Oregon Health & Science University

Course Guide

2024–2025

Subject Codes

School of Dentistry

AN	Anatomy
CDEN	Community Dentistry
DEN	Clinical Dentistry
DM	Dental Materials
ENDO	Endodontology
IB	Integrative Biosciences
MB	Microbiology
OB	Oral Biology
OPTH	Oral Pathology
ORD	Orthodontics
OS	Oral Surgery
PEDS	Pediatric Dentistry
PER	Periodontology
PHC	Pharmacology
PROS	Prosthodontics
REST	Restorative
RO	Oral Radiology

School of Medicine

ANAT	Anatomy
BCMB	Biochemistry & Molecular Biology
BEST	Behavioral & Systems Neuroscience
BME	Biomedical Engineering
BMI	Biomedical Informatics
BMSC	Biomedical Science
CANB	Cancer Biology
CELL	Cell & Developmental Biology
CONJ	Conjoint Allied Health
CPSY	Clinical Psychology
FSS	Food Systems & Society
HIP	Human Investigations Program
MATH	Mathematics
MBIM	Microbiology & Immunology
MGEN	Medical Genetics
MGRD	Med Grad
MGT	Management
MP	Medical Physics
NEUS	Neuroscience
NUTN	Clinical Nutrition
PAST	Physician Assistant Studies
PHPH	Physiology/Pharmacology
PHYS	Physiology
RDTT	Radiation Therapy Technology

School of Nursing

ACNP	Acute Care Nurse Practitioner
FNP	Family Nurse Practitioner
HSOL	Health Systems & Organizational Leadership
NAP	Nurse Anesthesia
NMID	Nurse Midwifery
NRS	Nursing (undergraduate)
NURS	Nursing (graduate)
PMH	Psych Mental Health
PNP	Pediatric Nurse Practitioner

School of Public Health

AGE	Aging & Gerontology
BSTA	Biostatistics
CPH	Community & Public Health
EPI	Epidemiology
ESHH	Environmental Systems & Human Health
GEOG	Geography
HSMP	Health Systems Management and Policy
LING	Linguistics
PA	Public Administration
PAP	Public Affairs Policy
PHE	Health Behavior
PSY	Psychiatry
SOC	Sociology
STAT	Statistics
SW	Social Work
SYSC	Systems Science
USP	Urban Studies & Planning

Undergraduate Medical Education

AMBL	Ambulatory Care
ANAT	Anatomy
ANST	Anesthesiology
ARTH	Arthritis
BLHD	Blood & Host Defense
CARD	Cardiology
CPR	Cardiopulmonary & Renal
CPX	Clinical Performance Exam
CSUR	Cardiopulmonary Surgery
DERM	Dermatology
DEVH	Developing Human
EMED	Emergency Medicine

ENDC	Endocrinology
ETOX	Emergency Medicine/Toxicology
FAMP	Family Medicine
FUND	Fundamentals
GERI	Geriatrics
GMED	General Internal Medicine
GSTR	Gastro
HEMA	Hematology
HODI	Hormones and Digestion
HOSP	Hospitalist
IMED	Internal Medicine
INFD	Infectious Disease
INTS	Intersession
IRAD	Interventional Radiology
IS	International Studies
JCON	Medical Conjoint
MGRD	Med Grad
MINF	Medical Informatics
MSCI	Medical Science
MULT	Multidisciplinary
NEPH	Nephrology
NEUR	Neurology
NSF	Nervous System
NSUR	Neurosurgery
OBGY	Obstetrics/Gynecology
OFKF	Oregon First Klamath Falls
OMAS	Oral & Maxillofacial Surgery
ONCL	Oncology
OPHT	Ophthalmology
ORTH	Orthopedics Surgery
OTOL	Otolaryngology/Maxillofacial
PATH	Pathology
PEDI	Pediatrics
PLAS	Plastic Surgery
PMR	Physical Med/Rehabilitation
PREC	Preceptorship
PREP	Preparation
PSUR	Pediatric Surgery
PSYC	Psychiatry
PULM	Pulmonary
RADD	Radiological Diagnosis
RADT	Radiation Oncology
RSP	Rural Scholars Program
SBM	Skin, Bones & Musculature
SCHI	Scholarly Project
SURG	Surgery
TRAN	Transition
UROL	Urology

Universitywide

IPE	Interprofessional Education
UNI	University Curriculum

School of Dentistry

AN 711 Dental Gross Anatomy (5 cr.)
Students will work collaboratively to develop an understanding of the fundamental organizing principles and inter-relatedness of oral and systemic anatomy, and they will learn to apply their understanding to physical diagnosis, radiographic analysis, procedures, and the study of pathology.

AN 713 General Histology (3-4 cr.)
Cells are the functional units of living tissue, and their study provides a useful central theme in the biological sciences and biomedicine. In this course, we will emphasize tissue organization at the cellular level as seen in the light microscope. Sixteen integrated lecture/lab sessions will introduce you to each of the major tissue types and organ systems found in the human body. Laboratory exercises featuring image-presentation software will be integrated into each lecture session, for both solo and small-group activities. Together, this lecture and lab material will provide a visual framework onto which you can a) begin to integrate the related physiology, biochemistry, and molecular biology of your other basic science courses and b) understand the cellular basis of pathology.

AN 715 Oral Histology (2 cr.)
Oral Histology is the study of the development and structure of oral tissues. The student will learn tissue characteristics and relationships that are necessary for assessing the health of the patient's oral tissues and determining the best therapy or procedure for the patient. This course also serves as a basis for the study of oral pathology.

CDEN 700A Health Promotion I (1 cr.)
The purpose of this course is to provide students with a good understanding of the main principles of health promotion, particularly in relation to oral health. The focus is on enabling and supporting individuals and populations to make healthy choices, and on integrating oral health policies with general health and social policies. This course also equips dental students with the knowledge, skills, and awareness related to the provision of culturally and linguistically appropriate oral health care.

CDEN 701 Clinical Scientific Inquiry (1 cr.)
Clinical Scientific Inquiry aims to provide the framework and supporting literature for understanding the background for, principles, and value of evidence based dentistry (EBD). In this course, students will focus on practical skills to develop relevant clinical questions in the PICO format and to develop the ability to search for, critically review and apply scientific literature to answer these questions. Students will learn a broad array of concepts that will be of use in your continued professional life, such as, CONSORT and PRISMA guidelines, systematic reviews and meta-analyses, Critically Appraised Topics (CATs), and journal impact factors. Students will have the opportunity to demonstrate their practical skills through session related exercises and by presenting their CAT to their peers.

CDEN 705 Social Determinants of Health, Social Justice and Equity (1-2 cr.)
Introduces and fosters a social determinants of health, health equity, and social justice learning environment; whereby, dental students can identify non-biomedical factors and how they contribute to the health of their patients. The sessions underscore holistic, comprehensive healthcare for patients and families who have diverse socioeconomic backgrounds. Additionally, sessions will challenge the dental students to reflect on any incorrect assumptions that poor oral health is primarily an individual consequence due to self-neglect.

CDEN 711 Principles of Public Health & Preventive Dentistry (1 cr.)
Principles of Public Health and Preventive Dentistry introduces first-year dental students to the core principles of Dental Public Health, and its application to population-based oral health. Students will also learn about evidence-based prevention strategies; dental access issues; epidemiology of common oral diseases in the US; common dental indices to measure these oral diseases; and the Oregon State Oral Health Program. Overall, the goal is to teach students how to incorporate prevention during the entire scheme of patient care.

CDEN 712 Health Care Systems/Finance & Delivery (1 cr.)
This course introduces dental students to the concepts and functions that comprise health care systems. This includes the role of financing and delivery of services. The course also introduces students to changes occurring in the overall healthcare landscape, and how those changes are impacting the dental industry and the future of oral health care practice. The course consists of didactic lectures covering core health policy topics including healthcare systems, finance, and models of care delivery. The lecture series also incorporates relevant guest lectures delivered by professionals with a range of experience in the Dental Industry.

CDEN 723 Geriatrics in Oral Health (1 cr.)
The lifespan of the average American is increasing and the proportion of the population over 65 years of age is expected to reach around 20% in 2050. In addition, due to the decrease in tooth extractions as compared to previous generations, older people have retained more teeth that need care. Thus, dental professionals must understand how to effectively

serve the needs of a diverse aging population and to be aware of a range of medical and dental care challenges. This course is designed to create awareness of issues related to geriatric oral health, and later to support specific geriatric dental training in appropriate settings.

CDEN 730 Health Related Behavior (1 cr.)
The purpose of this course is to provide dental providers with information about certain health-impacting behaviors and practical strategies for recognizing and dealing with these behaviors in the dental environment. Specifically, we will cover tobacco cessation, cannabis use, substance abuse, family violence and abuse, eating disorders, theories of behavior change, and motivational interviewing.

CDEN 732A Dental Practice Administration: Introduction (1 cr.)
CDEN 732A is the first in a series of two courses that provides the third-year dental student with an overview of the administrative, managerial and leadership roles of a practicing dentist. This course explores guidance for the new graduate, managerial and leadership roles of a practicing general dentist, practice options, models of dental care, practice transitions, and financial management for the new professional.

CDEN 732B Dental Practice Administration: Business Foundations (1 cr.)
CDEN 732B is the second in a series of two courses that provides the third-year dental student with an overview of the administrative, managerial and leadership roles of a practicing dentist. The course fosters an understanding of public agencies and legal frameworks involved with regulation of dental practice. The lecture series also incorporates guest lectures by subject matter experts who hold leadership roles in public and private organizations within the dental industry.

CDEN 740 Community Based Rotations (1-4 cr.)
This course is an eight-week extramural rotation, with an additional one week rotation at the OHSU Russell Street Clinic. In this course students will develop an understanding of issues associated with under-served populations through first-hand experience treating patients in a diverse array of off-campus community dental clinics and private practices in both urban and rural settings. Through direct participation in an off-campus service learning environment, students are introduced to the benefits of community-campus collaborations, inter-professional care, social determinants of health, and applied public health concepts.

CDEN 744 Community Based Rotation Elective (1 cr.)
Students will develop an understanding of issues associated with the underserved populations through first-hand experience treating patients in a diverse array of off-campus community dental clinics and private practices. Through direct participation in an off-campus service learning environment, students will be introduced to the benefits of community-campus collaborations and applied public health concepts.

DEN 555I Clinical Intersession Practice (0.5-1.5 cr.)
This is an extension of the core clinical courses in the practice of endodontics. The students practice a variety of non-surgical and surgical techniques. All patient treatments are reviewed by a faculty member.

DEN 570 Advanced Clinical Dentistry Practicum (3 cr.)
DEN 570 is a dental clinical practicum in which enrolled advanced specialty education students have the opportunity to continue clinical practice in any discipline under the supervision of clinic faculty.

DEN 730A Introduction to Comprehensive Care I (1 cr.)
The DEN730 series provides a foundation of knowledge and experience in patient evaluation and clinical protocols on which subsequent courses and clinical activities will build. Students are introduced to the principles of infection control comprehensive oral diagnosis and treatment planning via collaborative learning exercises, a case-based simulation patient, Clinical activities will also provide experience in the use of the dental unit, handling of the dental instruments, infection control procedures, and 4-handed dentistry.

DEN 730B Introduction to Comprehensive Care II (1 cr.)
The DEN730 series provides a foundation of knowledge and experience in patient evaluation and clinical protocols on which subsequent courses and clinical activities will build. Students are introduced to the principles of comprehensive oral diagnosis and treatment planning via collaborative learning exercises, a case-based simulation patient, as well as a simulated experience in conducting a patient interview, performing a clinical examination and documentation of findings in the electronic dental record. Clinical activities will also provide experience in the use of the dental unit, handling of the dental instruments, infection control procedures, and 4-handed dentistry.

DEN 730C Introduction to Comprehensive Care III (1 cr.)
The DEN730 series provides a foundation of knowledge and experience in patient evaluation and clinical protocols on which subsequent courses and clinical activities will build. Students continue learning the principles of comprehensive oral diagnosis and treatment planning. Students are introduced to the principles of evidence-based dentistry and continuing dental education. Clinical activities will also provide experience in the use of the dental unit, handling of

the dental instruments, infection control procedures, and 4-handed dentistry.

DEN 740A Introduction to Comprehensive Care IV (0.5 cr.)
The DEN 740 series introduces students to the School of Dentistry predoctoral patient care clinic. Students are scheduled for regular rotations through the predoctoral clinic with increasing responsibilities as the course series progresses. In the summer term, students begin taking on the role of provider by initiating a patient interview reviewing the medical history with their upperclassmen mentoring the process. These rotations will help prepare students to assess and safely treat patients in the clinic as well as think critically about the treatment they are rendering. This course series is intended to provide a seamless transition into the clinic environment at the School of Dentistry.

DEN 740B Introduction to Comprehensive Care V (1-2 cr.)
The DEN 740 series introduces students to the School of Dentistry predoctoral patient care clinic. In the fall term, students are scheduled for regular rotations through the predoctoral clinic with increasing responsibilities as the course progresses. In the fall term, multiple experiential small group workshops studying Emotional Intelligence, Radiology Interpretation, a series of Interprofessional Primary Care Medicine workshops led by an MD, and a collaborative workshop with Bio-Medical sciences in the Gross Anatomy Facility will help prepare students to safely treat patients in the clinic as well as think critically about the treatment they are rendering. Students will provide limited aspects of patient care including taking patient radiographs, providing periodontal treatment and may begin administering local anesthetic toward the end of the term. This course series is intended to provide a seamless transition into the clinic environment at the School of Dentistry.

DEN 740C Introduction to Comprehensive Care VI (2 cr.)
The DEN 740 series introduces students to the School of Dentistry predoctoral patient care clinic. Students are scheduled for regular rotations through the predoctoral clinic with increasing responsibilities as the course progresses. In the winter term, multiple experiential small group workshops studying Pediatric Case CATs, Ethics, Legal Documentation Requirements, Radiology Interpretation, a series of Interprofessional Primary Care Medicine workshops led by an MD, an Objective Structured Clinical Experience with a Standardized Patient, and an Interprofessional Event demonstrating and sharing knowledge of the Head & Neck Intraoral and Extraoral Exam with medical students will help prepare students to safely treat patients in the clinic as well as think critically about the treatment they are rendering. Students will begin to provide more aspects of direct patient care in the clinical setting including taking patient radiographs, administering local anesthetic and providing periodontal treatment as well as actively participating in admitting and specialty clinic rotations. This course series is intended to provide a seamless transition into the clinic environment at the School of Dentistry.

DEN 740D Introduction to Comprehensive Care VII (3 cr.)
The DEN 740 series introduces students to the School of Dentistry predoctoral patient care clinic. Students are scheduled for regular rotations through the predoctoral clinic with increasing responsibilities as the course progresses. In the spring term, multiple experiential small group workshops studying Treatment Planning, Social Work, Radiology Interpretation including CBCT small group, and AxiUm will help prepare students to safely treat patients in the clinic as well as think critically about the treatment they are rendering. Students will begin to provide more comprehensive care doing patient intake interviews, performing dental exams, taking and interpreting patient radiographs, administering local anesthetic and providing limited operative and periodontal treatment in the clinical setting, as well as actively participating in pre-doctoral and specialty clinic rotations. This course series is intended to provide a seamless transition into the clinic environment at the School of Dentistry.

DEN 754A Comprehensive Care I (10 cr.)
This course is the first of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide third year students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to approach the independent practice of dentistry as a competent entry level general practitioner.

DEN 754B Comprehensive Care II (1-10 cr.)
This course is the second of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide third year students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to approach the independent practice of dentistry as a competent entry level general practitioner.

DEN 754C Comprehensive Care III (1-10 cr.)
This course is the third of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide third year students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business

administration, and faculty interactions to approach the independent practice of dentistry as a competent entry level general practitioner.

DEN 754D Comprehensive Care IV (1-14 cr.)
This course is the fourth of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide third year students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to approach the independent practice of dentistry as a competent entry level general practitioner.

DEN 755I Intersession Comprehensive Care (1-2 cr.)
This course is intended to provide third and fourth year students with an opportunity to supplement their patient experiences in clinic during Intersession (break period between Fall and Winter terms). Registration is optional for all students who would benefit from the additional clinic time.

DEN 756A Comprehensive Care V (1-10 cr.)
This course is the fifth of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to assure entrance into the independent practice of dentistry as a competent entry level general practitioner.

DEN 756B Comprehensive Care VI (1-10 cr.)
This course is the sixth of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to assure entrance into the independent practice of dentistry as a competent entry level general practitioner.

DEN 756C Comprehensive Care VII (1-10 cr.)
This course is the seventh of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to assure entrance into the independent practice of dentistry as a competent entry level general practitioner.

DEN 756D Comprehensive Care VIII (1-10 cr.)
This course is the eighth of eight comprehensive care clinical courses offered at the School of Dentistry. This course is intended to provide students with the requisite patient experiences to develop clinic and behavioral skills, reflective self-evaluation to enhance personal learning, application of best evidence in patient care, business administration, and faculty interactions to assure entrance into the independent practice of dentistry as a competent entry level general practitioner.

DEN 770 Clinical Dentistry Practicum (1-5 cr.)
DEN 770 is a dental clinical practicum in which enrolled dental students have the opportunity to continue clinical practice in any discipline under the supervision of clinic faculty.

DEN 771 Clinical Dentistry Practicum II (1-5 cr.)
DEN 771 is a continuation of DEN 770, a dental clinical practicum in which enrolled dental students have the opportunity to continue clinical practice in any discipline under the supervision of clinic faculty.

DEN 772 Clinical Dentistry Practicum III (5 cr.)
DEN 772 is a continuation of DEN 771, a dental clinical practicum in which enrolled dental students have the opportunity to continue clinical practice in any discipline under the supervision of clinic faculty.

DEN 773 Clinical Dentistry Practicum IV (5 cr.)
DEN 773 is a continuation of DEN 772, a dental clinical practicum in which enrolled dental students have the opportunity to continue clinical practice in any discipline under the supervision of clinic faculty.

DM 531 Dental Materials (2 cr.)
This course emphasizes basic material science theories as they relate to the use of metals, ceramics, and polymers in orthodontic and pediatric dentistry. The primary purpose of this course is to provide the student with knowledge of 1) the general nature and composition of dental materials, 2) the physical properties of materials used in dentistry and medicine, and 3) the indications for and proper use of dental materials. Fluoride, allergies and biocompatibility are also discussed.

DM 711 Introduction to Dental Materials (1 cr.)
This course is the first in a series of two, one-credit hour courses. This course, as well as the one following it (DM 712) emphasizes basic material science theories as they relate to the use of metals, ceramics, and polymers in dentistry. This

course will provide the student with knowledge of: 1) the general nature and composition of dental materials, 2) the physical properties of materials used in dentistry and medicine, and 3) the indications for, selection and proper use of dental materials. This course is integrated with the pre-clinic courses in Restorative Dentistry, where the practical manipulation of the various materials is emphasized. While this is not expected to be a common occurrence, occasionally you will be asked to watch recorded content on your own. Content covered in class and in the recordings will be included in the exam. Welcome to Fall, have a great term!

DM 712 Introduction to Dental Materials II (1 cr.)
This course is the second in a series of three, one-credit hour courses. This course, as well as the one preceding and the subsequent courses, emphasizes basic material science theories as they relate to the use of metals, ceramics, and polymers in clinical dentistry. The primary purposes of this course are to provide the student with knowledge of: 1) the general nature and composition of dental materials, 2) the physical properties of materials used in dentistry and medicine, and 3) the indications for and proper use of dental materials. This course is integrated with the pre-clinic course in Prosthodontics. The manipulation of the various materials are emphasized in those courses, but are introduced in this course. While this is not expected to be a common occurrence, occasionally you will be asked to watch recorded content on your own. Content covered in class and in the recordings will be included in the exam. Welcome to Spring, have a great term!

DM 731 Dental Materials (1 cr.)
In this course, students will learn about the characteristics and behavior of the materials used in dentistry to maintain, restore and replace oral tissues. This information will help the student provide high quality oral health care during their time in dental school and upon graduation. Emphasis is placed on identifying the criteria for materials selection for specific dental situations, an identification of the indications and contraindications for various materials for a given patient and circumstance, a discussion of the limitations and benefits of current materials and how they may be improved in the future, and practical information about the appropriate handling and placement of current dental materials. Students participate in class by discussing these important issues as they pertain to specific clinical case scenarios.

ENDO 501-1 Research I (1-2 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-2 Research II (1-2 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-3 Research III (1-2 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-4 Research IV (1-5 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-5 Research V (1 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-6 Research VI (1 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-7 Research VII (1-2 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 501-8 Research VIII (4-5 cr.)
Each student must apply the scientific method to a research project, collect data, and complete a manuscript following the format of the Journal of Endodontics or other comparable journal.

ENDO 505A Classic Literature (2 cr.)
The purpose of this course is to give the student an in depth review of the literature that is considered important to a comprehensive understanding of the specialty of Endodontology. The students produce a written abstract including a critical evaluation for each article. There is a comprehensive written and oral examination each year.

ENDO 505B Current Literature (2 cr.)
This course is designed to bring the students up to date with developments in Endodontology and other relevant aspects of dentistry and medicine. The students are responsible for

obtaining the journal articles. The students give oral presentations and critically evaluate each article.

ENDO 507-1 Basic Concepts in Endodontics I (2 cr.)
The objective of this course is to give entering postgraduate endodontic students a basic understanding of endodontics. Reading assignments in endodontic texts are given for each seminar. The summer portion of BCE is coordinated with ENDO 511- Advanced Clinical Techniques with additional reading assignments.

ENDO 507-2 Basic Concepts in Endodontics II (1 cr.)
The objective of this course is to give entering postgraduate endodontic students a basic understanding of endodontics. Reading assignments in endodontic texts are given for each seminar. The summer portion of BCE is coordinated with ENDO 511- Advanced Clinical Techniques with additional reading assignments.

ENDO 507-3 Basic Concepts in Endodontics III (1 cr.)
The objective of this course is to give entering postgraduate endodontic students a basic understanding of endodontics. Reading assignments in endodontic texts are given for each seminar. The summer portion of BCE is coordinated with ENDO 511- Advanced Clinical Techniques with additional reading assignments.

ENDO 507-4 Basic Concepts in Endodontics IV (1 cr.)
The objective of this course is to give entering postgraduate endodontic students a basic understanding of endodontics. Reading assignments in endodontic texts are given for each seminar. The summer portion of BCE is coordinated with ENDO 511- Advanced Clinical Techniques with additional reading assignments.

ENDO 511 Advanced Clinical Techniques (2 cr.)
The objective of this course is to familiarize each student with a variety of non-surgical and surgical endodontic techniques using extracted teeth. This is a prerequisite for ENDO 550.

ENDO 512 Simulation Clinical Teaching (1 cr.)
Students participate as instructors in the DS-2 preclinical laboratory course. The intent is for the students to learn how to communicate information and mentor others in the preclinical lab.

ENDO 513 Clinical Case Review Seminar (1 cr.)
A portfolio of fifteen treatment cases demonstrating proficiency in endodontics must be completed for graduation. Five cases are due in July of the second year, 10 cases are due in December of second year, and a total of 15 cases are due in May of the second year.

ENDO 514 Endodontic Clinical Instruction (1 cr.)
Students participate as instructors in the preclinical endodontic clinic. The intent is for the students to learn how to communicate information and mentor others in the clinic.

ENDO 550 Advanced Clinical Practice (5 cr.)
This is the core clinical course in the practice of endodontics. The students practice a variety of non-surgical and surgical techniques. All patient treatments are reviewed by a faculty member. Selected cases are presented in ENDO 555. Test cases are used to demonstrate proficiency in both non-surgical and surgical treatment of patients.

ENDO 555-1 Case Analysis & Treatment Planning I (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical photography, diagnosis, treatment planning, and clinical judgment.

ENDO 555-2 Case Analysis & Treatment Planning II (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical photography, diagnosis, treatment planning, and clinical judgment.

ENDO 555-3 Case Analysis & Treatment Planning III (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical photography, diagnosis, treatment planning, and clinical judgment.

ENDO 555-4 Case Analysis & Treatment Planning IV (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical

photography, diagnosis, treatment planning, and clinical judgment.

ENDO 555-5 Case Analysis & Treatment Planning V (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical photography, diagnosis, treatment planning, and clinical judgment.

ENDO 555-6 Case Analysis & Treatment Planning VI (1 cr.)
Each student uses a PowerPoint format to present their cases to the other residents and faculty. The purpose of the course is to give students exposure to a wider range of experiences than they could achieve on their own, 2) to show that there are a variety of treatment approaches to a particular endodontic problem 3) to improve the residents skills in medical and dental history taking, radiography, clinical photography, diagnosis, treatment planning, and clinical judgment.

ENDO 580-1 Masters in Thesis Development I (1 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-2 Masters in Thesis Development II (1-2 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-3 Masters in Thesis Development III (1-3 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-4 Masters in Thesis Development IV (1-4 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-5 Masters in Thesis Development V (1-5 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-6 Masters in Thesis Development VI (1-6 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-7 Masters in Thesis Development VII (1 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 580-8 Masters in Thesis Development VIII (1 cr.)
To provide the resident pursuing the Master of Science in Endodontology with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ENDO 723 Endodontic Principles & Practice I (1 cr.)
In this course, students will learn core knowledge for the diagnosis and management of pulpal and periradicular diseases, including clinical techniques for non-surgical endodontic treatment.

ENDO 724 Foundational Endodontic Treatment I (2 cr.)
Endo 724 introduces the DS2 to the basic techniques and hand skills required for beginning endodontic practice in the DS3 clinic. Students will gain hands-on practice in access openings, cleaning and shaping, and obturation of incisors, canines, premolars, and molars in a simulation clinic. To complete the course and proceed to clinical practice the student must successfully complete two pre-clinical competency (PCE) exams: 1) Access, instrument, and obturate a single canal tooth, and 2) access, identify all canals, and clean, shape, and obturate 1 canal in a molar.

ENDO 725 Foundational Endodontic Treatment II (2 cr.)
ENDO 725 is the second course in the Foundational Endo Tx Series, following ENDO 724. The course covers basic techniques and hand skills required for beginning endodontic practice. Students are provided an opportunity for hands-on practice in access openings, cleaning and shaping, and obturation of incisors, canines, premolars, and molars in a simulation clinic.

ENDO 733 Endodontic Principles & Practice II (1 cr.)
ENDO 733 builds upon and expands the core knowledge base introduced in ENDO 723. It covers material necessary for the diagnosis of pulpal and periradicular disease and its treatment including endodontic evaluation, management of traumatized teeth, cracks and fractures in teeth, endodontic and periodontal interrelationships, endodontic treatment for young permanent dentition, geriatric endodontics, analgesics

and local anesthesia, focal infection theory and pros/cons of endodontic treatment vs. implant placement.

ENDO 743 Endodontic Principles & Practice III (1 cr.)
The purpose of this course is to provide fourth year dental students with information that will allow them to provide a standard of care consistent with the Quality Assurance Guidelines for Endodontics.

ENDO 748 Senior Endodontics Honors Seminar (1 cr.)
This is a one credit hour elective course presented for selected fourth year dental students with an interest in gaining more in depth knowledge in endodontics.

IB 701 Biophysiology I (4-6 cr.)
The IB 700 courses are interdisciplinary, combining the traditional contents of biochemistry, physiology, neuroscience and nutrition into a three-quarter series. IB will follow a block method of instruction focusing first on biochemical principles, and then progressing to physiology and applications of biochemistry in physiological systems. Neuroscience and nutrition will be taught as stand-alone disciplines. This will allow students to understand the molecular and biochemical basis of physiological responses, with additional focus on the nervous system and nutrition, exercise and energy metabolism. The underlying rationale for the development of the IB series is that oral health practitioners need to evaluate interdisciplinary, evidence-based information for the provision of oral health care in the 21st Century. The interdisciplinary nature of the IB 700 series will provide future practitioners with a stronger foundation to build evidence-based practices and will help future professionals incorporate scientific evidence into necessary decision-making for patient care. Throughout the course, an icon (A Little Bite of Integration) consistently calls attention to intersections between basic science and clinical science.

IB 702 Biophysiology II (4-6 cr.)
The IB 700 courses are interdisciplinary, combining the traditional contents of biochemistry, physiology, neuroscience and nutrition into a three-quarter course series. IB will follow a block method of instruction using physiology and physiological systems as the primary focus and complemented with the insertion of lectures in biochemistry. Neuroscience and nutrition will be taught as stand-alone disciplines. This will allow students to understand the molecular and biochemical basis of physiological responses, with additional focus on the nervous system and on nutrition. The underlying rationale for the development of the IB course series is that dentists now need to evaluate interdisciplinary, evidence-based information for the provision of oral health care in the 21st Century. The interdisciplinary nature of IB 700 will provide future dentists with a stronger foundation to build evidence-based practices and will help future professionals incorporate scientific evidence into decision-making for patient care. Throughout the course, an icon (A Little Bite of Integration) consistently calls attention to intersections between basic science and clinical science.

IB 703 Biophysiology III (4-6 cr.)
The IB 700 courses are interdisciplinary, combining the traditional contents of biochemistry, physiology, neuroscience and nutrition into a three-quarter series. IB will follow a block method of instruction focusing first on biochemical principles, and then progressing to physiology and applications of biochemistry in physiological systems. Neuroscience and nutrition will be taught as stand-alone disciplines. This will allow students to understand the molecular and biochemical basis of physiological responses, with additional focus on the nervous system and nutrition, exercise and energy metabolism. The underlying rationale for the development of the IB series is that oral health practitioners need to evaluate interdisciplinary, evidence-based information for the provision of oral health care. The interdisciplinary nature of the IB 700 series will provide future practitioners with a stronger foundation to build evidence-based practices and will help future professionals incorporate scientific evidence into necessary decision-making for patient care. Throughout the course, an icon (A Little Bite of Integration) consistently calls attention to intersections between basic science and clinical science.

MB 721 Microbiology & Immunology (3 cr.)
The course is designed to analyze major mechanisms of infectious disease and the resultant useful and harmful responses of the host. The focus is on understanding underlying processes using key example diseases to give depth for evaluating virulence mechanisms. This basic material will help students connect with future Pathology and clinical courses and locate and evaluate new information concerning past, present and emerging diseases. The course starts with 'non-specific,' innate immunity (with particular emphasis on inflammation) and specific adaptive immune responses. This is followed by an overview of bacteria and viruses, leading to discussions of representative bacterial and viral diseases. Significant amounts of the material highlight mucosal spread of disease, mucosal disease processes, and immune responses at mucosal sites. MB 721 is designed to lead directly into MB 722.

MB 722 Pathogenic & Oral Microbiology (3-4 cr.)
This course is designed to follow directly from MB 721, and to build directly on the knowledge and concepts learned in that course. The course is designed to analyze major mechanisms of infectious disease and the resultant useful and harmful responses of the host. The focus is on understanding underlying processes using key example diseases to give depth for evaluating microbial virulence mechanisms. This

basic material will help students connect with future Pathology and clinical courses, and locate and evaluate new information concerning past, present and emerging diseases, and their treatments. The course starts with analysis of bacterial diseases and progresses through key viral diseases, prion, and fungal diseases, ending with oral ecology/microbiology and periodontal & endodontic diseases. Much of the material highlights mucosal spread of disease, mucosal diseases, and mucosal immunity. There is special emphasis on oral biofilms and plaque-related microbial diseases.

OB 511 Oral Biology I (4 cr.)
The goal of this course is to understand in-depth, the scientific background of inflammation, its relationship with vascular response, oral microbiology, molecular biology, and clinical genetics.

OB 513 Oral Biology III (3 cr.)
The goal of this course is to understand current concepts of cariology, the effectiveness of fluorides and their relationship to dental caries, and the relationship of fluorides to dietary considerations, and microbiological flora. The relationships between saliva, caries and fluorides will also be reviewed.

OB 522 Oral Biology II: Statistics (4 cr.)
This course is designed for the graduate students in School of Dentistry to provide the foundations of statistics to design a scientific study, perform data analysis, and critically understand statistics in research articles. A combination of introductory-level statistics (descriptive statistics, statistical graphs, hypothesis tests, regression models) and more advanced statistical methods and machine learning will be introduced.

OPTH 505 Advanced Oral & Maxillofacial Histopathology (1-2 cr.)
This course provides a presentation of advanced concepts in oral and maxillofacial histology and histopathology for periodontology residents. The focus is on gaining an understanding of the histologic basis for the clinical appearance of normal oral tissues and selected pathologic alterations of oral tissues with special emphasis on those diseases that affect the gingival tissues, periodontium and periradicular bone. This basic understanding is essential to the fact that rational treatment of oral diseases can only proceed on the basis of accurate diagnosis and a sound understanding of the etiology and pathogenesis of the disease process.

Each resident will use a microscope to study microscopic slides. During the classes cases selected from a study set will be discussed with the instructor at the microscope. Each resident will have previously studied the selected cases and will be prepared to discuss the histopathologic features, the diagnosis, and the significance of the diagnosis. The students are expected to build on the diagnostic skills and knowledge acquired during the oral and maxillofacial clinical-pathologic conferences presented earlier in the graduate curriculum.

OPTH 517 Advanced Oral Pathology (1 cr.)
This course provides a presentation of advanced concepts in oral and maxillofacial pathology for endodontology residents. The focus is on gaining an understanding of the clinical, radiographic and histopathologic features of selected pathologic alterations of the oral and maxillofacial region with special emphasis on those diseases that affect the periradicular bone of the jaws. This basic understanding is essential to the fact that rational treatment of oral diseases can only proceed on the basis of accurate diagnosis and a sound understanding of the etiology and pathogenesis of the disease process.

The course will consist of a combination of seminars and clinical-pathologic conferences. During the conferences the students will demonstrate active participation and are expected to build on the diagnostic skills and knowledge acquired during the oral and maxillofacial clinical-pathologic conferences presented earlier in the graduate curriculum.

OPTH 721 Basic Disease Processes (2 cr.)
An understanding of basic disease processes and the mechanisms by which diseases develop and progress is the foundation upon which the ability to establish accurate diagnoses and, ultimately, rational treatment rests. The student will learn about the fundamental molecular and histological changes that take place during a disease process. OPTH 721 is designed to lead directly into OPTH 727 (systems pathology) in the following term. Additionally, the concepts learned in OPTH 721 will be essential for oral pathology classes (OPTH 731, 732, 733) that are offered in the DS3 year.

OPTH 725 Caries (2 cr.)
This course is designed to acquaint the student with the scientific basis of caries development, diagnosis, and treatment. This basic material will help students connect with future Pathology, Restorative, and clinical courses, and help students locate and evaluate new information concerning past, present and future dental caries knowledge. The focus is on understanding underlying processes. The course starts with an examination of basic tooth structure (e.g., hydroxyapatite) as well as saliva composition & function, and their relationship to lesion development. Key aspects of the microbiology of dental caries, with emphasis on understanding oral biofilms are also addressed. Several important anti-caries therapies, both current and potential, are examined in detail. Special emphasis is given to fluoride and its effects on tooth structure, resistance to caries, and

fluorosis. Finally, correlation of course material with current (and future) clinical and research practices is done.

OPTH 727 Pathology of the Systems (3-4 cr.)
In this course, students will explore how different basic disease processes (learned in OPTH 721) affect the different organ systems in the human body. The most common, the most dangerous, and the otherwise most noteworthy diseases from the standpoint of the dental practitioner will be stressed.

OPTH 731 Oral Pathology II (2 cr.)
OPTH 731 is the first of three oral pathology courses offered in the DS3 year. OPTH 731 is a mostly didactic course in which students learn the etiology, pathogenesis, clinical presentation, histopathologic features and treatment of numerous disease entities that present in the oral cavity. Odontogenic cysts and tumors, bone diseases, physical injuries, hematopathology, as well as epithelial and salivary diseases will be stressed.

OPTH 732 Oral Pathology III (2 cr.)
OPTH 732 is the second of three oral pathology courses offered in the DS3 year. OPTH 732 is mostly a didactic course in which students learn the etiology, pathogenesis, clinical presentation, histopathology and treatment of numerous disease entities that present in the oral cavity. Infectious, dermatologic (mucosal), allergic and immunologic diseases that affect the oral cavity will be discussed. Various orofacial pain syndromes and oral manifestations of systemic diseases will also be covered.

OPTH 733 Oral Pathology IV (2 cr.)
OPTH 733 is the third of three oral pathology courses offered in the DS3 year. OPTH 733 requires students to apply the knowledge gained in didactic-focused OPTH 731 and OPTH 732 in a case-based approach. The most common clinical scenarios will be stressed in this course.

ORD 501 Orthodontic Technique (3 cr.)
This course teaches the basics of orthodontic techniques through reading assignments, lectures, seminar discussion and hands-on exercises. Methods covered include obtaining pretreatment orthodontic records (clinical exam, intraoral and extraoral photography, radiographs, impressions, model fabrication), various types of a bends used in arch wire adjustments, welding of attachments to bands and archwires, as well as fabrication of retainers and diagnostic setups.

ORD 502-1 Cephalometric Theory & Practice 1 (1 cr.)
The seminar courses review cephalometric theory, history and clinical applications. Cephalometric techniques are emphasized for orthodontic diagnosis and treatment planning, and for analysis of growth and treatment changes of dental and skeletal relationships. Topics are discussed based on assigned textbook readings and from primary literature. A study guide is used to learn hands-on methods for cephalometric measurements. Students learn to hand-trace and to use computer programs for analyzing cephalograms as well as for constructing serial superimpositions.

ORD 502-2 Cephalometric Theory & Practice 2 (1 cr.)
The seminar courses review cephalometric theory, history and clinical applications. Cephalometric techniques are emphasized for orthodontic diagnosis and treatment planning, and for analysis of growth and treatment changes of dental and skeletal relationships. Topics are discussed based on assigned textbook readings and from primary literature. A study guide is used to learn hands-on methods for cephalometric measurements. Students learn to hand-trace and to use computer programs for analyzing cephalograms as well as for constructing serial superimpositions.

ORD 504-1 Facial Growth 1 (1 cr.)
The seminar courses cover in detail concepts of human craniofacial growth from prenatal development through adulthood based on discussions of reading assignments from textbook and primary literature sources. Seminars emphasize the time-dependent changes that occur with growth and physical maturation. Special emphasis is given to basic knowledge of growth and development of soft tissues, bone, cartilage and teeth, and how these relate to formation and overall growth of the craniofacial complex. Other topics covered include mechanisms of tooth eruption, how patterns of facial growth and tooth eruption relate to normal occlusion, malocclusion and asymmetries, and factors associated with root resorption.

ORD 504-2 Facial Growth 2 (1 cr.)
The seminar courses cover in detail concepts of human craniofacial growth from prenatal development through adulthood based on discussions of reading assignments from textbook and primary literature sources. Seminars emphasize the time-dependent changes that occur with growth and physical maturation. Special emphasis is given to basic knowledge of growth and development of soft tissues, bone, cartilage and teeth, and how these relate to formation and overall growth of the craniofacial complex. Other topics covered include mechanisms of tooth eruption, how patterns of facial growth and tooth eruption relate to normal occlusion, malocclusion and asymmetries, and factors associated with root resorption.

ORD 506-1 Osteology 1 (1 cr.)
This is a two-term course aimed at gaining insight into diagnosis and treatment planning. First year orthodontic

residents familiarize themselves with the individual cranial bones that make up the head and neck. Each week the post-doctoral students check out one of the individual cranial bones from the Department of Anatomy and through reading textbooks on anatomy and cephalometrics, learn to identify all structures for the bone. Identify of landmarks is made on the skull and on lateral and frontal cephalometric headfilms. In addition, literature is discussed on growth, development and clinical topics related to each of the bones including craniofacial anomalies and various pathologic conditions.

ORD 506-2 Osteology 2 (1 cr.)
This is a two-term course aimed at gaining insight into diagnosis and treatment planning. First year orthodontic residents familiarize themselves with the individual cranial bones that make up the head and neck. Each week the post-doctoral students check out one of the individual cranial bones from the Department of Anatomy and through reading textbooks on anatomy and cephalometrics, learn to identify all structures for the bone. Identify of landmarks is made on the skull and on lateral and frontal cephalometric headfilms. In addition, literature is discussed on growth, development and clinical topics related to each of the bones including craniofacial anomalies and various pathologic conditions.

ORD 508-1 Biomechanics 1 (1 cr.)
The objective of this course is to develop a fundamental knowledge of mechanics for application in analyzing orthodontic techniques. At the end of this course, graduate students will be familiar with the use of three-dimensional vector analysis. Assigned reading and presentations by graduate students will be required and evaluated. Participation in discussions is expected and will be evaluated.

ORD 508-2 Biomechanics 2 (1 cr.)
The objective of this course is to review commonly used orthodontic techniques. At the end of this course, graduate students will be familiar with various approaches that have been used to correct malocclusions. Assigned reading and presentations by graduate students will be required and evaluated. Participation in discussions is expected and will be evaluated.

ORD 511-1 Orthodontic Theory 1 (1 cr.)
This seminar series focuses on detailed knowledge of all aspects of orthodontic diagnosis and treatment planning. The etiology and epidemiology of genetic and epigenetic factors that contribute to dental and skeletal components of malocclusion are reviewed. Treatment timing and sequencing are discussed as are the theories and applications of various orthodontic appliances (fixed/removable) for treatment and retention.

ORD 511-2 Orthodontic Theory 2 (1 cr.)
This seminar series focuses on detailed knowledge of all aspects of orthodontic diagnosis and treatment planning. The etiology and epidemiology of genetic and epigenetic factors that contribute to dental and skeletal components of malocclusion are reviewed. Treatment timing and sequencing are discussed as are the theories and applications of various orthodontic appliances (fixed/removable) for treatment and retention.

ORD 511-3 Orthodontic Theory 3 (1 cr.)
This seminar series focuses on detailed knowledge of all aspects of orthodontic diagnosis and treatment planning. The etiology and epidemiology of genetic and epigenetic factors that contribute to dental and skeletal components of malocclusion are reviewed. Treatment timing and sequencing are discussed as are the theories and applications of various orthodontic appliances (fixed/removable) for treatment and retention.

ORD 511-4 Orthodontic Theory 4 (1 cr.)
This seminar series focuses on detailed knowledge of all aspects of orthodontic diagnosis and treatment planning. The etiology and epidemiology of genetic and epigenetic factors that contribute to dental and skeletal components of malocclusion are reviewed. Treatment timing and sequencing are discussed as are the theories and applications of various orthodontic appliances (fixed/removable) for treatment and retention.

ORD 512 Orthognathic Surgery (1 cr.)
This course teaches the principles of surgical procedures combined with orthodontic treatment for the management of patients with skeletal deformities. Reading assignments combined with seminars are the methods used to teach diagnosis, treatment planning, and clinical treatment for patients requiring both orthodontic and surgical procedures for a successful outcome. In addition, surgical procedures available, stabilization, facial changes, coordination of treatment, and pre-surgical/post surgical orthodontic treatment are discussed.

ORD 516-1 Topics in Orthodontics 1 (1 cr.)
This course teaches various treatment options for orthodontic problems that are commonly encountered. Topics include treatment goal determination, appliance construction, mechanics, order of treatment, mixed dentition, Class I, Class II, Class III, tooth size discrepancies, impactions, surgical orthodontics, TMJ, occlusion, retention and stability. Multiple examples of previously treated cases and references are used to expand and amplify these and other topics.

ORD 516-2 Topics in Orthodontics 2 (1 cr.)

This course teaches various treatment options for orthodontic problems that are commonly encountered. Topics include treatment goal determination, appliance construction, mechanics, order of treatment, mixed dentition, Class I, Class II, Class III, tooth size discrepancies, impactions, surgical orthodontics, TMJ, occlusion, retention and stability. Multiple examples of previously treated cases and references are used to expand and amplify these and other topics.

ORD 516-3 Topics in Orthodontics 3 (1 cr.)
This course teaches various treatment options for orthodontic problems that are commonly encountered. Topics include treatment goal determination, appliance construction, mechanics, order of treatment, mixed dentition, Class I, Class II, Class III, tooth size discrepancies, impactions, surgical orthodontics, TMJ, occlusion, retention and stability. Multiple examples of previously treated cases and references are used to expand and amplify these and other topics.

ORD 516-4 Topics in Orthodontics 4 (1 cr.)
This course teaches various treatment options for orthodontic problems that are commonly encountered. Topics include treatment goal determination, appliance construction, mechanics, order of treatment, mixed dentition, Class I, Class II, Class III, tooth size discrepancies, impactions, surgical orthodontics, TMJ, occlusion, retention and stability. Multiple examples of previously treated cases and references are used to expand and amplify these and other topics.

ORD 527-1 Orthodontic Literature Review 1 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-2 Orthodontic Literature Review 2 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-3 Orthodontic Literature Review 3 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-4 Orthodontic Literature Review 4 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-5 Orthodontic Literature Review 5 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-6 Orthodontic Literature Review 6 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-7 Orthodontic Literature Review 7 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic

knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-8 Orthodontic Literature Review 8 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-9 Orthodontic Literature Review 9 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 527-10 Orthodontic Literature Review 10 (1 cr.)
The purpose of this course series is to emphasize evidence-based orthodontic treatment and keep orthodontic knowledge up-to-date by reviewing current literature. In each class articles are assigned for presentation, one from the reading list recommended by American Board of Orthodontics and another from the current literature. Orthodontic residents make the presentations using PowerPoint, followed by seminar discussions of the topics. This course also teaches how to evaluate and critique study design and interpretation.

ORD 533-1 Advanced Orthodontic Theory 1 (1 cr.)
This seminar series for second and third year orthodontic residents involves literature review, assigned topics for discussion, case presentations of completed cases, and justification and defense of treatment approaches to the course instructors. In the didactic portion, the residents read and discuss either literature that was not assigned during the first year or topics that need further review. In the clinical portion, case presentations are made by the residents or the course director using recently completed or long-term retention cases. Seminar discussion centers on areas such as contemporary orthodontic technique, orthodontic philosophy, research evidence, historical background, biomechanics, tooth movement, histology, clinical judgment and ethics.

ORD 533-2 Advanced Orthodontic Theory 2 (2 cr.)
This seminar series for second and third year orthodontic residents involves literature review, assigned topics for discussion, case presentations of completed cases, and justification and defense of treatment approaches to the course instructors. In the didactic portion, the residents read and discuss either literature that was not assigned during the first year or topics that need further review. In the clinical portion, case presentations are made by the residents or the course director using recently completed or long-term retention cases. Seminar discussion centers on areas such as contemporary orthodontic technique, orthodontic philosophy, research evidence, historical background, biomechanics, tooth movement, histology, clinical judgment and ethics.

ORD 533-3 Advanced Orthodontic Theory 3 (2 cr.)
This seminar series for second and third year orthodontic residents involves literature review, assigned topics for discussion, case presentations of completed cases, and justification and defense of treatment approaches to the course instructors. In the didactic portion, the residents read and discuss either literature that was not assigned during the first year or topics that need further review. In the clinical portion, case presentations are made by the residents or the course director using recently completed or long-term retention cases. Seminar discussion centers on areas such as contemporary orthodontic technique, orthodontic philosophy, research evidence, historical background, biomechanics, tooth movement, histology, clinical judgment and ethics.

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ORD 543-1 Masters in Orthodontics Research 1 (1 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

ORD 543-2 Masters in Orthodontics Research 2 (1 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

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ORD 543-4 Masters in Orthodontic Research 4 (2 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

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ORD 543-6 Masters in Orthodontics Research 6 (2 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

ORD 543-7 Masters in Orthodontics Research 7 (2 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees),

periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

ORD 543-8 Masters in Orthodontics Research 8 (2 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

ORD 543-9 Masters in Orthodontics Research 9 (2 cr.)
A series of courses related to fulfilling the research requirement for an M.S. in Orthodontics. Major components of the research project include selection of a research topic and mentor, formation of a research advisory committee, writing a thesis proposal, conducting the study (with approval and oversight from appropriate institutional committees), periodic meetings of the research committee to obtain their advice and to keep committee members informed of progress, writing the M.S. Thesis, defending the thesis, and obtaining final approval of the MS Thesis. In addition, a qualifying examination must be passed during the second year of the program.

ORD 547-1 Orthodontic Diagnosis & Treatment Planning 1 (4 cr.)
This series of courses reviews orthodontic diagnostic procedures including methods for obtaining and interpreting information from the clinical examination and other orthodontic records, with an emphasis on customizing diagnostic records for individual patients. From the diagnostic information, the seminars focus on developing problem lists, treatment goals, and evaluation of potentially appropriate treatment options. Seminar formats include lectures by faculty and case presentations by residents.

ORD 547-2 Ortho Diagnosis & Treatment Planning 2 (3 cr.)
This series of courses reviews orthodontic diagnostic procedures including methods for obtaining and interpreting information from the clinical examination and other orthodontic records, with an emphasis on customizing diagnostic records for individual patients. From the diagnostic information, the seminars focus on developing problem lists, treatment goals, and evaluation of potentially appropriate treatment options. Seminar formats include lectures by faculty and case presentations by residents.

ORD 547-3 Ortho Diagnosis & Treatment Planning 3 (3 cr.)
This series of courses reviews orthodontic diagnostic procedures including methods for obtaining and interpreting information from the clinical examination and other orthodontic records, with an emphasis on customizing diagnostic records for individual patients. From the diagnostic information, the seminars focus on developing problem lists, treatment goals, and evaluation of potentially appropriate treatment options. Seminar formats include lectures by faculty and case presentations by residents.

ORD 547-4 Ortho Diagnosis & Treatment Planning 4 (4 cr.)
This series of courses reviews orthodontic diagnostic procedures including methods for obtaining and interpreting information from the clinical examination and other orthodontic records, with an emphasis on customizing diagnostic records for individual patients. From the diagnostic information, the seminars focus on developing problem lists, treatment goals, and evaluation of potentially appropriate treatment options. Seminar formats include lectures by faculty and case presentations by residents.

ORD 554-1 Orthodontic Case Analysis 1 (1 cr.)
This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 554-2 Orthodontic Case Analysis 2 (1 cr.)
This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 554-3 Orthodontic Case Analysis 3 (1 cr.)

This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 554-4 Orthodontic Case Analysis 4 (2 cr.)
This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 554-5 Orthodontic Case Analysis 5 (1 cr.)
This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 554-6 Orthodontic Case Analysis 6 (1 cr.)
This seminar series builds expertise on diagnosis and treatment planning through case presentations and discussions. For each patient pre-treatment records are presented along with diagnostic summary, problem list, treatment goals, treatment alternatives and a treatment plan. The presentation is used to evaluate knowledge of the resident making the case presentation as well as his/her peers through questions about the case raised by instructors. For particular topics, instructors review pertinent literature and supplement presentations with cases treated in their private practices.

ORD 555 Pre-Doctoral Lab Instruction (1 cr.)
This one term laboratory course utilizes the first year orthodontic post-doctoral students to teach the second year pre-doctoral students how to fabricate several common fixed and removable appliances. The residents help the course director in teaching the dental students the skills necessary to make band and loop space maintainers, lower lingual holding arches, fixed W-arches, removable anterior crossbite appliances, and Hawley retainers. This course helps build the orthodontic residents' laboratory skills and develop communication skills necessary for working with their dental colleagues.

ORD 559-1 Pre-doctoral Clinic Instruction 1 (1 cr.)
This course provides the post-doctoral students with additional exposure to limited orthodontic treatment and treatment of patients in the mixed dentition as they assist and instruct pre-doctoral students with their limited treatment orthodontic cases. The experience also broadens the post-doctoral students' teaching experience through instruction of pre-doctoral students. Through the review orthodontic consultation forms competed by pre-doctoral students, the post-doctoral students increase their experience in conducting the screening of new orthodontic patients.

ORD 559-2 Pre-doctoral Clinic Instruction 2 (1 cr.)
This course provides the post-doctoral students with additional exposure to limited orthodontic treatment and treatment of patients in the mixed dentition as they assist and instruct pre-doctoral students with their limited treatment orthodontic cases. The experience also broadens the post-doctoral students' teaching experience through instruction of pre-doctoral students. Through the review orthodontic consultation forms competed by pre-doctoral students, the post-doctoral students increase their experience in conducting the screening of new orthodontic patients.

ORD 559-3 Pre-doctoral Clinic Instruction 3 (1 cr.)
This course provides the post-doctoral students with additional exposure to limited orthodontic treatment and treatment of patients in the mixed dentition as they assist and instruct pre-doctoral students with their limited treatment orthodontic cases. The experience also broadens the post-doctoral students' teaching experience through instruction of pre-doctoral students. Through the review orthodontic consultation forms competed by pre-doctoral students, the post-doctoral students increase their experience in conducting the screening of new orthodontic patients.

ORD 559-4 Pre-doctoral Clinic Instruction 4 (1 cr.)
This course provides the post-doctoral students with additional exposure to limited orthodontic treatment and treatment of patients in the mixed dentition as they assist and instruct pre-doctoral students with their limited

treatment orthodontic cases. The experience also broadens the post-doctoral students' teaching experience through instruction of pre-doctoral students. Through the review orthodontic consultation forms competed by pre-doctoral students, the post-doctoral students increase their experience in conducting the screening of new orthodontic patients.

ORD 563-1 Practice Management 1 (1 cr.)
This series of seminars for second and third year residents is aimed at preparation for entering into a practice in orthodontics. Formats used include lectures by faculty and outside (invited) speakers, and digital media provided by the American Association of Orthodontists. Topics covered include types of practice opportunities, contracts, selection of a practice location, office design, staff management, communication with patients and professionals, building and maintaining a referral base, patient scheduling, financial management (personal and business-related), insurance coverage and risk management.

ORD 563-2 Practice Management 2 (1 cr.)
This series of seminars for second and third year residents is aimed at preparation for entering into a practice in orthodontics. Formats used include lectures by faculty and outside (invited) speakers, and digital media provided by the American Association of Orthodontists. Topics covered include types of practice opportunities, contracts, selection of a practice location, office design, staff management, communication with patients and professionals, building and maintaining a referral base, patient scheduling, financial management (personal and business-related), insurance coverage and risk management.

ORD 563-3 Practice Management 3 (1 cr.)
This series of seminars for second and third year residents is aimed at preparation for entering into a practice in orthodontics. Formats used include lectures by faculty and outside (invited) speakers, and digital media provided by the American Association of Orthodontists. Topics covered include types of practice opportunities, contracts, selection of a practice location, office design, staff management, communication with patients and professionals, building and maintaining a referral base, patient scheduling, financial management (personal and business-related), insurance coverage and risk management.

ORD 571-1 Craniofacial Disorders 1 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 571-2 Craniofacial Disorders 2 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

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ORD 571-4 Craniofacial Disorders 4 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 571-5 Craniofacial Disorders 5 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip

and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 571-6 Craniofacial Disorders 6 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 571-7 Craniofacial Disorders 7 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 571-8 Craniofacial Disorders 8 (1 cr.)
This course series is a rotation in which one first year and one second year orthodontic resident accompany the course director to the Craniofacial Disorder's Clinic at Doernbecher Children's Hospital. Patients in the clinic are primarily cleft lip and cleft palate patients with a mix of other craniofacial problems including various syndromes. The residents join the rest of the craniofacial team in providing intraoral examinations and occlusal assessments in order to make recommendations regarding orthodontic treatment for the craniofacial patients. The residents gain exposure to diagnostic methodology from medical as well as dental perspectives.

ORD 579-1 Orthognathic Surgery Case Conference 1 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 579-2 Orthognathic Surgery Case Conference 2 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 579-3 Orthognathic Surgery Case Conference 3 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 579-4 Orthognathic Surgery Case Conference 4 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 579-5 Orthognathic Surgery Case Conference 5 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require

orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

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This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 579-7 Orthognathic Surgery Case Conference 7 (1 cr.)
This is a combined conference of residents and faculty from graduate programs in orthodontics and oral and maxillofacial surgery. Presentations are made by individual residents of pretreatment orthodontic cases that may require orthognathic surgery, cases that have started orthodontic treatment and are being prepared for orthognathic surgery, and cases that have completed combined orthodontic/orthognathic surgical treatment. The case presentations are mixed with faculty, resident or guest lecturer presentations on subjects related to Orthognathic surgery.

ORD 580-1 Masters in Thesis Development 1 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-2 Masters in Thesis Development 2 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-3 Masters in Thesis Development 3 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-4 Masters in Thesis Development 4 (1-4 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-5 Masters in Thesis Development 5 (1-5 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-6 Masters in Thesis Development 6 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-7 Masters in Thesis Development 7 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-8 Masters in Thesis Development 8 (1-8 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-9 Masters in Thesis Development 9 (1-9 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 580-10 Masters in Thesis Development 10 (1 cr.)
To provide the resident pursuing the Master of Science in Orthodontics with an understanding of research methodology and apply that knowledge to the development his/her own research project.

ORD 590-1 Post-doctoral Orthodontic Clinic 1 (3 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the

resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-2 Post-doctoral Orthodontic Clinic 2 (3 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-3 Post-doctoral Orthodontic Clinic 3 (4 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-4 Post-doctoral Orthodontic Clinic 4 (4 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-5 Post-doctoral Orthodontic Clinic 5 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-6 Post-doctoral Orthodontic Clinic 6 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-7 Post-doctoral Orthodontic Clinic 7 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-8 Post-doctoral Orthodontic Clinic 8 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially

modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-9 Post-doctoral Orthodontic Clinic 9 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 590-10 Post-doctoral Orthodontic Clinic 10 (5 cr.)
This course series provides education of orthodontic residents on the full range of clinical experiences required for the practice of orthodontics. Treatment of all patients is planned and monitored with faculty input at each appointment, including clinical examinations, collection of initial records, diagnosis and treatment of individual patients, determining the need for outside consultations, fabrication and placement of orthodontic appliances, sequentially modifying the appliance to achieve planned treatment goals, removal of the appliances, designing and placement of retainers, and retention recall follow up. As part of this process, communication skills are developed between the resident and patients, staff, referring dentists, consulting dentists or physicians, and orthodontic colleagues.

ORD 722 Facial Growth (1 cr.)
This lecture course introduces basic concepts of human craniofacial growth from prenatal development through adulthood. Lectures emphasize the time-dependent changes that occur with growth and physical maturation. Special emphasis is given to basic knowledge and understanding of bone and tooth development, craniofacial growth, eruption of teeth, and how patterns of facial growth and tooth eruption relate to normal occlusion and malocclusions.

ORD 723 Orthodontics I (1 cr.)
This didactic course builds on the principles presented in Facial Growth. The course provides a foundation in space maintenance, tooth moving appliances and orthodontic diagnosis.

ORD 727 Orthodontic Techniques (1 cr.)
In this laboratory course the basic designs for common orthodontic limited treatment appliances are presented. The student will develop the technical skills necessary to fabricate fixed and removable appliances for movement of teeth and for space maintenance.

ORD 732 Orthodontics II (1 cr.)
In this course, students will learn how to assess facial patterns and describe how individual patterns for a given age relate to the structure and function of the underlying skeletal, dental, and soft tissues. An understanding of tooth eruption patterns and changes in the maxillary and mandibular dental arches, and occlusion of the two, over time will be presented. Combining information on facial patterns, tooth eruption patterns and dental arch development, it should then be possible to relate facial form to patterns of dental occlusion in order to help recognize normal versus abnormal growth patterns and treatment timing. The impact of disturbances in oral function and craniofacial development will highlight interactions between structure and function. An emphasis will be placed on applying an understanding of malocclusion to various treatment options available. An understanding of the limitations for tooth movement and an overview of the needs of the periodontal-orthodontic patient, the restorative-orthodontic patient, and the orthognathic surgery patient is also expected.

ORD 740 Orthodontic Clinic Elective (1 cr.)
This elective course is appropriate for the predoctoral students with an interest in orthodontics or who are considering applying to a graduate education program in orthodontics and dentofacial orthopedics. It provides the opportunity for predoctoral students to treat patients with orthodontics and to present their results in the spring term of DS4. Patients will be assigned to students from the department's patient pool, or if appropriate, students will be able to provide orthodontic treatment for patients assigned to them in the predoctoral clinic. The hands-on treatment experience will provide additional basic foundation knowledge in diagnosis and treatment planning. Providing treatment will involve the integration of information from the clinical exam, study models, photographs and radiographic images. Instructors will guide the students through decisions related to treatment options, selection of and detailing the treatment plan, and the design and use of orthodontic appliances. Typical treatment will involve limited tooth movement of one or several teeth in a single dental arch, or use of interceptive appliances to eliminate habits or improve dental arch relationships. Students will also become more familiar with the risks, complications and limitations of orthodontic treatment. This course will increase the exposure of students to different types of malocclusion in the mixed

and permanent dentition; guide the student through the review of pretreatment and post-treatment records for limited orthodontic treatment cases and the evaluation of whether the goals and objectives of the treatment were met. This process will be accomplished in a seminar or clinical conference format by student presentations and participation in discussions of their treated cases.

OS 700 Dental Management of the Medically Complex Patient I (1 cr.)
This course is designed to provide the student with the background and skill to assess and manage healthy patients and those who are medically compromised.

OS 701 Dental Management of the Medically Complex Patient II (1 cr.)
You will develop competency in the assessment, diagnosis, and management of dental patients who present with potentially life-threatening conditions. Through assigned reading, lecture, small group presentations, group simulations, small group discussion and hands-on emergency scenario drills, you will receive the basic tools to manage the most common medical emergencies. Given the sporadic and relatively uncommon nature of medical emergencies in the dental office, competency in the management of these situations depends on knowledge of medical conditions that may place a patient at higher risk of such an event. Preparing in advance for and preventing an emergency optimizes patient outcomes. You will learn to assess patient risk at consult, when to consult members of the care team, diagnose sudden onset of symptoms and manage a simulated medical emergency. You will learn to use emergency equipment and medications. When you fully participate in OS 700, you will be prepared to provide safe/emergency care at the SOD and in your future dental practice.

OS 722 Introduction to Oral Surgery (1 cr.)
The purpose of this course is to provide second year dental students with an understanding of the basic principles of the clinical practice of Oral & Maxillofacial Surgery. The course is presented from two major levels. The first is to provide a comprehensive description of the basic oral surgery procedures performed by most general practitioners. The second is to provide an overview of more advanced and complex surgical management.

OS 725 Anesthesia in Dentistry (2 cr.)
This course introduces the dental student to the techniques of providing anesthesia to the dental patient through the use of local anesthesia and nitrous oxide anxiolysis. It also introduces the student to the concepts of oral and IV sedation. Content in anatomy, physiology, pharmacology, patient behavior, risk assessment, and technique prepares the student to provide safe and effective dental anesthesia and sedation for a dental patient.

OS 731 Oral Surgery II (1 cr.)
OS 731 is the second of three, contiguous courses that introduces the student to the specialty of oral and maxillofacial surgery in a progressive fashion, commencing with basic concepts of surgery and proceeding to the surgical management of a more complex patient. The course is presented as a weekly, one-hour session in a lecture format. The student is evaluated by two written examinations. However, the concepts learned in this course will translate into clinical applications in the OMS pre-doctoral clinic and subsequently be evaluated via Clinical Skills Assessment.

OS 733 Advanced Oral Surgery (1 cr.)
The purpose of this course is: 1) To build on oral and maxillofacial surgery topics introduced during years 1 through 3 of dental school, 2) To provide a review for the Integrated National Dental Board Exams (INDBE) and, 3) help guide future clinical practice. The course will provide information to aid the future dentist in treatment planning, providing surgical care for their patients, and providing a timely and appropriate referral when necessary.

PEDS 725 Theory & Practice of Pediatric Dentistry (1 cr.)
This course is the pre-clinical application of principles and techniques related to the clinical care of children and adolescents, in addition to a brief overall introduction to pediatric dentistry. In this course students will also learn the fundamentals related to restorative and preventive techniques unique to children along with the prevention of trauma utilizing mouthguards, child abuse, and common oral pathologic lesions.

PEDS 730 Comprehensive Pediatric Dentistry (2 cr.)
This course includes didactic and preclinical laboratory sessions which will provide students with the opportunity to apply previously acquired knowledge via a cased-based curriculum. The course will act as a pre-requisite for assigned pediatric care in the third year. Through small-group discussions, case presentations, and case-based laboratory projects, students will display competency in the following areas:

- Communication and documentation
- Patient assessment, diagnosis, comprehensive treatment planning, prognosis, and informed consent based on the patient's risk assessment
- Disease prevention, caries management, restoration, and extractions
- Pulp therapy for primary and young permanent dentition
- Management of developing occlusion
- Dental emergencies

• Pain and anxiety control
• Medically complex and special health care needs patients
• Behavior management
• Identify when a referral is indicated

PER 501 Research I (1 cr.)
The goal of this course is to introduce residents to this aspect of the practice of periodontics. The resident will be expected to select and begin to formulate a research protocol to complete and present to a professional audience prior to completion of the residency. The level of knowledge expected to result from this course is understanding.

PER 502 Research II (2 cr.)
The goal of this course is to have the second-year resident actively engaged in the execution of the research protocol at the competency level.

PER 503 Research III (2 cr.)
The resident is expected to have completed the execution of the research protocol and now is gathering the data, analyzing the results and formulating the documented aspects of the research completed.

PER 505-1 Current Literature I (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the first-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. Familiarity with scientific writing and analysis, as well as nurturing the significance of evidence-based literature will be emphasized at the first-year resident level. The goal of this course is also to enable the periodontal resident to become well versed in the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 505-2 Current Literature II (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the first-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. Familiarity with scientific writing and analysis, as well as nurturing the significance of evidence-based literature will be emphasized at the first-year resident level. The goal of this course is also to enable the periodontal resident to become well versed in the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 505-3 Current Literature III (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the first-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. Familiarity with scientific writing and analysis, as well as nurturing the significance of evidence-based literature will be emphasized at the first-year resident level. The goal of this course is also to enable the periodontal resident to become well versed in the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 505-4 Current Literature IV (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the first-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. Familiarity with scientific writing and analysis, as well as nurturing the significance of evidence-based literature will be emphasized at the first-year resident level. The goal of this course is also to enable the periodontal resident to become well versed in the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 506-1 Current Literature V (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The second-year resident will be expected to demonstrate an understanding level progressing to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 506-2 Current Literature VI (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The second-year resident will be expected to demonstrate an understanding level progressing to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature

to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 506-3 Current Literature VII (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The second-year resident will be expected to demonstrate an understanding level progressing to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 506-4 Current Literature VIII (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The second-year resident will be expected to demonstrate an understanding level progressing to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 507-1 Current Literature IX (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The third-year resident is expected to demonstrate an understanding to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The third-year resident is expected to facilitate the group dynamics of the seminar review amongst all residents of the current literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 507-2 Current Literature X (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The third-year resident is expected to demonstrate an understanding to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The third-year resident is expected to facilitate the group dynamics of the seminar review amongst all residents of the current literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 507-3 Current Literature XI (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The third-year resident is expected to demonstrate an understanding to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The third-year resident is expected to facilitate the group dynamics of the seminar review amongst all residents of the current literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 507-4 Current Literature XII (1 cr.)
Review of selected periodic current publications from a variety of professional peer reviewed journals will be conducted to enable the second-year periodontal resident to integrate the most current knowledge of the Specialty of Periodontics into his/her daily clinical practice. The third-year resident is expected to demonstrate an understanding to an in-depth level of knowledge of scientific writing and analysis, as well as nurturing the significance of evidence-based literature. The third-year resident is expected to facilitate the group dynamics of the seminar review amongst all residents of the current literature. The goal of this course is also to enable the periodontal resident to demonstrate in-depth knowledge of the current literature to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 515A Advanced Pain Control/IV Sedation (5 cr.)
The goal of this course is to prepare the periodontal resident to meet the ADA Commission on Dental Accreditation, Accreditation Standards for Advanced Specialty Education Programs in Periodontics academic requirements for methods of conscious sedation. Nitrous oxide/oxygen inhalation sedation, oral sedation, and intravenous sedation

methods are trained to an in-depth level of knowledge. A diverse number of faculty with expertise in fields other than periodontics are the teaching faculty.

PER 515B ACLS (1 cr.)
Advanced Cardiovascular Life Support

PER 517 Interdisciplinary Specialties I (1 cr.)
The goal of this course is to provide students enrolled in Advanced Education Programs in Periodontics and Orthodontics with an interdisciplinary approach to the management of patients. Emphasis is primarily placed on collaboration between the specialties of Periodontics and Orthodontics. There are two components to the course. The first component involves a review of current literature with a focus on an interdisciplinary approach involving the periodontist and orthodontist for the successful management of patients' needs. Literature reviews will be conducted by each resident. The outcomes of the reviews will presented in PowerPoint format, which will be followed by a seminar question and answer period. The second component of this course involves collaborative interdisciplinary case-based presentations by a Periodontics resident and an Orthodontics resident. Presentations will be in PowerPoint format. Presentations will focus on treatment plans, or patient cases, which are being treated or have been treated by both specialties. Concerning presentations of cases and topics, each case presentation should be 20 minutes in length, with 5 minutes follow-up for further questions. Topic presentations should be 15 minutes in length, with 5 minutes for follow-up questions. In total, each resident will be responsible for 1 topic presentation and 2 case presentations.

PER 518 Interdisciplinary Specialties II (1 cr.)
The goal of this course is to provide the second-year resident with an interdisciplinary approach to the management of periodontal patients. Emphasis is placed on the specialties of Periodontics, Orthodontics, and Prosthodontics. Literature review, seminar discussion, and presentation of interdisciplinary cases for treatment planning will all be completed during this course.

PER 519 Advanced Interdisciplinary Specialties (1 cr.)
The goal of this course is to provide the third-year resident with an interdisciplinary approach to the management of periodontal patients. Emphasis is placed on the specialties of Periodontics, Orthodontics, and Prosthodontics. Literature review, seminar discussion, and presentation of interdisciplinary cases which have had ongoing therapy for approximately one year.

PER 530-1 Classic Literature I (3 cr.)
The goal of this course is to provide the first-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 530-2 Classic Literature II (3 cr.)
The goal of this course is to provide the first-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 530-3 Classic Literature III (3 cr.)
The goal of this course is to provide the first-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 530-4 Classic Literature IV (3 cr.)
The goal of this course is to provide the first-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure

a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 540-1 Classic Literature V (3 cr.)
The goal of this course is to provide the second-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The second-year resident is expected to facilitate achieving the goal of this course through enhancing the group dynamics of all nine residents. The second-year residents function as Seminar Leaders. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 540-2 Classic Literature VI (3 cr.)
The goal of this course is to provide the second-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The second-year resident is expected to facilitate achieving the goal of this course through enhancing the group dynamics of all nine residents. The second-year residents function as Seminar Leaders. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 540-3 Classic Literature VII (3 cr.)
The goal of this course is to provide the second-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The second-year resident is expected to facilitate achieving the goal of this course through enhancing the group dynamics of all nine residents. The second-year residents function as Seminar Leaders. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 540-4 Classic Literature VIII (3 cr.)
The goal of this course is to provide the second-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The second-year resident is expected to facilitate achieving the goal of this course through enhancing the group dynamics of all nine residents. The second-year residents function as Seminar Leaders. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 548 Advanced Principles in Surgical Periodontics (1 cr.)
This is a selective course for selected senior year dental students with an interest in gaining advanced knowledge and skills in periodontics. Students will gain hands-on experience in basic periodontal non-surgical and surgical procedures. Students are required to review the assigned reading on the topic before class and participate in discussion. Besides the didactic and hands on portion of the course, students will also be offered opportunities to attend the graduate periodontics clinical seminar series, perform at least one mentored periodontal surgery and visit a private periodontal practice.

PER 550-1 Classic Literature IX (3 cr.)
The goal of this course is to provide the third-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The third-year resident is expected to perform in a leadership role for seminar topics of interest enhancing the group dynamics of all residents. The third-year resident will be expected to utilize the in-depth knowledge of the literature reviewed during the first two residency years to establish a basis for defending American Board of Periodontology (ABP) format residency case presentations, as well as defending ABP cases submitted for actual ABP examinations. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success

rate of residents becoming Diplomates of the American Board of Periodontology.

PER 550-2 Classic Literature X (3 cr.)
The goal of this course is to provide the third-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The third-year resident is expected to perform in a leadership role for seminar topics of interest enhancing the group dynamics of all nine residents. The third-year resident will be expected to utilize the in-depth knowledge of the literature reviewed during the first two residency years to establish a basis for defending American Board of Periodontology (ABP) format residency case presentations, as well as defending ABP cases submitted for actual ABP examinations. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 550-3 Classic Literature XI (3 cr.)
The goal of this course is to provide the third-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The third-year resident is expected to perform in a leadership role for seminar topics of interest enhancing the group dynamics of all nine residents. The third-year resident will be expected to utilize the in-depth knowledge of the literature reviewed during the first two residency years to establish a basis for defending American Board of Periodontology (ABP) format residency case presentations, as well as defending ABP cases submitted for actual ABP examinations. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology

PER 550-4 Classic Literature XII (3 cr.)
The goal of this course is to provide the third-year resident with an in-depth review of the literature necessary to engage in clinical practice as a periodontist. The course is conducted in a seminar format reviewing assigned articles in abstract form followed by a discussion of questions related to the articles abstracted. Additionally, critical analysis of the research involved in the articles will be conducted. The third-year resident is expected to perform in a leadership role for seminar topics of interest enhancing the group dynamics of all nine residents. The third-year resident will be expected to utilize the in-depth knowledge of the literature reviewed during the first two residency years to establish a basis for defending American Board of Periodontology (ABP) format residency case presentations, as well as defending ABP cases submitted for actual ABP examinations. This course provides the background knowledge required to successfully complete the residency and apply the in-depth knowledge gained to practice clinical periodontics at a proficient level. This knowledge additionally serves to ensure a greater success rate of residents becoming Diplomates of the American Board of Periodontology.

PER 551-1 Advanced Periodontology Clinic I (4 cr.)
The goal of this course is to introduce residents to the clinical practice of periodontics. Emphasis is placed on patient management, examination, diagnosis, treatment planning, non-surgical and surgical therapy, and accurate and thorough documentation of therapy completed. including clinical photographic documentation. The results are expected to assure patients of receiving quality periodontal therapy. The skill level expected at the completion of this course is competent.

PER 551-2 Advanced Periodontology Clinic II (9 cr.)
The goal of this course is to build upon the previous clinic course and in addition increase the variety of procedures and the number of patients being treated by the first-year resident. The skill level expected at the completion of this course is competent.

PER 551-3 Advanced Periodontology Clinic III (9 cr.)
The goal of this course is to build upon previous clinic courses and, in addition, increase the variety and difficulty of procedures, and the number of patients being treated by the first-year resident.

PER 551-4 Advanced Periodontology Clinic IV (9 cr.)
The goal of this course is to build upon previous clinic courses. The resident is now expected to be able to provide a diverse variety of clinical periodontal therapeutic procedures at a competent level.

PER 552-1 Periodontics Treatment Plan/Therapy Seminar 1 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature.

Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 552-2 Periodontics Treatment Plan/Therapy Seminar 2 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 552-3 Periodontics Treatment Plan/Therapy Seminar 3 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 553-1 Fundamentals of Periodontics & Implants I (3 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The first-year resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology.

PER 553-2 Fundamentals of Periodontics & Implants II (1 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology.

PER 553-3 Fundamentals of Periodontics & Implants III (1 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology.

PER 553-4 Fundamentals of Periodontics & Implants IV (1 cr.)
The goal of this course is to provide the resident with an overview of periodontal anatomy, diagnosis and classification, rationale and basic techniques for periodontal therapy. Special emphasis is given to the correlation between histologic and clinical characteristics. The first year resident is expected to read, abstract, and assimilate assigned articles

germane to the theory and practice of periodontics. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology.

PER 554 Anesthesiology Hospital Rotation (1 cr.)
An anesthesiology hospital rotation to provide students enrolled in the Advanced Education Program in Periodontics with increased experiential training in anesthesia and sedation. Special emphasis is given to pre- and post-operative assessment, venipuncture, airway management, and prevention and management of anesthetic emergencies. Activities performed by the residents at this site include: 1. preoperative evaluation; 2. assessment of the effects of behavioral and pharmacologic anesthetic techniques; 3. venipuncture technique; 4. patient monitoring in the perioperative period; 5. airway management; 6. understand administration of sedative and analgesic agents; 7. prevention and treatment of anesthetic emergencies; 8. assessment of patient recovery from anesthesia.

PER 561-1 Advanced Periodontology Clinic V (10 cr.)
The goal of this course is to have the second-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will be at a competency level building towards a level of proficiency at the completion of this course.

PER 561-2 Advanced Periodontology Clinic VI (9 cr.)
The goal of this course is to have the second-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will be at a competency level building towards a level of proficiency. During the time frame of this course, the resident will also complete a five-week rotation in the Department of Anesthesiology at OHSU Hospitals and Clinics. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy.

PER 561-3 Advanced Periodontology Clinic VII (10 cr.)
The goal of this course is to have the second-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will be at a competency level building towards a level of proficiency. During the time frame of this course, the resident will also complete a five-week rotation in the Department of Anesthesiology at OHSU Hospitals and Clinics. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy.

PER 561-4 Advanced Periodontology Clinic VIII (10 cr.)
The goal of this course is to have the second-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will now be approaching a proficiency level. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy. Additionally, this term initiates the clinical experience of the periodontal resident as a practicing "periodontist" at Russell Street Clinic. The resident will engage the clinical practice dynamics of working with general dentists, other specialists, dental hygienists, and office staff personnel. The ADA accreditation goal of exodontia at the proficiency level for periodontal residents will also be emphasized. Service to patient populations of the community metropolitan area who otherwise may not receive clinical services of a periodontist will also be achieved.

PER 562-1 Periodontics Treatment Plan/Therapy Seminar 4 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 562-2 Periodontics Treatment Plan/Therapy Seminar 5 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient

diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 562-3 Periodontics Treatment Plan/Therapy Seminar 6 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 563-1 Advanced Concepts in Periodontics & Implants I (1 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The second-year resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology. Additionally, the second and third year periodontal residents will be assigned to provide implant placement surgery with a pre doctoral student. Cases will be presented and discussed by the pre doctoral student and periodontal resident

PER 563-2 Advanced Concepts in Periodontics & Implants II (1 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The second-year resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology. Additionally, the second and third year periodontal residents will be assigned to provide implant placement surgery with a pre doctoral student. Cases will be presented and discussed by the pre doctoral student and periodontal resident

PER 563-3 Advanced Concepts in Periodontics & Implants III (1 cr.)
The goal of this course is to provide the resident with an in-depth review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. It is anticipated that the resident will thus be provided a thorough working knowledge necessary to provide clinical care utilizing these procedures. The second year resident is expected to read, abstract, and assimilate assigned articles germane to the theory and practice of dental implants. This course provides the background knowledge required to successfully complete the residency and successfully achieve Diplomate status from the American Board of Periodontology. Additionally, the second and third year periodontal residents will be assigned to provide implant placement surgery with a pre doctoral student. Cases will be presented and discussed by the pre doctoral student and periodontal resident.

PER 564 Case Analysis Endodontics/Periodontics I (1 cr.)
The goal of this course is to provide a forum, in seminar form, in which first year residents are introduced to the exercise of presenting clinical cases, fielding questions from faculty regarding the cases and observing how residents defend the therapy they have completed. Residents are also evaluated on their ability to deliver a presentation to a professional audience. The knowledge level expected at the completion of this course is understanding.

PER 565 Case Analysis Endodontics/Periodontics II (1 cr.)
The second-year resident will be expected to present cases within a joint forum with the Department of Endodontics on selective cases of interest. These are surgical cases, examples of which are root amputations, root fractures, etc. Photographic documentation, cases selected, discussion involving the case and defense of the case will all be expected to be completed at a proficient level.

PER 566 Case Analysis Endodontics/Periodontics III (1 cr.)
The resident will be expected to present cases within a joint forum with the Department of Endodontics on selective cases of interest. These are surgical cases examples of which are root amputations, root fractures, etc. Photographic documentation, cases selected, discussion involving the case and defense of the case will all be expected to be completed at a proficiency level.

PER 571-1 Advanced Periodontology Clinic IX (10 cr.)
The goal of this course is to have the third-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will now be at a proficient level. The third year resident is also expected to provide implant, sinus lift and ridge augmentation procedures at a competent level. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy. The clinical experience of the periodontal resident as a practicing 'periodontist' at Russell Street Clinic continues during this course. The resident will engage the clinical practice dynamics of working with general dentists, other specialists, dental hygienists, and office staff personnel. The ADA accreditation goal of exodontia at the proficiency level for periodontal residents will also be emphasized. Service to patient populations of the community metropolitan area who otherwise may not receive clinical services of a periodontist will also be achieved.

PER 571-2 Advanced Periodontology Clinic X (10 cr.)
The goal of this course is to have the third-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will now be at a proficient level. The third-year resident is also expected to provide implant, sinus lift, ridge augmentation, other advanced reconstructive surgical procedures at a competent level. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy. The clinical experience of the periodontal resident as a practicing 'periodontist' at Russell Street Clinic continues during this course. The resident will engage the clinical practice dynamics of working with general dentists, other specialists, dental hygienists, and office staff personnel. The ADA accreditation goal of exodontia at the proficiency level for periodontal residents will also be emphasized. Service to patient populations of the community metropolitan area who otherwise may not receive clinical services of a periodontist will also be achieved.

PER 571-3 Advanced Periodontology Clinic XI (10 cr.)
The goal of this course is to have the third year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will now be at a proficient level. The third year resident is also expected to provide implant, sinus lift, ridge augmentation, other advanced reconstructive surgical procedures at a competent level. Additionally, hospital cases involving pediatric periodontal patients of record at Doernbecher Children's Hospital, as well as selected adult patients needing hospital based periodontal therapy completed at OHSU hospitals and clinics, will also be assigned to periodontal residents for management and therapy. The clinical experience of the periodontal resident as a practicing "periodontist" at Russell Street Clinic is completed during this course. The resident will engage the clinical practice dynamics of working with general dentists, other specialists, dental hygienists, and office staff personnel. The ADA accreditation goal of exodontia at the proficiency level for periodontal residents will also be emphasized. Service to patient populations of the community metropolitan area who otherwise may not receive clinical services of a periodontist will also be achieved.

PER 571-4 Advanced Periodontology Clinic XII (10 cr.)
The goal of this course is to have the third-year resident actively engaged in the clinical practice of periodontics. The clinical practice of periodontics expected will now be at a proficient level. The third-year resident is also expected to provide implant, sinus lift, ridge augmentation, other advanced reconstructive surgical procedures at a competent level.

PER 572-1 Periodontics Treatment Plan/Therapy Seminar 7 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 572-2 Periodontics Treatment Plan/Therapy Seminar 8 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 572-3 Periodontics Treatment Plan/Therapy Seminar 9 (1 cr.)
Students should demonstrate the ability to confidently present cases that have been treatment planned or treated and justify the rationale for such treatment with appropriate citations from the classic and current periodontal literature. Students should be prepared to take and pass the oral examination given by the American Board of Periodontology. Each resident will present a fully documented case (see instructions below for full case documentation) at least once each of the Fall, Winter, and Spring Terms for a patient diagnosed with Generalized Moderate - Severe Chronic or Aggressive Periodontitis they have either treatment planned or treated. Residents will answer questions based on their presentation from both faculty and residents. The focus of these sessions will be for the resident to discuss the rationale for treatment either planned or provided with an emphasis on literature support for the clinical approaches selected.

PER 573-1 Advanced Concepts in Periodontics & Implants IV (1 cr.)
The goal of this course is to provide the resident with a thorough review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. The third-year resident is now expected to complete clinical procedures based on the in-depth knowledge gained from this course to a competent level. Third-year residents are expected to prepare for and conduct an implant surgical case presentation. Documentation of the case is expected to be thorough, including the treatment plan, surgical site preparation, Stage I and Stage II surgery, postoperative treatment, and if possible, prosthetics treatment.

PER 573-2 Advanced Concepts in Periodontics & Implants V (1 cr.)
The goal of this course is to provide the resident with a thorough review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. The third-year resident is now expected to complete clinical procedures based on the in-depth knowledge gained from this course to a competent level. Third-year residents are expected to prepare for and conduct an implant surgical case presentation. Documentation of the case is expected to be thorough, including the treatment plan, surgical site preparation, Stage I and Stage II surgery, postoperative treatment, and if possible, prosthetics treatment.

PER 573-3 Advanced Concepts in Periodontics & Implants VI (1 cr.)
The goal of this course is to provide the resident with a thorough review of literature related to implant therapy, reconstructive surgical techniques including sinus lift, ridge augmentation, and distraction osteogenesis procedures, as well as other advanced procedures beyond those normally associated with conventional periodontal therapy. The third-year resident is now expected to complete clinical procedures based on the in-depth knowledge gained from this course to a competent level. Third-year residents are expected to prepare for and conduct an implant surgical case presentation. Documentation of the case is expected to be thorough, including the treatment plan, surgical site preparation, Stage I and Stage II surgery, postoperative treatment, and if possible, prosthetics treatment.

PER 580-1 Masters in Thesis Development I (1 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master’s degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters’ candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-2 Masters in Thesis Development II (1-2 cr.)

This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-3 Masters in Thesis Development III (1-3 cr.)
This course designates a periodontal resident who is actively pursuing a masters degree track, and who has declared themself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares themself a master's candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-4 Masters in Thesis Development IV (1-4 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared themself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares themself a master's candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-5 Masters in Thesis Development V (1-5 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-6 Masters in Thesis Development VI (1-6 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-7 Masters in Thesis Development VII (1-7 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-8 Masters in Thesis Development VIII (1-8 cr.)

This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared themself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares themself a master's candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-9 Masters in Thesis Development IX (1-9 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-10 Masters in Thesis Development X (1-10 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared himself/herself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare himself/herself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares himself/herself a masters' candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-11 Masters in Thesis Development XI (1-11 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared themself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares themself a master's candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 580-12 Masters in Thesis Development XII (1-12 cr.)
This course designates a periodontal resident who is actively pursuing a master's degree track, and who has declared themself as a candidate for the degree of Master of Science in Periodontology. The periodontal resident is required to declare themself a master's degree candidate no later than the Spring Term of the first year of the Advanced Specialty Education Program in Periodontics to enroll no later than the Summer Term of the second year of the Advanced Specialty Education Program in Periodontics. The degree of Master of Science in Periodontology is optional for periodontal residents who have matriculated into, and are enrolled in, the Advanced Education Program in Periodontics. The periodontal resident who declares themself a master's candidate is required to have become enrolled into this track no later than the Summer Term of the second year of the Advanced Specialty Education Program.

PER 710 Intro to Principles of Periodontology (1 cr.)
Introduction to Principles of Periodontology is the first course in the theory and application of periodontology and is designed for the first-year dental student. Students are presented with an introduction to the anatomy and histology of the healthy periodontium as well as an overview of the clinical discipline of periodontics and its impact on oral health. The focus of laboratory simulation and clinical exercises is the development of basic skills in patient observation, data collection, instrument design and utilization. The didactic, clinical and simulation exercises form a critical foundation for future courses in Periodontology. During this course, with supervision, students will perform periodontal data collection through performing a head and neck examination and a comprehensive periodontal examination. Upon completion of the course, students will have attained the knowledge and skills necessary to progress to the treatment of periodontal diseases.

PER 711 Principles of Periodontology I (1 cr.)
Principles of Periodontology I is the second course in the theory and application of periodontology to patient care and is designed for the first-year dental student. It begins with laboratory simulation in the design and use of periodontal instruments. This is followed by clinical exercises is the development of basic skills in non-surgical periodontal instrumentation, oral hygiene instruction (OHI), and coronal polishing. The didactic, clinical and simulation exercises form a critical foundation for future courses in Periodontology. Upon completion of the course, students will have attained the knowledge and skills necessary to progress to the treatment of more severe periodontal diseases. Also, within this course, students will develop CaseCATs in small groups that will aid in their understanding of the scientific basis for periodontal patient care and evidence-based dentistry in general.

PER 712 Principles of Periodontology II (1-2 cr.)
Principles of Periodontology II is the third of three courses designed for the first-year dental student. This course will expand the student's understanding of periodontal diseases with a focus on periodontitis and its treatment. It covers risk factors for periodontitis (smoking, diabetes, genetics, occlusion), prognosis, adjunctive initial periodontal therapy treatment options (occlusal therapy, chemotherapeutics, minor tooth movement), evaluation of initial therapy, periodontal maintenance, endodontic-periodontic relationships, orthodontic-periodontic relationships, treatment of acute periodontal conditions, patient motivation and compliance, multidisciplinary treatment planning. This prepares the student to develop a comprehensive treatment plan for the initial therapy of both gingivitis and periodontitis patients.

PER 720 Principles of Periodontology III (1 cr.)
Principles of Periodontology is the fourth of the six periodontal courses designed in the dental curriculum. In the previous courses, students have learned about healthy periodontium, periodontal diseases including their classification, etiology/pathogenesis and risk factors, comprehensive periodontal examination, and non-surgical periodontal therapy (scaling and root planing). In this course, the student will learn about the evaluation and management of a patient with periodontitis including non-surgical and surgical therapies, adjunctive antimicrobials, periodontal maintenance, treatment of atypical forms of periodontitis, patient motivation and compliance, and collaborative care management.

PER 723 Principles of Periodontology IV (1 cr.)
In this course, students will build on their foundational knowledge in diagnosis and treatment of periodontal diseases and apply this to patient care. An appreciation of advanced periodontal/peri-implant topics (e.g. laser therapy, guided bone regeneration, implant surgery) will prepare students to develop a more comprehensive oral examination for diagnosis, prognosis, and treatment plan for their patients. In addition, students will gain an understanding of inter-disciplinary care (e.g. Orthodontics, Endodontics, Restorative Dentistry) and periodontal medicine (e.g. cardiovascular disease, diabetes mellitus, respiratory diseases) that will better prepare them for inter-professional patient care. Clinical applications will be emphasized throughout the course, utilizing case presentations/participation, problem-based learning, and lectures.

PER 730 Applied Periodontology (1 cr.)
This course is designed to assist the student in translating previous didactic information into actual practice in the student clinic and in the professional practice of General Dentistry after graduation. The translation of periodontal knowledge is highly dependent upon good dentist-patient communications and interactions. Because periodontal health cannot be improved without changes in patient health behaviors, this course also assists the student in acquiring evidence-based micro-skills for clinical health promotion. This course presents contemporary topics and/or controversies in Periodontics from case and evidence-based perspectives. Topics include advanced diagnosis, periodontal medicine, local antimicrobial therapy, treatment plan presentation strategies. Course participants will learn how to acquire evidence for supporting clinical decisions related to periodontal interventions and apply to clinical periodontally diseased cases. Such techniques may be extended to other clinical situations faced in dental practice. The course structure includes lecture, discussion, case-based formats, and homework assignments. Written homework assignments will be directly related to the junior student's interactions, communications with and clinical decisions related to their assigned patient in the student clinic.

PER 748 Advanced Principles in Surgical Periodontics (1 cr.)
This is a selective course for selected third-year dental students with an interest in gaining advanced knowledge and skills in periodontics. Students will gain hands-on experience in basic periodontal non-surgical and surgical procedures. Students are required to review the assigned reading on the topic before class and participate in discussion. Besides the didactic and hands-on portion of the course, students will also be offered opportunities to attend the graduate periodontics clinical seminar series, perform at least one mentored periodontal surgery and visit a private periodontal practice.

PHC 721 General Pharmacology (4 cr.)

This course covers the fundamentals of pharmacology and general principles that guide the use of pharmaceutical agents. It focuses on how drugs affect, and are affected by, the human body. The general principles are applied to three areas of pharmacology that are highly relevant to dental patients or the dental practice itself: 1) cardiovascular drugs, 2) agents that affect hemostasis, and 3) control of pain. The course structure offers small group discussions of clinical case-based problems that integrate knowledge of pharmacology with other biomedical and clinical sciences. The goal is to help develop the skills needed to gather and critically evaluate evidence when planning treatment of dental patients.

PHC 722 Clinical Pharmacology (4 cr.)
This course focuses on two categories of drugs: 1) directly associated with the dental practice, including analgesics, anxiolytics, and antibiotics, and 2) frequently taken by dental patients to treat systemic conditions, such as depression, Parkinson's disease, and diabetes. The course structure offers small group discussions of clinical case scenarios and associated problems that integrate knowledge of various drug groups with general pharmacology concepts (presented in PHC721) and other disciplines. The primary goal is to help develop the skills needed to critically evaluate scientific and clinical evidence when planning treatment of oral health conditions in medically complex patients.

PROS 731 Advanced Topics in Prosthodontics I (1 cr.)
This course supports the transition and development from pre-clinical skills and knowledge into the clinical care and treatment of patients. An overview of the major restorative procedures that will be encountered in the clinic will be provided. Techniques and skills will also be reviewed.

PROS 732 Advanced Topics in Prosthodontics II (1 cr.)
PROS 732 is a continuation of PROS 731 for the third-year dental students. Common concepts in prosthodontics are reinforced and expanded upon as they relate to restoring the edentulous, partially edentulous, and fully dentate patients. In-depth instructions are given for the procedures for fixed, removable and implant prosthodontics emphasizing chair-side procedures, laboratory procedures, and maintenance of prosthesis, intertwined with the awareness of patient management and various approaches to behavioral modification.

PROS 733 Advanced Topics in Prosthodontics III (1 cr.)
PROS 733 is the final course in the PROS series for the third-year dental students. Common concepts are reinforced and expanded upon as they relate to restoring the edentulous, partially edentulous, and dentate patients to biological and psychological function and esthetics. In-depth instruction is given regarding procedures for fixed, removable and implant prosthodontics emphasizing on clinical decision-making, chairside procedures and laboratory processes. Intertwined with this is the awareness of patient management and various approaches to behavioral modification. Diagnosis and Treatment planning are emphasized and advanced concepts in restorative treatment are discussed. The following topics are covered in each of the major restorative areas:

1. Fixed Prosthodontics: Advanced concepts for tooth preparation design, material selection for fixed restorations, treatment planning for complex cases including full mouth rehabilitations
2. Removable Prosthodontics: Combination of fixed/removable cases (treatment sequencing when survey crowns are needed), clinical remounts
3. Implant Prosthodontics: Implant restorations in the esthetic zone, implant treatment for the edentulous arch

REST 701 Dental Anatomy (1-5 cr.)
The study of dental anatomy provides the student knowledge in the anatomical and morphological characteristics of the teeth, the basic terminology necessary to discuss intra-oral features, and the nomenclature used to describe teeth. The knowledge of dental anatomy is fundamental to the study of dentistry. This knowledge is integrated in the dental procedures that restore the teeth to proper form and function, and is also related to those disciplines in which the existing form and contour of teeth is an important element in diagnosis and treatment; examples including the disciplines of endodontics, orthodontics, periodontics, radiology, removable prosthodontics and restorative dentistry. The student will be able to demonstrate knowledge in the morphological characteristics of primary and permanent teeth, how they fit with other teeth in the oral cavity and when they erupt and exfoliate. This knowledge will be used in several areas, including the identification of teeth, construction of teeth, restoration of teeth, and diagnosis of tooth anomalies.

REST 702 Introduction to Occlusion (2 cr.)
In this introductory occlusion course, students will study the anatomy and function of the gnathostomatic system and the relevance of occlusion in all phases of general dentistry. Students will be trained to use a dental articulator, learn how to mount diagnostic casts, and perform occlusal analysis. Students will continue to develop their waxing skills, learn to wax teeth into occlusion with emphasis on a cusp-marginal ridge occlusal waxing scheme.

REST 703 Minimally Invasive Dentistry I, Direct Restorations SS (2 cr.)
REST 703 is the first in a series of Restorative courses which focus on the fundamentals of Minimally Invasive Dentistry. REST 703 provides the foundation for the Restorative courses

that follow. This course introduces students to cariology, covers caries classification and diagnosis, CAMBRA, patient centered caries management, prevention, non-invasive caries treatment, and minimally invasive treatment strategies. Students are taught cavity nomenclature and the principles of cavity preparations. We introduce the importance of ergonomics and enforce these topics during simulated clinic procedures. Students learn principles of tooth whitening, sealants, selective caries removal and pulp capping. The course introduces students to dental materials including composites, sealants, adhesives, cavity liners and bases, amalgam, resin modified glass ionomer and IRM. Cavity preparation and restoration technique is taught didactically and in simulated patient care for class I amalgam and composite and class V composites.

REST 705 Occlusion (2 cr.)
REST 705 is the second of two courses primarily focused on occlusion. This course is a combination of didactic, simulation clinic, and clinic sessions. Topics include diagnostic mounting and articulation usage, initial occlusal evaluation and techniques for fabrication of occlusal splints. The course is completed by the delivery and adjustment of an occlusal splint for a patient.

REST 706 Direct Restorations I (2 cr.)
REST 706 is a combined didactic and simulation clinic restorative technique course. Direct multiple surfaces (two and three surfaces) anterior/posterior composites and amalgam will be taught. As the students learn about these different dental materials and procedures, they will have the immediate opportunity to apply the knowledge in the simulation clinic by preparing and restoring typodont teeth with the appropriate material.

REST 708 Direct Restorations II (2 cr.)
REST 708 is a combined didactic and simulation clinic restorative technique course. Large anterior and posterior composites, amalgams, and inlay/onlay gold casting preparations and restorations will be taught. As the students learn about these different dental materials and procedures, they will have the immediate opportunity to apply that knowledge in the simulation clinic by preparing and restoring typodont teeth with the appropriate material.

REST 709 Indirect Restorations II: Part & Full Coverage (2 cr.)
This course is an introduction to full-coverage indirect restorations with a focus on full gold crowns (FGC). The didactic portion will cover basic principles of crown preparation, provisionalization, impression making, full gold crown fabrication (investing and casting), cementation, and materials used in fixed prosthodontics. The theoretical foundation is complemented by hands-on exercises specific to full gold crown preparation, making provisional restorations with different materials, fabrication of custom tray and making a final impression, fabrication of master cast, sectioning of the cast, and die trimming.

REST 710 Indirect Restorations: Esthetic (2 cr.)
REST 710 builds on the basic principles of fixed prosthodontics introduced in REST 709. The course provides comprehensive didactic and hands-on instructions for diagnosis, treatment planning and execution of restorative and fixed prosthodontic treatments. While the course covers a broad range of topics including basic principles of fixed prosthodontics, dental materials, composite and ceramic veneers, all ceramic restorations and CAD/CAM-generated ceramic restorations, a special focus will be placed on esthetic considerations. Upon the completion of this course, the students will be capable of diagnosing, treatment planning and performing restorative procedures in the esthetic zone.

REST 711 Indirect Restorations IV: Single/Multiple (2 cr.)
REST 711 further elaborates upon the concept of full coverage indirect restorations. Students will learn about the clinical and laboratory steps that are involved in the fabrication of metal-ceramic single-unit full coverage restorations, as well as multiple-unit restorations replacing missing teeth (Fixed Partial Dentures). This course elaborates on FPD abutment selection, pontic design, advanced principles of tooth preparation (management of compromised preps), basic principles of foundation restorations & core build-ups, communication with the dental laboratory technician (writing lab authorizations for different types of single and multiple unit metal-ceramic restorations), and insertion/cementation of a fixed restoration (gold / metal-ceramic). In the SIM clinic, students will practice preparing teeth for FPDs to replace missing teeth, as well as making provisional FPDs.

REST 712 Prosthetic Dentistry I (2 cr.)
REST 712 is a combined didactic and laboratory restorative technique course. The students will be taught the laboratory sequence of complete denture fabrication. They will learn about denture occlusion and the proper position of denture teeth as it relates to phonetics and mechanics.

REST 713 Prosthetic Dentistry II (2 cr.)
In this course, students will learn the fundamental clinical steps of complete denture treatment. REST 713 is a combined didactic and laboratory restorative course, a continuation of REST 712, which introduced the student to technique complete dentures. The course is designed to provide the student with an understanding of the clinical procedures and techniques necessary in the restorative treatment of edentulous and partially edentulous patients. The student will be introduced to the clinical procedures and techniques

involved in the fabrication of complete removable dentures, both conventional and interim types. Clinical cases will be presented, requiring treatment planning and laboratory steps in waxing a characterized complete denture, and an interim complete denture.

REST 714 Implant Dentistry (2 cr.)
The purpose of this course is to present current information and hands on experiences that will familiarize the student with basic dental implant procedures. Experiences will prepare the student to handle simple clinical cases and discern case difficulty. A wide variety of experiences will be provided in this course including diagnosis, treatment planning, simulated implant placement, CBCT software skills development and implant placement planning for fabricating a surgical guide. The course covers both fixed and removable implant prosthetic treatment options for replacement of missing teeth. Students are instructed in common complications related to implant dentistry and maintenance of implant supported prostheses.

REST 715 Restorative Treatment I (2 cr.)
REST 715 is the first restorative treatment preclinical course in Restorative Dentistry. The student will learn about patient communication, data collection, comprehensive oral diagnosis, AxiUm forms, treatment planning, treatment presentation, and review the topics of dental amalgam and caries detection, diagnosis, and removal. After finalizing the treatment plan of a high caries risk patient, the student will "provide" restorative treatment by preparing and restoring Ivorine teeth in the simulation clinic using the appropriate materials and techniques for this particular simulated patient.

REST 717 Restorative Treatment III (2 cr.)
REST 717 is designed for DS2 students. The students will continue to learn basic principles of fixed prosthodontics taught in REST 709, 710, 711. The course provides comprehensive didactic and hands-on instructions for diagnosis, treatment planning and execution of restorative and fixed prosthodontic treatments. While this course covers a broad range of topics in fixed prosthodontics, a special focus will be placed on restoring structurally compromised teeth. Students will also learn how to use the electronic chart (Axium). Upon completion of this course, students will be capable of diagnosing, treatment planning and performing restorative procedures for structurally compromised teeth.

REST 718 Restorative Treatment IV (1-2 cr.)
Restorative 718 is designed to allow the student to practice critical thinking as they assimilate their knowledge gained from all the previous preclinical restorative courses into the creation of treatment plans for two partially edentulous patients. The course will include practice with diagnosis and use of the electronic health record currently in place at the School of Dentistry. Students will then simulate the organization, preparation and skills necessary for a successful restorative clinical appointment in the undergraduate clinic and practice and/or develop necessary understanding and skills for specific laboratory procedures.

REST 719 Restorative Treatment V (2 cr.)
REST 719 is a combined didactic and laboratory restorative course, introducing the student to Removable Partial Dentures. The student will learn about data collection, comprehensive oral diagnosis, treatment planning and presentation within the discipline of removable prosthodontics. After finalizing a treatment plan, the student will learn procedures involved in the fabrication of RPDs. Theory and application of RPD treatment including extensive design topics will be included. Upon completion of this course, the student will demonstrate an understanding of comprehensive diagnosis and treatment of partially edentulous patients.

REST 720 Sim Clinic Competency (1-2 cr.)
REST 720 is an opportunity to demonstrate competency in performing restorative procedures. The student will perform operative and prosthetic procedures on natural teeth. Each simulation clinic session will be a simulated independent clinical experience for the students. They will use the knowledge and experience they have accumulated over their first year and a half of dental school, apply it to each assignment, and act as independent clinicians.

REST 722 Cad/Cam Technology (1 cr.)
REST 722 is a combined didactic and simulation clinic restorative technique course. Indirect, cuspal-coverage, digitally imaged CAD/CAM anterior and posterior ceramic restorations will be taught. As the students learn about these different dental materials and procedures, they will have the immediate opportunity to apply the knowledge in the simulation clinic by preparing and restoring typodont teeth with the appropriate material. To maximize the hands-on experiences, the course will utilize the "flipped classroom" approach. Students will have pre-recorded lectures and or videos that they will be required to review prior to class, including prior to the first class. Upon completion of this course the student will demonstrate an understanding of the physical and mechanical properties, considerations, preparation and restoration of CAD/CAM ceramic restorations.

RO 712 Principles of Oral Radiology (2 cr.)
This didactic course is the first of two courses that will prepare you in the basic principles of radiology that are required of all radiation workers using x-radiation, including dentists. The course will provide a basic knowledge and understanding of radiology foundations and techniques,

anatomy on radiographs, and also an introduction to radiographic interpretation.

RO 723 Principles of Radiographic Interpretation (1 cr.)
This didactic course is the final of two courses designed to prepare you in the basic principles of radiology that are required of all radiation workers using x-radiation, including dentists. This didactic course will cover in more depth and extend the principles of radiographic interpretation introduced in the RO 712 course, including cysts of the jaws, benign and malignant neoplasms, dysplastic diseases, trauma, paranasal sinus diseases, and temporomandibular disorders.

School of Medicine

ANAT 411UN Foundation of Clinical Anatomy (5 cr.)
Students from diverse professional trajectories will work collaboratively to develop a common understanding of the fundamental organizing principles of anatomy as they apply to clinical contexts. In addition, students will learn to recognize anatomical structures using various imaging techniques to facilitate translation of observations from cadaveric materials to images of living patients.

ANAT 444 Anatomy for Radiation Therapists (3 cr.)
Students from the Radiation Therapy (RT) program will work to develop an understanding of fundamental anatomical principles and relationships as applied to clinical contexts. By doing so, students will learn to recognize anatomical structures using prosection donors and various imaging techniques to facilitate the translation of observations from cadaveric materials to images of living patients.

ANAT 511UN Foundations of Clinical Anatomy (5 cr.)
Students from diverse professional trajectories will work collaboratively to develop a common understanding of the fundamental organizing principles of anatomy as they apply to clinical contexts. In addition, students will learn to recognize anatomical structures using various imaging techniques to facilitate translation of observations from cadaveric materials to images of living patients.

BCMB 503 Thesis (1-16 cr.)
This is a Thesis course

BCMB 601 Research (1-16 cr.)
This is a Research course

BCMB 603 Dissertation (1-16 cr.)
This is a Dissertation course

BCMB 605A Protein Structure & Function Journal Club (1 cr.)
Recommended publications focused on biochemical and biophysical analysis of receptor-mediated signal transduction, ion-transport, and ligand-stimulated membrane protein trafficking will be discussed. In addition, the journal club will offer an overview of modern experimental approaches to structure and function of membrane proteins, such as site-specific labeling, fluorescent spectroscopy, energy-transfer, EPR, and fluorescence photo bleaching recovery.

BCMB 606 Journal Club (1-8 cr.)
This is a Journal Club course

BCMB 607A Department Seminar Series (1 cr.)
This is a Department Seminar Series

BCMB 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

BCMB 618 Protein Design (3 cr.)
Advanced topics that cover the structure, chemistry and function of proteins. Particular aspects of protein biochemistry include: the chemical properties of amino acid side chains, catalysis, levels of protein structural organization, purine metabolic pathways, rational drug design, membrane receptors, extracellular matrix, protein cofactors, kinase and phosphatase catalytic mechanisms.

BCMB 619 Topics in Biochemistry/Molecular Biology (1-2 cr.)
An advanced graduate course with an emphasis on the latest research from the primary literature along with in-depth presentation of the basic concepts of biochemistry and molecular biology. Topics will be chosen from areas of expertise among the cancer biology faculty. Topics will include genomics and cancer, genomic instability, and drug discovery. This class is not a faculty-driven lecture class, but is based on student presentations of background material and research papers selected from the current literature. It is designed to maximize active roles for students in each class.

BCMB 620 Biochemical & Biophysical Properties of Membranes (2 cr.)
The composition of biological membranes and the functional aspects of their composition; models of membrane structure, membrane function, and mechanisms of membrane transport.

BCMB 630 Introductory Biophysics (3 cr.)
Biophysics involves the application of physical techniques to achieve an understanding of life processes at a molecular level. Physical techniques are central to the measurement of the atomic structure, dynamics and interactions of molecules that are a core foundation of modern molecular biology,

while physical theory governs the predicted behavior of biomolecules and helps us achieve a mechanistic understanding of how they work. Thus, biophysics is a central science in the fundamentals of normal physiology, molecular pathology, and in the development of pharmaceutical remedies for a wide range of diseases. This is the first of two lecture courses that will prepare graduate and advanced undergraduates for research and professional work in Molecular Biophysics. It will cover macromolecular structure and underlying atomic interactions, and the thermodynamics and kinetics through which function is understood, using membrane proteins as an example. It will then introduce three of the experimental technologies used to elucidate structure and dynamics: Crystallography, Spectroscopy and Magnetic Resonance. At the conclusion of this course, students will have the theoretical foundation to understand the properties of macromolecular functions, and understand the principles by which their actions are simulated. Students will be able to critically assess primary literature written for a general scientific audience in the area of macromolecular structure & function, understanding the experimental basis in crystallography, NMR and spectroscopy. Students will also be prepared for the Advanced Biophysics course which would be the entry point into practical application of biophysical techniques.

BCMB 631 Advanced Biophysics (3 cr.)
This is the second of two primarily lecture courses that will prepare graduate and advanced undergraduates for research and technical work in Molecular Biophysics. It will cover the practical aspects of the elucidation of macromolecular structure and dynamics by NMR spectroscopy and x-ray crystallography, and the characterization of macromolecular interactions by electron microscopy, mass spectrometry and fluorescence methods. It will examine computational methods for interpreting structure, predicting properties and simulating mechanisms of action.

BEST 501 Research (1-16 cr.)
Research

BEST 503 Thesis (1-16 cr.)
Thesis

BEST 601 Research (1-16 cr.)
This is a Research course

BEST 603 Dissertation (1-16 cr.)
This is a Dissertation course

BEST 605 Reading and Conference (1-5 cr.)
Reading and conference

BEST 606 Journal Club (1-8 cr.)
This is a Journal Club course

BEST 607 Neuroscience & Career Pathways (1 cr.)
Seminar

BEST 607A Seminar: Issues in Behavioral Neuroscience (1 cr.)
A current topics seminar that focuses on the neurobiological determinants of behavior and the effects of environment and experience on behavioral, physiological, neurochemical and molecular processes. The term coordinator(s) chooses the specific topic(s), and schedules regular participation of the students.

BEST 616 Neurobiology of Learning & Memory (2 cr.)
The goal of this course is to familiarize students with current thinking about the neurobiology of learning and memory. The course will focus on theoretical processes involved in memory and will evaluate experimental approaches designed to investigate the neurobiological systems, cellular, and molecular mechanisms involved in these processes. The course emphasizes critical analysis of experimental design and theoretical interpretations. A different topic will be considered each week and classes will alternate between background lectures by the instructor and student presentations that will address empirical work supporting two sides of a theoretically contentious issue related to that week's topic. At the end of the course, student will have a basic understanding of neurobiological mechanisms involved in memory and will be able to evaluate experimental approaches designed to investigate these mechanisms.

BEST 618 Behavioral Neuroscience (3 cr.)
Survey of the basic and current literature of the field, with emphasis on the role of the central nervous system in behavior; fundamentals of neuroanatomy, neurochemistry and neurophysiology basic to physiological psychology.

BEST 620 Neurochemical Systems Relevant to Behavior (1 cr.)
This course will examine the mechanisms by which major brain neurotransmitters and modulators are synthesized and released and the biochemistry of synaptic responses. Basic physiological, biochemical, and morphological characteristics of neuronal transmission will be discussed. An emphasis will be placed on the experimental approaches used to examine these processes.

BEST 627 Neuroscience of Aging I (1 cr.)
The two course series is a required course for students on the Neuroscience of Aging training grant, but is also of interest to others interested in development and aging. The courses are a team-taught survey course, including an introductory module on concepts in aging research, and aging of non-CNS systems, as well as modules on the neuroscience of aging of

sensory, motor, and cognitive systems as well as neurodegenerative diseases. Grading is P/NP and based on a 5-page paper on an aging related topic of the student's choice.

BEST 628 Neuroscience of Aging II (1 cr.)
The two-course series is a required course for students on the Neuroscience of Aging training grant, but is also of interest to others interested in development and aging. The courses are a team-taught survey course, including an introductory module on concepts in aging research, and aging of non-CNS systems, as well as modules on the neuroscience of aging of sensory, motor, and cognitive systems as well as neurodegenerative diseases. Grading is P/NP and based on a 5-page paper on an aging related topic of the student's choice.

BEST 639 Neurobiology of Addiction (2 cr.)
The goal of this course is to familiarize students with research on the neurobiology of addiction. The course will focus on theoretical processes involved in addiction and will evaluate experimental approaches designed to investigate the molecular, cellular, and systems neurobiological mechanisms involved in these processes. The course emphasizes critical analysis of experimental design and theoretical interpretations. Different topics will be discussed each week and the class meeting will consist equally of presentations and discussion.

BEST 642 Systems Neuroscience (4 cr.)
This course is an introduction to the functional anatomy, electrophysiology and pharmacology of the central and peripheral nervous system. Emphasis is placed on the functional organization and processing of information in the major input and output systems of the brain, including the somatosensory, motor, visual, auditory and autonomic and hormonal regulatory systems, and on the higher integrative functions of the nervous systems, including learning, emotion, motor control, and sleep. The course will consist of lectures and readings in primary literature.

BEST 650 BEST Teaching Practicum (1 cr.)
Students will prepare and deliver a series of lectures on a pre-determined topic in Behavioral Neuroscience (e.g. the neurobiology of memory) for students at local area universities or colleges. Topics are determined by student expertise in consultation with the director of the course offered at the local area university or college. Students may be required to prepare other educational materials associated with their topic, e.g., discussion questions, examination/learning assessment tools.

BME 503 M.S. Thesis Research (1-12 cr.)
Supervised original research towards a thesis for the master's degree. Consent of a supervising faculty member is required for approval to begin M.S. thesis research.

BME 505 Readings in Biomedical Engineering (0 cr.)
This course is designed to teach critical evaluation of information in the field of Biomedical Engineering. Students will read articles and papers on timely topics related to the student's area of interest. Students are required to present summaries of the readings and to lead class discussions.

BME 601 Prequalifying Ph.D. Research (1-16 cr.)
Supervised Ph.D. research prior to passing the department's qualifying exam.

BME 602 Independent Study (1-12 cr.)
Independent study allows a student to work one-on-one with a faculty member on selected topic(s) of interest. Registering for independent study requires pre-approval from the faculty member and the student's academic department. For letter grade only.

BME 603 PhD Dissertation Research (1-16 cr.)
Research toward the dissertation for the Ph.D. degree occurring after passing the qualifying exam.

BME 604 Professional Internship (1-12 cr.)
This course provides students an opportunity to earn credit for relevant non-credit bearing work or research experience in industry or academia outside of OHSU. Through this opportunity, students gain valuable research and/or professional experience that allows them to both apply the knowledge gained in the classroom and prepare for careers following graduation. Requires approval from both the faculty mentor and program director.

BME 605 Readings in Biomedical Engineering (1 cr.)
This course is designed to teach critical evaluation of information in the field of Biomedical Engineering. Students will read articles and papers on timely topics related to the student's area of interest. Students are required to present summaries of the readings and to lead class discussions.

BME 606 Special Topics (1-9 cr.)
Special topics courses are offered in areas of particular relevance to the research interests of faculty or in response to industry needs. Special Topic courses are subject to change and are offered intermittently.

BME 607 Biomedical Engineering Seminar (0.5 cr.)
This seminar course will feature presentations and discussions on topics in biomedical engineering that exemplify the wide range of applications of biomedical engineering to science and medicine. The goals are to provide

the students with an overview of the diverse opportunities for research and application, to foster development of critical analysis and thinking, and to stimulate creative problem solving and research planning.

BME 608 Grant Writing & Qualifier Preparation (1 cr.)
Students will be instructed in the preparation of a 6 page NRSA-style grant proposal per the BME Program Guidelines for submission to their qualifying exam committees. The topic of the proposal will be determined by each student. In addition to didactic instruction on grant writing skills, the students will serve as reviewers for their fellow students' proposals.

BME 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

BME 618 Readings in Machine Learning (1 cr.)
In this course, we will review recent as well as seminal papers in the area of machine learning, artificial intelligence, mathematical modeling, system identification, and pattern recognition. Each student will be required to present 1-3 papers over the course of the 10-week course. Students will be assessed for pass/fail based on the quality of their presentations (70%) and their engagement with other students during other presentations (30%).

BME 619 Readings in Cancer Systems Biology (1 cr.)
In this course, we will review recent as well as seminal papers in the area of cancer systems biology.

BME 620 Science Writing for Journals (2 cr.)
In this course, we will break down the components of scientific writing to include the following topics: 1) Starting strategies- Deciding on a journal and the review process; 2) Abstract construction; 3) Introduction- Communicating significance and rationale; 4) Methods- Data recording and transparency; 5) Figure making- Tools and guidelines; 6) Communication of results; 7) Discussion- Summaries, limitations, and the bigger picture; 8) Submission and Response to reviewers; 9) Review articles, letters, short communications and conference abstracts; 10) Navigating collaborations and mentorship. Students will be assessed for a letter grade based on the quality of their written assignments (50%), their engagement during course meetings (25%), and final oral presentation to the class (25%).

BME 640 Fluid Mechanics and Biotransport (3 cr.)
This course will introduce basic concepts of fluid mechanics and convective mass transport. It will start with a derivation of mass, momentum and energy conservation equations for fluid flows. The importance of non-dimensional parameters such as Reynolds number and the Womersley parameter will be extensively discussed, and non-dimensional equations will be derived. Other topics will include Bernouilli's equation, low and high Reynolds number flows, oscillatory flows, interactions of fluid flows with tissue and boundary layers. The final part of the course will cover the derivation and use of mass transport equations in fluid flows. Examples from different areas of biomechanics will be discussed throughout the course.

As part of this course, each student will be asked to work on a project. Students will be encouraged to choose project themes from their own research areas or interests. Access to a finite element commercial package will be available for interested students. Through the project, students will be exposed to current analytical and computational methodologies to analyze fluid flow dynamics.

BME 645 Biocompatibility: Host-Implant Interactions (3 cr.)
This course provides the student with a firm understanding of how the body reacts to implanted biomaterials at the cell, tissue, organ, and systemic levels. In addition, specific characteristics that hinder or improve the biocompatibility of materials will be addressed. The concepts of biocompatibility with regards to biomaterials in experimental and clinical situations are presented. The influences of the molecular interactions between materials with different bulk and/or surface chemistry will be discussed. Issues related to the consequences of degradation products, inflammation and infection are discussed at the cellular and molecular level. Techniques to characterize biomaterials in vitro, as well as the in vivo / ex vivo analysis of implanted and explanted biomaterials are presented. Format will consist of 1 hour lecture/week and 3 hour discussion of relevant literature.

BME 651 Mentorship and Teaching Assistantship (1 cr.)
This course provides students an opportunity to earn credit for assisting with teaching and mentoring for BME classes by engaging in activities such as: office hours, course grading, academic tutoring on a course subject, and delivering lectures on predetermined topic(s), as well as mentoring summer interns (high school and undergraduate students) seeking a research experience.

BME 665 Intro to Computational Neurophysiology (3 cr.)
In this course students will explore how neurons communicate through electrical signals, how information transmission between neurons occurs, and how connectivity between neurons determines activity patterns and results in specialized behavior. Topics to be covered include Hodgkin-Huxley models of simple and complex morphologies; central pattern generators; models of simple invertebrate circuits; integrate-and-fire and spike-response neuron models for use in network models; models of neural development, ocular

dominance and orientation columns; and rate versus spike-timing dependent plasticity. A solid math background is needed; some programming (in MATLAB) will be required.

BME 669 Physics of Medical Imaging (3 cr.)
A comprehensive introduction to all major aspects of standard medical imaging systems used today. Topics include radiation, x-ray imaging, computed tomography, nuclear medicine (PET and SPECT), MRI, ultrasound, and imaging applications in therapy. The fundamental mathematics underlying each imaging modality is reviewed and the mechanism of contrast formation is heavily emphasized. The course will incorporate a journal club review of research papers, participation in class discussions, and exams.

BME 673 Cancer Systems Biology (3 cr.)
Cancer systems biology is an integrative approach to understanding cancer as a complex biological system that is made up of more than the sum of its parts. This course is designed to provide an understanding of the rational and approaches used in cancer systems biology. The class will transition through a discussion of the biological basis for cancer, experimental methods, experimental model systems, large-scale data resources, analytical methods, and will provide practical experience with analyzing data.

BME 674 Foundations of Measurement Science (3 cr.)
This course is intended for first and second year graduate students in the BME program or quantitative students in other programs who are interested in quantitative biosystems approaches to biomedical research and seek a deeper understanding of the technologies used in their research. The course will examine the physical principles underlying the instrument design and function and discuss analysis of their output and their practical use in actual research settings.

BME 675 Analysis in Quantitative Bioscience (3 cr.)
This introductory computational biology course is geared toward students comfortable with quantitative methods, but extensive programming experience is not necessary. The course introduces and employs python notebooks for analyses of genomic and related 'big' biological data. Key statistical concepts are introduced and used throughout the course in the discussion of algorithms for the analysis and simulation of biological data. Topics covered typically included sequence alignments, analysis of RNA sequence data, pathway analysis, Markov modeling, and machine learning.

BME 680 Digital Signal Processing (3 cr.)
This course will teach students the core principals of digital signal processing. We will survey a variety of topics in class lecture/discussion based on assigned readings while exploring specific topics/applications in depth through lab assignments and a final project. Specifically, we will cover the core topic areas in digital signal processing including an overview of discrete-time signals and systems, the discrete-time Fourier transform, the z-Transform and transform analysis, the discrete Fourier Series, the discrete Fourier transform, circular convolution, network structures for FIR system, design of IIR and FIR filters, multi-rate processing, and linear prediction. If time permits, we will also provide an introductory lecture on the Kalman filter and the extended Kalman filter.

BME 683 Physiological Modeling and Model Predictive Control (3 cr.)
This course will teach students the core principals of modeling of physicologic processes and then teach how to use these models within a model-predictive control framework. Models of physiology can be used to improve our understanding of a system and for educational purposes and as a means to support clinical processes. Model predictive control (MPC) is a method for controlling systems based on prior knowledge about the process being controlled and using a horizon of predicted responses of the process to determine optimal input control parameters. This class will provide an introduction to modeling of physiologic processes.

BME 690 Topics in Nanomedicine (3 cr.)
Nanomedicine involves the development and application of materials and devices to study biological processes and to treat disease at the level of single molecules and atoms. We will introduce basic principles underlying nanomedicine and review how nanomedicine is redefining clinical research in areas such as diagnostic imaging agents, drug screening, precision medicine, and nanomaterial-based drug, gene, immunotherapy and vaccine delivery. FDA regulations governing nanomedicine development will also be covered. This class is co-offered with OSU's PHAR 574.

BME 695 Topics in Quantitative and Experimental Cancer Biology (1 cr.)
This course provides formal instruction and mentoring in both 'wet' and 'dry' techniques in cancer biology, as well as professional development. The course covers computational techniques, complementary wet-lab cancer biology approaches, and their integration using a mixture of didactic teaching, journal club sessions, trainee research presentations, and structured discussions. Specific topics will be geared toward current trainee needs.

BMI 501 Research (1-10 cr.)
Research

BMI 502 Independent Study (1-10 cr.)
Independent study

BMI 503 Thesis (1-16 cr.)
Thesis

BMI 505 Reading and Conference (1-5 cr.)
This is a "journal club" style course in which students are required to present a key paper or research method in their particular field of research.

BMI 505F Reading and Conference - Fellows (1-5 cr.)
This is a "journal club" style course in which students are required to present a key paper or research method in their particular field of research for fellows.

BMI 507 Seminar: Biomedical Informatics (1-4 cr.)
A current topics seminar that focuses on the topics of Biomedical Informatics. The instructor chooses the specific topics and schedules regular participation of the students.

BMI 509 Practicum (1-3 cr.)
A practical hands-on experience in an operational biomedical informatics setting at OHSU, with a local health software vendor, or at a hospital/health system.

BMI 510 Introduction to Biomedical Informatics (3 cr.)
This course provides a broad survey introduction to biomedical and health informatics, the field concerned with the acquisition, use, and storage of information in healthcare, biomedical research, and public health. Students focus on the underlying themes of biomedical and health informatics, including the proper use of information technology in health-related settings. The course provides a broad understanding of the field from the vantage point of those who implement, lead, and develop IT solutions for improving health, healthcare, public health, and biomedical research. It provides up-to-date details on current events in the field, including electronic health records, data standards and interoperability, clinical decision support, healthcare data analytics, population health, patient engagement, and telemedicine. It also describes and sets the context for new technologies, such as SMART on FHIR, wearables, and blockchain.

BMI 510NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

BMI 512 Clinical Information Systems (3 cr.)
An in-depth study of the basic concepts surrounding clinical information systems, with emphasis on electronic health records - terminology and standards, clinical configuration, user interface design, computerized physician order entry, clinical decision support, and clinical reporting. The course then focuses on the practical application of these concepts, including implementation, clinical workflow, privacy and security, certification, medical device integration, and community health information exchange; includes guest lecturers presenting real-world case studies.

BMI 516 Standards for Interoperability (3 cr.)
This course will explore the details of healthcare information technology (HIT) interoperability and standards. The evolution of technology in healthcare, along with the impact on clinical information systems, will be studied. The benefits of integrating healthcare information systems will be investigated, as will the challenges of integrating systems across disparate organizations, healthcare disciplines, and technologies. The value proposition of a standards-based approach to integration will be presented. Students will learn the process of HIT integration projects, and how that parallels the development process of interoperability standards. The course will present an in depth look at standards critical to HIT interoperability- HL7 v2, HL7 v3 RIM. CDA, and SNOMED- and at the use of those standards in national regulations and industry-wide efforts such as IHE. Students will gain experience in navigating through standards documents and tools. Students will utilize the skills and knowledge gained to design a standards-based interoperability project addressing a real-world need.

BMI 517 Organizational Behavior & Management (3 cr.)
Nearly everything that is accomplished in our society is done through the efforts of groups and organizations. Organizations are comprised of individuals. Therefore, the most important functions of managers in an organization include understanding and motivating individuals and organizing structural systems within which they can work in a productive manner. The field of Organizational Behavior deals with these issues. This course will consider the issues as they relate to informatics in healthcare at three levels: The Individual, The Group, and The Organization.

BMI 518 Project Management (3 cr.)
This course introduces informatics students to the profession and practice of traditional project management. It exposes learners to the concepts, tools, and techniques project managers use to define, plan, control, and close projects, with attention given to the development of both individual and team skills.

BMI 519 The Business of Healthcare Informatics (3 cr.)
This course is designed to provide the health informatics student an overview of the business practices related to the operational informatics environment. It exposes the learner to the practices whereby a health care organization sets IT goals and objectives, designs and implements IT solutions, manages the IT function and organization, and develops IT

capital and operating budgets.

At its highest level, the course answers the question "what do clinical informaticians need to know about the business of health care delivery to make them effective in their professional careers?"

BMI 520 Consumer Health Informatics (3 cr.)
Consumer Health Informatics focuses on the intersection between consumers, information technologies and health care. It explores the design, use and impact of technologies that aim to engage consumers to participate in their health and health care. Concepts included arise from various informatics disciplines such as health communication, behavioral science, quality improvement, psychology and public health. We will review opportunities and challenges in consumer health information technology, from perspectives of various stakeholders including patients, caregivers and health professionals. Topics include: trends; information quality; access and usage; barriers and opportunities for clinical integration; role of peers online and caregivers; tools for prevention and chronic illness care, and emerging health IT.

BMI 521 Public Health Informatics (3 cr.)
Recent events underscore the need for a strong public health information infrastructure. Public Health Informatics is the study of how public health information is generated, collected, transferred, and shared. This course is designed to introduce both biomedical informatics and public health students to public health informatics. Course topics will include the information needs of public health professionals; barriers and requirements of a public health information infrastructure; data and process standards; electronic health records; electronic data exchange, including security issues; data registries and sources; evidence-based public health and community health assessment; public health informatics tools, such as GIS; public health reporting and surveillance, including communicable disease, environmental, syndromic, and bioterrorism surveillance.

BMI 523 Clinical Research Informatics (3 cr.)
This online, synchronous class will introduce the student to the principles of clinical research informatics. Topics include the design of clinical research, clinical trial administration, good clinical data management, clinical trial registration and publication, subject recruitment, use of administrative databases, registries and electronic health records in research, practice-based research networks, standards in terminology and messaging for clinical research, and research collaboration. Course activities will consist of readings of primary and summary literature, weekly graded assignments and activities, and a required face-to-face or video conferencing discussion once per week.

BMI 524 Analytics for Healthcare (3 cr.)
This course focuses on real world use of analytics in healthcare settings. While analytics can take many forms, we primarily focus on the use of this framework to advance the goals of healthcare organizations. We attempt to cover the process, infrastructure needs, tools, skills, organization, people and governance to effectively perform this work in a healthcare organization. We do not focus on particular methodologies and therefore our course should be considered 'non-technical'. Instead, we provide a broad overview of the field with exposure to several common tools and software packages.

BMI 525 Principles and Practices of Data Visualization (3 cr.)
This course will give students a foundation in the principles of data visualization, particularly as applied to scientific and technical data, as well as provide students with hands-on experience using modern software tools for developing visualizations. Lecture topics will include an overview of visual perception, color theory and practice, different types of graphs and their purposes, visualizations for specialized forms of data including time-series and geospatial data sets, strategies for working with multidimensional data, etc. There will also be lecture content on ethical issues surrounding data visualization. Weekly lab sessions will introduce students to popular data visualization tools such as R's ggplot and Shiny, Tableau, etc.

BMI 527 Applied Data Science and Machine Learning (3 cr.)
This course is an overview of the application of data science, machine learning, and artificial intelligence in health care settings. Students will be introduced to a wide range of machine learning topics, including identifying health care issues that can be addressed with machine learning solutions, machine learning model development and data source identification, machine learning model implementation, critical appraisal of machine learning literature, and ethical considerations for the application of machine learning and artificial intelligence in health care. Students will also identify an issue in health and develop their own machine learning model to address this issue.

BMI 530 The Practice of Health Care (3 cr.)
This course introduces the medical informatics student to the clinical practice of healthcare, including:

- The underlying biology and manifestations of selected disease states;
- The information-gathering and reasoning processes used to detect, understand, and treat diseases;
- The health professionals who provide and support care;
- The clinical settings in which care takes place

The objective is to enable non-clinicians to understand the context, the vocabulary, and some of the challenges for supporting clinical work in real settings with informatics tools.

BMI 531 Probability & Statistical Inference (3 cr.)
This course will introduce fundamental concepts underlying statistical data display, analysis, inference and statistical decision making. The topics include presentation and description of data, basic concepts of probability, Bayes theorem, discrete and continuous probability distributions, estimation, sampling distributions, classical tests of hypotheses on means, variances and proportions, maximum likelihood estimation, Bayesian inference and estimation, linear models, examples of nonlinear models and introduction to simple experimental designs. One of the key notions underlying this course is the role of mathematical modeling in science and engineering with a particular focus on the need for an understanding of variability and uncertainty. Examples are chosen from a wide range of engineering, clinical and social domains.

BMI 535 Management & Processing of Large Scale Data (3 cr.)
The goal of this course is to provide an introduction to the data management and data processing applications available for large scale data, with a focus on biomedical data. Utilizing samples from the 1000 Genomes Project, this course will provide hands-on experience managing and processing large scale biomedical data. Topics covered include SQL, NoSQL, distributed file systems and parallel computing.

BMI 536 Evidence-Based Medicine (3 cr.)
This hybrid course provides a rigorous introduction to the principles of evidence-based medicine (EBM). It begins with an overview of how to frame an answerable clinical question and then find the best evidence to answer it. The major categories of questions that arise in clinical practice - treatment, diagnosis, harm (etiology), and prognosis - are each covered, with instruction on what is the best type of evidence to answer questions, how to find that evidence, and how to apply it to a given patient. This is followed by units on summarizing evidence (e.g., through systematic reviews and meta-analysis), putting evidence into practice (e.g., implementing clinical practice guidelines), and the limitations of the EBM approach. Some pre-campus coursework is required. See syllabus for details.

BMI 537 Healthcare Quality (3 cr.)
This course covers methods for measuring, managing and improving the quality of health care. A general overview of the health care system in the United States and beyond is followed by the quality challenges and issues in these systems. Students are also taught the principles of quality improvement and are expected to be able to apply them in practical settings. Current national efforts in performance measures, financial incentives and quality are also covered. The hybrid version of the course includes pre-campus reading assignments (see hybrid syllabus for details).

BMI 538 Medical Decision Making (3 cr.)
This course introduces the student to decision analysis (modeling of decisions). Given uncertain information and limited resources, students will learn to model uncertainty and expected outcomes of various decisions. Course will cover Bayesian theory, decision trees, patient utilities, quality of life and cost related to health outcomes. Students will apply decision analysis techniques in addressing real world problems using software (by TreeAge, Inc.) and participate in online discussion of decision analyses in the medical literature.

BMI 539A Deep Learning I (3 cr.)
Deep neural networks (DNNs) have recently demonstrated superiority to other machine learning techniques in a variety of tasks ranging from speech recognition and natural language processing to computer vision. This course covers a number of topics in machine learning with a specific focus on deep neural networks (DNNs) including model capacity, regularization, overview of optimization techniques, perceptron algorithm and multi-layer perceptron, feed-forward neural networks, convolutional networks, and sequence-to-sequence models. The topics are purposely chosen to cover all the background material that students need to effectively train DNNs through supervised techniques in their research problems. The course will also draw from applications in speech and language processing. Recommended background of this course includes programming proficiency in Python or Matlab, enough knowledge of calculus, linear algebra and probability theory. The course will be a combination of Introductory lectures and a few toy examples in Python. The course also requires a final project of interest to students chosen in consultation with the instructor. The project requires a written report and a final presentation.

BMI 539B Deep Learning II (3 cr.)
This course will cover two areas of deep learning in which labeled data is not required: Deep Generative Models and Unsupervised Learning. Recent advances in generative models have made it possible to realistically model high-dimensional raw data such as natural images, audio waveforms and text corpora. Topics include energy-based models (e.g., restricted Boltzmann machines), autoencoders, variational autoencoders, generative adversarial networks, in addition to a brief overview on elements of Bayesian inference including Monte Carlo techniques (e.g., Gibbs sampling and Metropolis-Hasting) and variational inference. This course will cover the theoretical foundations of these

topics as well as their newly enabled applications. Students will learn how to effectively train deep models through unsupervised techniques, and will enable them to employ deep models in their research problems. The course will also draw from applications in speech and language processing. This is a second course in the sequence of "deep learning" topics and only those who have previously taken the "Deep Learning I" are encouraged to take this class. The course will be a combination of Introductory lectures, a few toy examples in Python, reading discussions in which students will take turns presenting papers and will be responsible for up to 2 papers. The course also requires a final project of interest to students chosen in consultation with the instructor. The project requires a written report and a final presentation.

BMI 540 Computer Science & Programming for Clinical Info (3 cr.)
This course provides an introduction to computer science and programming demonstrated through the Python programming language. In addition, the course includes the presentation of computer science principles, including spreadsheets, representation and storage of data, architecture, operating systems, and algorithms. The goal of this class is to expose clinical informatics students to programming in Python for common data manipulation and analysis tasks.

BMI 543 Machine Learning (3 cr.)
This course provides a broad introduction to techniques for building computer systems that improve through experience. It provides both conceptual grounding and practical experience with several learning systems. The course provides grounding for advanced study in statistical learning methods, and for work with adaptive technologies used in speech and image processing, robotic planning and control, diagnostic systems, complex system modeling, and iterative optimization. Topics include: learning paradigms and concept learning, decision trees, artificial neural networks, statistical sampling and empirical error estimation, Bayesian learning (including an introduction to belief networks), clustering, principal and independent component analysis, generalization theory, memory-based (instance) techniques, evolutionary computation, and reinforcement learning. Students will gain practical experience implementing and evaluating systems applied to pattern recognition, prediction, and optimization problems.

BMI 544 Databases (3 cr.)
An in-depth look at databases and database management systems. Topics covered will include data modeling, hierarchical and relational databases, query languages (SQL), database optimization, and OLAP and data warehousing.

BMI 546 Software Engineering (3 cr.)
This course covers the basic principles of software engineering geared towards providing students with a solid understanding of the process of producing quality software systems on time and on budget. The main activities in software process models are covered in detail, including: proposal creation, requirements gathering and specification, architecture design, software development methodologies, verification and testing, quality management and maintenance. Students will be expected to demonstrate their mastery of the material by the creation of written documentation for several of these main activities on a hypothetical software project of their choice, as well as by answering homework questions based on assigned reading and passing written exams.

BMI 548 Human Computer Interaction (3 cr.)
This hybrid course will provide an overview of the principles and tools of HCI design and evaluation techniques. It will begin with 6-8 weeks of directed readings with small assignments or quizzes followed by one week on campus and then completion of a project. The on-campus portion of the course will have lectures in the morning and lab sessions in the afternoon, for 5 days. Topics to be covered include: Principles of good interface design, The iterative process of design, Surveying techniques, Discount usability testing, Cognitive processes affecting usability, Think-aloud protocols, Physiological processes that affect usability, Eye-tracking techniques, Quantitative evaluative measures, and Research topics in HCI. Some pre-campus coursework is required.

BMI 550 Bioinformatics & Computational Biomedicine I: Algorithms (4 cr.)
The course will be a problem-driven examination of the algorithmic and quantitative issues in computational biology. The course assumes basic background in algorithms. The emphasis is on algorithm development and application to biological problems, particularly those from multi-omics studies. This will enable the student to evaluate algorithms, as well as assess computational considerations for development and implementation. Topics include: global and local alignment, Scoring functions, suffix trees, Next Generation Sequencing Algorithms, Genome Alignment, Database search, Phylogeny, Multiple sequence alignment, motif finding, and genome rearrangements.

BMI 551 Bioinformatics & Computational Biomedicine II: Statistical Methods (4 cr.)
This course will be a problem-driven examination of the quantitative issues in computational biology. The course will provide students with the statistical fundamentals underlying the techniques covered. Topics will include applications involving MCMC Models, Maximum Likelihood, Random Walks, Hidden Markov Models, Estimating Genealogical

Relationships and Networks. Students will be evaluated on written assignments and a programming project.

BMI 552A Research in Bioinformatics & Computational Biomedicine (1 cr.)
The Research in Bioinformatics course is designed to give students a foundation in general research approaches with specific application to bioinformatics, computational biology, and clinical informatics. This is the first in a two-part course, with the second part of the course being taken in the Spring. This course will focus on developing the critical thinking and evaluation skills necessary to be successful in the field. Special emphasis will be placed on critical evaluation of the literature, and preparing to do a project in the Spring term course.

BMI 552B Research in Bioinformatics & Computational Biomedicine (1 cr.)
The Research in Bioinformatics course is designed to give students (Masters, Ph.D., and fellows) a foundation in general research approaches with specific application to bioinformatics and medical informatics. This is the second of a two-part course which will focus on developing the critical thinking and evaluation skills necessary to be successful in this field. The emphasis this term will be on executing an informatics project and preparing a Specific Aims page using the skills developed during the first part of the course.

BMI 553 Readings in Bioinformatics & Computational Biomedicine (1 cr.)
This is a seminar style course requiring significant student participation and will address new and emerging technologies and/ or methodologies.

BMI 559 Genetics for Computational Biologists (3 cr.)
This course is designed for students with a mathematical/computational background needing an in-depth discussion of the genetic concepts underlying current experimental methods. Emphasis will be given to the genomic level techniques, data representations and the integration of the data types with the biology. Prior molecular biology or genetic knowledge is not needed or assumed. The foundation and principles of molecular genetics and population genetics will be presented in the context of data intensive techniques used to study genetic problems. The course will also address challenges that are faced in computational genetics by the need for standardization of data capture and communication, organization of easily accessible repositories, and algorithms for integrated analysis based on heterogeneous sources of information. There is a central emphasis throughout the course on scientific communication with regard to presenting results, public education and outreach.

BMI 560 Design & Evaluation in Health Informatics (3 cr.)
Research and development projects in the broad field of biomedical informatics can take many forms, from field studies that improve understanding of the tasks and information needs of users, to development projects that design, build, and deploy information systems, to studies that assess the impact of information systems on health care processes and outcomes. This course provides an overview of the concepts, vocabularies, and strategies needed to design and evaluate projects in biomedical informatics, including a breadth of methodologies drawn from qualitative research, quantitative research, and software engineering.

BMI 561 Qualitative Research Methods (3 cr.)
Qualitative research methods are used to address the "why, what, and how" questions that are hard to answer with quantitative methods and yet are so important to answer in medical informatics. Informaticians who evaluate systems or conduct research within organizations will find this course a useful foundation when considering data gathering and analysis options.

BMI 562 Quantitative Research Methods (3 cr.)
This course reviews a variety of study designs used in biomedical informatics and outcomes research. These include experimental designs (completely randomized designs, randomized block designs, nested designs, two-way factorial designs, crossover designs, and repeated measures models), observational study designs (cohort designs, case/control designs, cross-sectional designs) and prediction designs (with both linear and logistic regression approaches). For each study design, appropriate statistical analyses and use of statistical software (SPSS) will also be covered. Estimation of statistical power and required sample sizes for various study designs will be discussed.

BMI 565 Bioinformatics Programming & Scripting (3 cr.)
The purpose of this course is to equip research scientists with computational skills necessary to create and automate tools to analyze biological data. The course is divided into four sub-topics: Python programming, scripting in Unix/Linux, the BioPython library, and computational workflows. Python will be used to solve simple to sophisticated programming problems and to review general programming language paradigms such as problem abstraction, data types, file I/O, iteration, functions, and objects. There will also be an emphasis on writing Unix/Linux operating system shell scripts to automate repetitive tasks and connect multiple bioinformatics tools using files and pipes. In addition, students will learn to access public repositories to perform basic bioinformatics tasks such as annotating gene products, sequence searching, and functional queries. This course is designed to be a first-year requirement for students in the Bioinformatics and Computational Biology graduate program in Biomedical Informatics.

BMI 567 Network Science & Biology (3 cr.)
Networks are everywhere: the Internet, social networks, epidemiological networks, protein-interaction networks, gene regulatory networks, etc. This course will introduce students to basic concepts shared by many different kinds of networks, with focus on biological networks as examples. Students will learn how to program against networks, search for patterns hidden in networks, and visualize networks generated from real biological data sets. After this course, students will be expected to think in a network way and have basic concepts and skills to analyze network data in order to untangle the complexity of networks.

BMI 569 Data Analytics (3 cr.)
Data Analytics is an applied hybrid course that introduces the concepts of the data analytics life cycle through the implementation of a quality metric. Through this implementation, we explore the role of analysts and analytics in healthcare organizations. This hybrid course will consist of eight weeks of directed readings with online discussions, hands-on use of analytical tools for data extraction, data cleaning and analysis and an on-campus portion. The on-campus portion will consist of lectures, guest speakers, and hands-on lab sessions in R and SQL. This will be an applied course that introduces the concepts of the data analytics lifecycle.

BMI 570 Scientific Writing & Communication for Informatics Students (3 cr.)
The focus of this course is scientific writing and communication. Students will prepare abstracts, papers and slides as well as learn about writing theses and capstones, scientific journal articles, and grant proposals. Topics will also include bibliographic database searching and presentations and posters for scientific meetings.

BMI 576 Managing Ethics in Biomedical Informatics (3 cr.)
The goal of this course is to introduce and sensitize students to the ethical, legal, and social issues arising in the use of electronic uses of data. Students will become familiar with managing and implementing legal and regulatory requirements mandated by HIPAA rules, as well as developing and implementing organization wide HIPAA-related policies and training programs. Topics will include the theories and models for critical thinking in ethical decision-making, federal rules and regulations related to ethical issues in health care.

BMI 581 Capstone Project (1-6 cr.)
Capstone project

BMI 590 Capstone Internship (1-6 cr.)
External sponsoring organizations will provide structured Capstone/Internship experience for medical informatics students to work on current projects. The Capstone/Internship will bring together theory, application, and current practice in the field of informatics.

BMI 601 Research (1-16 cr.)
Research

BMI 602 Independent Study (1-6 cr.)
Independent study

BMI 603 Dissertation (1-16 cr.)
Dissertation

BMI 605 Reading and Conference (1-6 cr.)
This is a "journal style" club in which students are required to present a key paper or research method in their particular field of research.

BMI 605F PhD/Fellows Meeting (1-6 cr.)
This is a "journal club" style course in which students are required to present a key paper or research method in their particular field of research for fellows.

BMI 607 Seminar (1-4 cr.)
A current topics seminar that focuses on the topics of Biomedical Informatics. The instructor chooses the specific topics and schedules regular participation of the students.

BMI 610 Introduction to Biomedical Informatics (3 cr.)
This course provides a broad survey introduction to biomedical and health informatics, the field concerned with the acquisition, use, and storage of information in healthcare, biomedical research, and public health. Students focus on the underlying themes of biomedical and health informatics, including the proper use of information technology in health-related settings. The course provides a broad understanding of the field from the vantage point of those who implement, lead, and develop IT solutions for improving health, healthcare, public health, and biomedical research. It provides up-to-date details on current events in the field, including electronic health records, data standards and interoperability, clinical decision support, healthcare data analytics, population health, patient engagement, and telemedicine. It also describes and sets the context for new technologies, such as SMART on FHIR, wearables, and blockchain.

BMI 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

BMI 612 Clinical Information Systems (3 cr.)

An in-depth study of the basic concepts surrounding clinical information systems, with emphasis on electronic health records - terminology and standards, clinical configuration, user interface design, computerized physician order entry, clinical decision support, and clinical reporting. The course then focuses on the practical application of these concepts, including implementation, clinical workflow, privacy and security, certification, medical device integration, and community health information exchange; includes guest lecturers presenting real-world case studies.

BMI 616 Standards for Interoperability (3 cr.)
This course will explore the details of healthcare information technology (HIT) interoperability and standards. The evolution of technology in healthcare, along with the impact on clinical information systems, will be studied. The benefits of integrating healthcare information systems will be investigated, as will the challenges of integrating systems across disparate organizations, healthcare disciplines, and technologies. The value proposition of a standards-based approach to integration will be presented. Students will learn the process of HIT integration projects, and how that parallels the development process of interoperability standards. The course will present an in depth look at standards critical to HIT interoperability- HL7 v2, HL7 v3 RIM. CDA, and SNOMED- and at the use of those standards in national regulations and industry-wide efforts such as IHE. Students will gain experience in navigating through standards documents and tools. Students will utilize the skills and knowledge gained to design a standards-based interoperability project addressing a real-world need.

BMI 617 Organizational Behavior & Management (3 cr.)
Nearly everything that is accomplished in our society is done through the efforts of groups and organizations. Organizations are comprised of individuals. Therefore, the most important functions of managers in an organization include understanding and motivating individuals and organizing structural systems within which they can work in a productive manner. The field of Organizational Behavior deals with these issues. This course will consider the issues as they relate to informatics in healthcare at three levels: The Individual, The Group, and The Organization.

BMI 618 Project Management (3 cr.)
This course introduces informatics students to the profession and practice of traditional project management. It exposes learners to the concepts, tools, and techniques project managers use to define, plan, control, and close projects, with attention given to the development of both individual and team skills.

BMI 619 The Business of Healthcare Informatics (3 cr.)
This course is designed to provide the health informatics student an overview of the business practices related to the operational informatics environment. It exposes the learner to the practices whereby a health care organization sets IT goals and objectives, designs and implements IT solutions, manages the IT function and organization, and develops IT capital and operating budgets.

At its highest level, the course answers the question "what do clinical informaticians need to know about the business of health care delivery to make them effective in their professional careers?"

BMI 620 Consumer Health Informatics (3 cr.)
Consumer Health Informatics focuses on the intersection between consumers, information technologies and health care. It explores the design, use and impact of technologies that aim to engage consumers to participate in their health and health care. Concepts included arise from various informatics disciplines such as health communication, behavioral science, quality improvement, psychology and public health. We will review opportunities and challenges in consumer health information technology, from perspectives of various stakeholders including patients, caregivers and health professionals. Topics include: trends; information quality; access and usage; barriers and opportunities for clinical integration; role of peers online and caregivers; tools for prevention and chronic illness care, and emerging health IT.

BMI 621 Public Health Informatics (3 cr.)
Recent events underscore the need for a strong public health information infrastructure. Public Health Informatics is the study of how public health information is generated, collected, transferred, and shared. This course is designed to introduce both biomedical informatics and public health students to public health informatics. Course topics will include the information needs of public health professionals; barriers and requirements of a public health information infrastructure; data and process standards; electronic health records; electronic data exchange, including security issues; data registries and sources; evidence-based public health and community health assessment; public health informatics tools, such as GIS; public health reporting and surveillance, including communicable disease, environmental, syndromic, and bioterrorism surveillance.

BMI 623 Clinical Research Informatics (3 cr.)
This online, synchronous class will introduce the student to the principles of clinical research informatics. Topics include the design of clinical research, clinical trial administration, good clinical data management, clinical trial registration and publication, subject recruitment, use of administrative databases, registries and electronic health records in

research, practice-based research networks, standards in terminology and messaging for clinical research, and research collaboration. Course activities will consist of readings of primary and summary literature, weekly graded assignments and activities, and a required face-to-face or video conferencing discussion once per week. Doctoral students will have an additional term paper required.

BMI 624 Analytics for Healthcare (3 cr.)
This course focuses on real world use of analytics in healthcare settings. While analytics can take many forms, we primarily focus on the use of this framework to advance the goals of healthcare organizations. We attempt to cover the process, infrastructure needs, tools, skills, organization, people and governance to effectively perform this work in a healthcare organization. We do not focus on particular methodologies and therefore our course should be considered 'non-technical'. Instead, we provide a broad overview of the field with exposure to several common tools and software packages.

BMI 625 Principles and Practices of Data Visualization (3 cr.)
This course will give students a foundation in the principles of data visualization, particularly as applied to scientific and technical data, as well as provide students with hands-on experience using modern software tools for developing visualizations. Lecture topics will include an overview of visual perception, color theory and practice, different types of graphs and their purposes, visualizations for specialized forms of data including time-series and geospatial data sets, strategies for working with multidimensional data, etc. There will also be lecture content on ethical issues surrounding data visualization. Weekly lab sessions will introduce students to popular data visualization tools such as R's ggplot and Shiny, Tableau, etc.

BMI 627 Applied Data Science and Machine Learning (3 cr.)
This course is an overview of the application of data science, machine learning, and artificial intelligence in health care settings. Students will be introduced to a wide range of machine learning topics, including identifying health care issues that can be addressed with machine learning solutions, machine learning model development and data source identification, machine learning model implementation, critical appraisal of machine learning literature, and ethical considerations for the application of machine learning and artificial intelligence in health care. Students will also identify an issue in health and develop their own machine learning model to address this issue.

BMI 630 The Practice of Health Care (3 cr.)
This course introduces the medical informatics student to the clinical practice of healthcare, including:

- The underlying biology and manifestations of selected disease states;
- The information-gathering and reasoning processes used to detect, understand, and treat diseases;
- The health professionals who provide and support care;
- The clinical settings in which care takes place.

The objective is to enable non-clinicians to understand the context, the vocabulary, and some of the challenges for supporting clinical work in real settings with informatics tools.

BMI 631 Probability & Statistical Inference (3 cr.)
This course will introduce fundamental concepts underlying statistical data display, analysis, inference and statistical decision making. The topics include presentation and description of data, basic concepts of probability, Bayes theorem, discrete and continuous probability distributions, estimation, sampling distributions, classical tests of hypotheses on means, variances and proportions, maximum likelihood estimation, Bayesian inference and estimation, linear models, examples of nonlinear models and introduction to simple experimental designs. One of the key notions underlying this course is the role of mathematical modeling in science and engineering with a particular focus on the need for an understanding of variability and uncertainty. Examples are chosen from a wide range of engineering, clinical and social domains.

BMI 635 Management & Processing of Large Scale Data (3 cr.)
The goal of this course is to provide an introduction to the data management and data processing applications available for large scale data, with a focus on biomedical data. Utilizing samples from the 1000 Genomes Project, this course will provide hands-on experience managing and processing large scale biomedical data. Topics covered include SQL, NoSQL, distributed file systems and parallel computing.

BMI 636 Evidence-Based Medicine (3 cr.)
This hybrid course provides a rigorous introduction to the principles of evidence-based medicine (EBM). It begins with an overview of how to frame an answerable clinical question and then find the best evidence to answer it. The major categories of questions that arise in clinical practice - treatment, diagnosis, harm (etiology), and prognosis - are each covered, with instruction on what is the best type of evidence to answer questions, how to find that evidence, and how to apply it to a given patient. This is followed by units on summarizing evidence (e.g., through systematic reviews and meta-analysis), putting evidence into practice (e.g., implementing clinical practice guidelines), and the limitations of the EBM approach. Some pre-campus coursework is required.

BMI 637 Healthcare Quality (3 cr.)
This course covers methods for measuring, managing and improving the quality of health care. A general overview of the health care system in the United States and beyond is followed by the quality challenges and issues in these systems. Students are also taught the principles of quality improvement and are expected to be able to apply them in practical settings. Current national efforts in performance measures, financial incentives and quality are also covered. The hybrid version of the course includes pre-campus reading assignments (see hybrid syllabus for details).

BMI 638 Medical Decision Making (2-3 cr.)
This course introduces the student to decision analysis (modeling of decisions). Given uncertain information and limited resources, students will learn to model uncertainty and expected outcomes of various decisions. Course will cover Bayesian theory, decision trees, patient utilities, quality of life and cost related to health outcomes. Students will apply decision analysis techniques in addressing real world problems using software (by TreeAge, Inc.) and participate in online discussion of decision analyses in the medical literature.

BMI 639A Deep Learning I (3 cr.)
Deep neural networks (DNNs) have recently demonstrated superiority to other machine learning techniques in a variety of tasks ranging from speech recognition and natural language processing to computer vision. This course covers a number of topics in machine learning with a specific focus on deep neural networks (DNNs) including model capacity, regularization, overview of optimization techniques, perceptron algorithm and multi-layer perceptron, feed-forward neural networks, convolutional networks, and sequence-to-sequence models. The topics are purposely chosen to cover all the background material that students need to effectively train DNNs through supervised techniques in their research problems. The course will also draw from applications in speech and language processing. Recommended background of this course includes programming proficiency in Python or Matlab, enough knowledge of calculus, linear algebra and probability theory. The course will be a combination of Introductory lectures and a few toy examples in Python. The course also requires a final project of interest to students chosen in consultation with the instructor. The project requires a written report and a final presentation.

BMI 639B Deep Learning II (3 cr.)
This course will cover two areas of deep learning in which labeled data is not required: Deep Generative Models and Unsupervised Learning. Recent advances in generative models have made it possible to realistically model high-dimensional raw data such as natural images, audio waveforms and text corpora. Topics include energy-based models (e.g., restricted Boltzmann machines), autoencoders, variational autoencoders, generative adversarial networks, in addition to a brief overview on elements of Bayesian inference including Monte Carlo techniques (e.g., Gibbs sampling and Metropolis-Hasting) and variational inference. This course will cover the theoretical foundations of these topics as well as their newly enabled applications. Students will learn how to effectively train deep models through unsupervised techniques, and will enable them to employ deep models in their research problems. The course will also draw from applications in speech and language processing. This is a second course in the sequence of “deep learning” topics and only those who have previously taken the “Deep Learning I” are encouraged to take this class. The course will be a combination of Introductory lectures, a few toy examples in Python, reading discussions in which students will take turns presenting papers and will be responsible for up to 2 papers. The course also requires a final project of interest to students chosen in consultation with the instructor. The project requires a written report and a final presentation.

BMI 640 Computer Science & Programming for Clinical Info (3 cr.)
This course provides an introduction to computer science and programming demonstrated through the Python programming language. In addition, the course includes the presentation of computer science principles, including spreadsheets, representation and storage of data, architecture, operating systems, and algorithms. The goal of this class is to expose clinical informatics students to programming in Python for common data manipulation and analysis tasks.

BMI 643 Machine Learning (3 cr.)
This course provides a broad introduction to techniques for building computer systems that improve through experience. It provides both conceptual grounding and practical experience with several learning systems. The course provides grounding for advanced study in statistical learning methods, and for work with adaptive technologies used in speech and image processing, robotic planning and control, diagnostic systems, complex system modeling, and iterative optimization. Topics include: learning paradigms and concept learning, decision trees, artificial neural networks, statistical sampling and empirical error estimation, Bayesian learning (including an introduction to belief networks), clustering, principal and independent component analysis, generalization theory, memory-based (instance) techniques, evolutionary computation, and reinforcement learning. Students will gain practical experience implementing and evaluating systems applied to pattern recognition, prediction, and optimization problems.

BMI 644 Databases (3 cr.)
An in-depth look at databases and database management systems. Topics covered will include data modeling, hierarchical and relational databases, query languages (SQL), database optimization, and OLAP and data warehousing.

BMI 646 Software Engineering (3 cr.)
This course covers the basic principles of software engineering geared towards providing students with a solid understanding of the process of producing quality software systems on time and on budget. The main activities in software process models are covered in detail, including: proposal creation, requirements gathering and specification, architecture design, software development methodologies, verification and testing, quality management and maintenance. Students will be expected to demonstrate their mastery of the material by the creation of written documentation for several of these main activities on a hypothetical software project of their choice, as well as by answering homework questions based on assigned reading and passing written exams.

BMI 648 Human Computer Interaction (3 cr.)
This course will provide an overview of the principles and tools of HCI design and evaluation techniques. It will consist of 6 weeks of online lectures, directed readings, discussions and term project milestones. The online portion will be followed by one week on campus and the completion of the term project. The on-campus portion of the course will include lectures, hands on usability activities and time for working on the class project.

BMI 650 Bioinformatics & Computational Biomedicine I: Algorithms (4 cr.)
The course will be a problem-driven examination of the algorithmic and quantitative issues in computational biology. The course assumes basic background in algorithms. The emphasis is on algorithm development and application to biological problems, particularly those from multi-omics studies. This will enable the student to evaluate algorithms, as well as assess computational considerations for development and implementation. Topics include: global and local alignment, Scoring functions, suffix trees, Next Generation Sequencing Algorithms, Genome Alignment, Database search, Phylogeny, Multiple sequence alignment, motif finding, and genome rearrangements.

BMI 651 Bioinformatics & Computational Biomedicine II: Statistical Methods (4 cr.)
This course will be a problem-driven examination of the quantitative issues in computational biology. The course will provide students with the statistical fundamentals underlying the techniques covered. Topics will include applications involving MCMC Models, Maximum Likelihood, Random Walks, Hidden Markov Models, Estimating Genealogical Relationships and Networks. Students will be evaluated on written assignments and a programming project.

BMI 652A Research in Bioinformatics & Computational Biomedicine (1 cr.)
The Research in Bioinformatics course is designed to give students a foundation in general research approaches with specific application to bioinformatics, computational biology, and clinical informatics. This is the first in a two-part course, with the second part of the course being taken in the Spring. This course will focus on developing the critical thinking and evaluation skills necessary to be successful in the field. Special emphasis will be placed on critical evaluation of the literature, and preparing to do a project in the Spring term course.

BMI 652B Research in Bioinformatics & Computational Biomedicine (1 cr.)
The Research in Bioinformatics course is designed to give students (Masters, Ph.D., and fellows) a foundation in general research approaches with specific application to bioinformatics and medical informatics. This is the second of a two-part course which will focus on developing the critical thinking and evaluation skills necessary to be successful in this field. The emphasis this term will be on executing an informatics project and preparing a Specific Aims page using the skills developed during the first part of the course.

BMI 653 Readings in Bioinformatics & Computational Biomedicine (1 cr.)
This is a seminar style course requiring significant student participation and will address new and emerging technologies and/ or methodologies.

BMI 654 Mentored Teaching Prep (1-2 cr.)
Development of contract with mentor for teaching experience. Decisions will be made regarding lectures, deadlines, scope and topics to be covered. Prepare lesson plans, course materials with Mentor (syllabus, calendar, lectures).

BMI 655 Mentored Teaching (6-12 cr.)
Students teach a subject area course under the mentorship of a faculty member.

BMI 657 Symposium (3 cr.)
State-of-the-art literature synthesis in an area of research from which the student will be questioned and graded during a student symposium. Student symposia will be scheduled during several weeks during the quarter and each student presentation can last no longer than 20 minutes.

BMI 659 Genetics for Computational Biologists (3 cr.)
This course is designed for students with a mathematical/computational background needing an in-depth discussion of the genetic concepts underlying current experimental methods. Emphasis will be given to the genomic level techniques, data representations and the integration of the data types with the biology. Prior molecular biology or genetic knowledge is not needed or assumed. The foundation and principles of molecular genetics and population genetics will be presented in the context of data intensive techniques used to study genetic problems. The course will also address challenges that are faced in computational genetics by the need for standardization of data capture and communication, organization of easily accessible repositories, and algorithms for integrated analysis based on heterogeneous sources of information. There is a central emphasis throughout the course on scientific communication with regard to presenting results, public education and outreach.

BMI 660 Design & Evaluation in Health Informatics (3 cr.)
Research and development projects in the broad field of biomedical informatics can take many forms, from field studies that improve understanding of the tasks and information needs of users, to development projects that design, build, and deploy information systems, to studies that assess the impact of information systems on health care processes and outcomes. This course provides an overview of the concepts, vocabularies, and strategies needed to design and evaluate projects in biomedical informatics, including a breadth of methodologies drawn from qualitative research, quantitative research, and software engineering.

BMI 661 Qualitative Research Methods (3 cr.)
Qualitative research methods are used to address the "why, what, and how" questions that are hard to answer with quantitative methods and yet are so important to answer in medical informatics. Informaticians who evaluate systems or conduct research within organizations will find this course a useful foundation when considering data gathering and analysis options.

BMI 662 Quantitative Research Methods (3 cr.)
This course reviews a variety of study designs used in biomedical informatics and outcomes research. These include experimental designs (completely randomized designs, randomized block designs, nested designs, two-way factorial designs, crossover designs, and repeated measures models), observational study designs (cohort designs, case/control designs, cross-sectional designs) and prediction designs (with both linear and logistic regression approaches). For each study design, appropriate statistical analyses and use of statistical software (SPSS) will also be covered. Estimation of statistical power and required sample sizes for various study designs will be discussed.

BMI 665 Bioinformatics Programming & Scripting (3 cr.)
The purpose of this course is to equip research scientists with computational skills necessary to create and automate tools to analyze biological data. The course is divided into four sub-topics: Python programming, scripting in Unix/Linux, the BioPython library, and computational workflows. Python will be used to solve simple to sophisticated programming problems and to review general programming language paradigms such as problem abstraction, data types, file I/O, iteration, functions, and objects. There will also be an emphasis on writing Unix/Linux operating system shell scripts to automate repetitive tasks and connect multiple bioinformatics tools using files and pipes. In addition, students will learn to access public repositories to perform basic bioinformatics tasks such as annotating gene products, sequence searching, and functional queries. This course is designed to be a first-year requirement for students in the Bioinformatics and Computational Biology graduate program in Biomedical Informatics.

BMI 667 Network Science & Biology (3 cr.)
Networks are everywhere: the Internet, social networks, epidemiological networks, protein-interaction networks, gene regulatory networks, etc. This course will introduce students to basic concepts shared by many different kinds of networks, with focus on biological networks as examples. Students will learn how to program against networks, search for patterns hidden in networks, and visualize networks generated from real biological data sets. After this course, students will be expected to think in a network way and have basic concepts and skills to analyze network data in order to untangle the complexity of networks. For PhD students, they will be asked to apply learned concepts and skills into their own research fields by working on course projects related to their own work.

BMI 669 Data Analytics (3 cr.)
Data Analytics is an applied hybrid course that introduces the concepts of the data analytics life cycle through the implementation of a quality metric. Through this implementation, we explore the role of analysts and analytics in healthcare organizations. This hybrid course will consist of eight weeks of directed readings with online discussions, hands-on use of analytical tools for data extraction, data cleaning and analysis and an on-campus portion. The on-campus portion will consist of lectures, guest speakers, and hands-on lab sessions in R and SQL. This will be an applied course that introduces the concepts of the data analytics lifecycle.

BMI 670 Scientific Writing & Communication for Informatics Students (3 cr.)

The focus of this course is scientific writing and communication. Students will prepare abstracts, papers and slides as well as learn about writing theses and capstones, scientific journal articles, and grant proposals. Topics will also include bibliographic database searching and presentations and posters for scientific meetings.

BMI 676 Managing Ethics in Biomedical Informatics (3 cr.)
The goal of this course is to introduce and sensitize students to the ethical, legal, and social issues arising in the use of electronic uses of data. Students will become familiar with managing and implementing legal and regulatory requirements mandated by HIPAA rules, as well as developing and implementing organization wide HIPAA-related policies and training programs. Topics will include the theories and models for critical thinking in ethical decision-making, federal rules and regulations related to ethical issues in health care.

BMSC 601 Research (1-16 cr.)
This course covers rotation research (4-week long) and pre-qualifying exam research. Rotation research is supervised and graded by PBMS academic mentors, whereas pre-qualifying exam research is supervised and graded by research mentors. Research topics are varied and will depend on a specific laboratory.

BMSC 603 Dissertation (1-16 cr.)
Dissertation research

BMSC 607 PBMS Seminar Series (0.5 cr.)
Cross-Departmental Seminar Series. This 0.5 credit course is required for all first-year PBMS students during winter term. This seminar series includes all hub specific/departmental seminars. Students should attend the seminars that are most relevant to their current lab rotation. Attendance is mandatory, students are required to attend a minimum of 5 seminars to maintain a passing grade. Student attendance will be monitored at each session by requiring each student to legibly print their name on the attendance roster.

BMSC 610 Data Rigor & Reproducibility (1 cr.)
This course provides students with knowledge about the integral components of and practices that impact scientific rigor and reproducibility. Through class discussions, exercises, and reading students will learn to understand, identify, and apply methods and practices that contribute to rigor and reproducibility, as well recognize digital tools and OHSU resources for reproducible research. This class is organized in 8 modules: 1. Introduction and Lack of Transparency, 2. Blinding and Randomization, 3. Biological and Technical Replicates, 4. Sample Size, Outliers, and Exclusion Criteria, 5. Research Data Management, 6. Reproducibility Tools, 7. Publishing Data, 8. OHSU Resources for Reproducible Research.

BMSC 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

BMSC 611 Introductory Scientific Writing (1 cr.)
Students will learn and practice the conventions of scientific writing through a variety of discussions, exercises and assignments. Students will learn how to effectively convey their message, as well as review the basics of literature searching and citation management, and examine editing and peer review processes.

BMSC 612 Writing a Fellowship Proposal (1 cr.)
Students will learn and practice the conventions of scientific writing of an NRSA style proposal, with an emphasis on specific aims and research training plan components. The class will combine lectures, workshops and one-on-one instruction. There will be two lectures, one on Specific Aims and another one Research Training plan. The lectures will be followed by two-hour workshops where students will review and comment on one another's specific aims and research plans. The remaining time will be spent on one-on-one consultations with the course directors.

BMSC 620 Introduction to Biostatistics (3 cr.)
This course will teach how to gain and communicate insights from biomedical data. Concepts learned will include data wrangling, exploratory data analysis and visualization, statistical inference with a simulation-based resampling focus, power analyses, and linear regression modelling. Students will learn how to implement the statistical programming language R throughout the research pipeline: importing, wrangling, visualizing, analyzing, interpreting, and communicating data. In addition, students will learn to create and maintain efficient workflows for reproducible research.

Modern teaching materials will be used to introduce and reinforce R skills in an interactive self-guided environment, and through online resources.

BMSC 621 Searching & Information Management (1 cr.)
This course provides students with functional knowledge of information searching and information management in the sciences through a critical framework. Students will develop their abilities to identify the need for information, procure the information, evaluate the information, and subsequently revise their strategy for obtaining the information. Students will learn how to search database and non-database sources such as PubMed and other NCBI tools, Scopus, and grey literature to find information. They will also learn to use the information they find in an ethical and legal manner, engage in best practices for information management (e.g. using

citation management software), and cultivate a mindset of lifelong learning related to information literacy. This course encourages students to be critically reflective in every stage of the information research cycle as they recognize that the information tools and systems they use in their everyday and academic lives are not neutral -- that existing power structures are reflected in the creation, organization, and access of information. Through class discussions, exercises, readings, and assignments, students will develop their own critical research praxis to become better researchers and information consumers.

BMSC 622 Scientific Posters (1 cr.)
This course provides students with the skills and knowledge to create posters for presentations at academic and scientific conferences. Through class discussions, exercises and readings, students will learn to understand, identify, and apply methods and practices that contribute to high-quality, well organized and visually stimulating posters. Students will also be introduced to opportunities and best practices for publishing and citing their conference contributions as well as digital tools and OHSU resources for effective poster design, production and sharing.

BMSC 630 Professional Practicum (1-9 cr.)
Practicum or internship experience in biomedical organizations. Examples include PNNL, OHSU Tech Transfer, supervised guest lectures at other institutions. Application of principles and skills in biomedical sciences to real situations under the guidance of professionals in the field. Arrangements for suitable sites/experiences will be made in consultation with the student's research mentor and academic mentor.

BMSC 631 Professional Experience (1-4 cr.)
Participation in an intensive advanced learning experience offered by biomedical societies, not for profit organizations, or institutes. Examples include Cold Spring Harbor Laboratories Workshops/Courses, American Association of Immunologists Advanced Course. Arrangements for suitable experiences will be made in consultation with the student's research mentor and academic mentor.

BMSC 660 Short scientific talks (1 cr.)
This course covers presentation skills for scientific talks, including how to structure presentations, how to create effective slides and other visual aids, speaking skills, timing of talks and "commanding the room".

BMSC 661 Structure & Function of Biological Molecules (3 cr.)
This course is designed to provide students with an in depth understanding of macromolecular structure/function including: 1) protein structure; 2) thermodynamic considerations of protein folding; 3) nucleic acid structure and topology; 4) the functions of proteins as enzymes and in macromolecular assembly, including quantitative analyses of ligand binding phenomena and enzyme kinetics; 5) structural and biochemical properties of lipids, membrane assembly and dynamics, and characteristics of membrane proteins; 6) the principles of bioenergetics and metabolism.

BMSC 662 Genetic Mechanisms & Bioregulation (3 cr.)
This course is designed to provide students with a deeper understanding of genetic mechanisms, inheritance and gene regulation. The course is divided into four parts with one exam following each part (4 exams in total). Part I will focus on DNA replication, transcription, RNA processing, and translation; Part II will cover mutagenesis, recombination, DNA repair, genome architecture and human genetics; Part III will include lectures on chromatin structure, DNA methylation, epigenetics and non-coding RNAs; Part IV will cover the widely used genetic model organisms, such as bacteria, Drosophila and mouse, as well as genome editing and system biology. The material will primarily be presented by lectures with weekly lecture review and group discussion sessions. Prerequisites: Undergraduate genetics and biology or equivalent.

BMSC 663 Molecular & Cell Biology (3 cr.)
The goal of this course is to provide students with a foundational understanding of cell biology that will accelerate their future scientific endeavors as well as introduce them to cutting edge areas of cell biological research. Topics to include: movement of molecules within cells by vesicular and cytoskeletal transport, protein modification and degradation, cellular organelles, cellular adhesion, cellular signaling and communication, and the regulation of cell division and death.

BMSC 664 Research Models & Methods (2 cr.)
The goal of this course is to provide students with a fundamental knowledge of basic methods in biochemistry, cell, and molecular biology. Students will learn how these methods are uniquely deployed in prominent model organisms to address specific biological questions. Lecture topics will be temporally correlated as closely as possible with BMSC663 to facilitate understanding of the primary literature. The course will discuss methods related to DNA/RNA manipulation and analysis; protein expression, purification, and analysis; and in vitro techniques such as cell culture and sorting. The biology of six prominent model systems will be presented along with a discussion of the ethical use of animals in biomedical research. Students will further develop oral communication skills by moderating class discussions.

BMSC 665 Scientific Logic (3 cr.)

The goal of this course is to provide students with the analytical, critical thinking, presentation, and communication skills to effectively select and present journal articles.

BMSC 666 Chemical Biology Innovators (2 cr.)
The 2-credit (6 week; 4 h/week) course will provide a broad overview of the field of chemical biology. The focus will be on chemistry-mediated innovations that enable new biological discoveries. Topics will include: I. Lighting up Biology (GFP, small molecule probes); II. Analyzing enzyme classes (activity-based protein profiling); III. Metabolic engineering (bioorthogonal chemistry, unnatural amino acids); IV. Imparting new functions on proteins (directed evolution); V. Controlling enzymes (Photopharmacology, PROTAC) and VI. Chemical Genetics. Each lecture will highlight a leader in the field and her/his seminal papers. Grades will be based on: Course participation (25%); Paper reviews/commentaries (40%); Pre-proposal pitch (5%); Original research proposal (25%); presentation of proposal (5%).

BMSC 667 Principles of Physiology (2 cr.)
This course provides an introduction to mammalian physiology, with an emphasis on the roles and functions of major organs. During this course, the student is expected to gain a better understanding of the interplay and communication that coordinates cells into organ systems. Organ systems covered include the nervous system, endocrine, cardiovascular, and digestive systems. Lectures will emphasize maintenance of physiological homeostasis under normal conditions, and its dysregulation in diseases such as asthma, hypertension, and diabetes will be discussed.

BMSC 668 Molecular Biophysics & Structural Bioinformatics (2 cr.)
This course will cover the range of research using problem-based approaches. The goal is to expose the student to principles and concepts underlying physical and computational methods used in modern molecular and biological research. The course is specifically designed to be accessible to students lacking a strong background in computation methods, physical chemistry or calculus. Overall focus is placed on understanding general, key concepts, rather than the latest, most cutting-edge specific applications.

Topics include: Structural bioinformatics: theory of key bioinformatics tools and algorithms, their applications towards databases, data analysis and mining, alignments, 3-D structure prediction/visualization and genome analysis. Theory and application of genetic and proteomic approaches to analyze protein expression and modifications using high-throughput methods are also covered.

BMSC 669 Fundamentals of Immunology (2 cr.)
Students completing this course will understand the fundamentals of immunology. After this course, students will be able to describe the underpinnings of innate and adaptive immunity. The course will introduce students to central concepts in immunology including immune responses to pathogens, allergies and hypersensitivity reactions, autoimmunity and anti-tumor responses.

CANB 503 Thesis (1-9 cr.)
Research-based course used for thesis preparation work.

CANB 601 Research (1-16 cr.)
This is independent research carried out in the laboratory of a Cancer Biology Faculty

CANB 603 Dissertation (1-16 cr.)
This is a Dissertation course

CANB 606 Mechanisms of Cancer Journal Club (1-8 cr.)
This course introduces students to the critical analysis of original research articles in Cancer Biology. Papers will be analyzed in terms of background, hypothesis, appropriate use of experimental methods, and objective interpretations of results. Covers a wide range of papers in biophysics, biochemistry, genetics, immunology, cell and biology, and pharmacology with an emphasis on seminal discoveries in cancer.

CANB 606A Tumor Microenvironment Journal Club (1 cr.)
The goal of the Tumor Micro-Environment Journal Club is to critically review manuscripts emerging in the field of tumor microenvironment. Students, postdocs, staff and faculty will present manuscripts that explore how changes in tissue structure and function potentiate malignant conversion and progression. This includes but is not limited to angiogenesis/lymphangiogenesis, matrix remodeling and fibroblast activation, tumor-associated inflammation and immunity, metastatic niche development and maintenance, tumor/stromal interactions.

New features:
1. JC2.0 format in which single experiments from 3-5 papers are collected together to formulate hypotheses (optional)
2. Presenter polling audience about the paper under discussion (required)
3. Presenter including Altmetrics outputs during discussion of impact (required)

CANB 606C Basic and Translational Science Journal Club (1 cr.)
The Basic and Translational Science (BTS) Journal Club is held prior to each BTS series seminar and focuses on a recent publication from the upcoming speaker. The BTS series seminar features leading extramural scientists speaking on

fundamental and translational research topics. The goal of the journal club is to familiarize students with the scientific contributions of the speaker and introduce them to the research topic that will be highlighted in the seminar. The format and expectations of the journal club will include all students reading the assigned publication as well as being prepared to explain the paper figures.

CANB 607 Cancer Biology Seminar Series (1 cr.)
This is a weekly seminar series, with presentations by external and internal cancer biologists that introduces students to new cutting-edge cancer research performed in preeminent labs around the country.

CANB 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

CANB 613A Tissue Biology (4 cr.)
The first half of the course will be devoted to the teaching of basic histology. This will be accomplished in two parts: 1) through online video lectures, which the students will view independently outside of scheduled class time; and 2) through scheduled classes (labs) in which students observe digital slides, guided by written lab exercises. One or more faculty will be present during the lab classes. The faculty will provide an overview of the slides, address questions the students may have as they study the slides themselves, and address general questions about the on-line lecture material. These 1.5 hour "labs" are intended to be highly interactive. The second part of the course will be devoted to the critical reading and discussion of research papers. This part of the course will be thematic and change from year-to-year. The intent is for students to use the background information they acquired during the first half of the course to understand current literature that is at the cutting edge of tissue biology, particularly in the mouse system. Potential themes would be "tissue homeostasis and stem cells", "organogenesis", "physiology", or "novel approaches". The second part of the course-critical reading and discussion of papers-will be offered as a stand-alone "tissue biology" journal club that student can take for 1 credit year after year.

CANB 616 Advanced Topics in Cancer Biology (4 cr.)
This course is designed to give students entering cancer research a broad background in cancer biology. The course is divided into three main sections, as follows:

I) Basic Cancer Biology and Mechanisms. Topics include discovery of oncogenes and tumor suppressor genes and their functions; mechanisms of cancer initiation; role of the immune system in cancer; role of the microenvironment in cancer; metastasis; stem cells; cancer cachexia.
II) Technology in Cancer Research and Treatment. Topics include next generation sequencing in research and diagnosis; predictive gene signatures; radiation treatment; MRI; genetic manipulation of model systems; targeted therapeutics and clinical trials
III) Organ Specific Cancer Incidence, Characteristics, and Treatment. Lectures in this section will cover the pathogenesis and treatment of specific cancers such as breast, prostate, gastrointestinal, skin, and blood tumors.

The course will also have several special sections, including a series of basic pathology lectures and a project, grand rounds participation and presentation to the class, and physician shadowing to gain perspectives into current treatment options and shortcomings for patients with cancer. Note: physician shadowing will be cancelled for the Spring 2020 class due to Covid-19 concerns.

CANB 617 Drug Discovery and Development (2 cr.)
This course will provide students with an introduction to key preclinical stages of the drug discovery process, from target identification and validation, through assay development, high throughput screening, hit identification, pharmacokinetics and finally selection of candidate molecules for clinical development.

CANB 622 Advanced Topics in Genome Sciences (3 cr.)
This course is designed to provide in-depth coverage of topics in Genome Sciences such as the use of genetic systems to probe complex problems, genetic approaches to identify novel genotype-phenotype associations, molecular genetics, single-cell profiling, CRISPR/cas9 editing, and quantitative genetics. Focus areas may include gene regulatory mechanisms and genome regulation underlying development, regeneration, degeneration, stem cell fitness, cancer evolution, and cancer predisposition syndromes. Emphasis will be on recent insights and emerging technologies. Readings will be based on selected reviews and articles from the current literature. Interactive discussions will involve critical analyses of recent research papers.

CANB 695 Topics in Quantitative and Experimental Cancer Biology (1 cr.)
This course provides formal instruction and mentoring in both 'wet' and 'dry' techniques in cancer biology, as well as professional development. The course covers computational techniques, complementary wet-lab cancer biology approaches, and their integration using a mixture of didactic teaching, journal club sessions, trainee research presentations, and structured discussions. Specific topics will be geared toward current trainee needs.

CELL 503 Master's Thesis (1-16 cr.)
This is a Master's Thesis course

CELL 601 Research (1-16 cr.)
This is a Research course

CELL 603 Dissertation (1-16 cr.)
This is a Dissertation course

CELL 605 Reading and Conference (1-5 cr.)
Reading and conference

CELL 606 Journal Club (1-8 cr.)
This is a Journal Club course

CELL 607 Seminar (1 cr.)
Seminar

CELL 607A Departmental Seminar Series (1 cr.)
Departmental Seminar Series, after 1st year, all CDB students are required to enroll in and attend throughout their graduate training, which includes the Basic and Translational Sciences Seminar Series. Attendance is mandatory. Students who fail to maintain a passing grade in this course will be placed on immediate probation. Students in their second year of graduate training are required to participate in a pre-seminar journal club, during which students will discuss selected papers by outside speakers. This journal club will be organized by the course director. Students who have completed their Qualifying Examinations will be required to give a 30-minute presentation each year on their dissertation research. In general, students will give their first presentation in the spring term of their 3rd year, and will continue to give subsequent presentations annually throughout their graduate training. Students will receive oral and written critiques from participating faculty to help improve their presentation skills.

CELL 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

CELL 613A Tissue Biology (4 cr.)
The first half of the course will be devoted to the teaching of basic histology. This will be accomplished in two parts: 1) through online video lectures, which the students will view independently outside of scheduled class time; and 2) through scheduled classes (labs) in which students observe digital slides, guided by written lab exercises. One or more faculty will be present during the lab classes. The faculty will provide an overview of the slides, address questions the students may have as they study the slides themselves, and address general questions about the on-line lecture material. These 1.5 hour "labs" are intended to be highly interactive. The second part of the course will be devoted to the critical reading and discussion of research papers. This part of the course will be thematic and change from year-to-year. The intent is for students to use the background information they acquired during the first half of the course to understand current literature that is at the cutting edge of tissue biology, particularly in the mouse system. Potential themes would be "tissue homeostasis and stem cells", "organogenesis", "physiology", or "novel approaches". The second part of the course-critical reading and discussion of papers-will be offered as a stand-alone "tissue biology" journal club that student can take for 1 credit year after year.

CELL 615 Advanced Topics in Developmental Neuroscience (3 cr.)
Advanced graduate course designed to provide an overview of the major aspects of nervous system formation, plus more in-depth presentations of specific topics in the field of neural development and differentiation. Emphasis will be on recent insights into the molecular and cellular mechanisms that underlie specific aspects of neural development, including pattering of the early nervous system, neurogenesis, neuronal migration and axonal outgrowth, synaptogenesis and plasticity, cell death, and neural stem cells in regeneration. Readings will be based on selected reviews and articles from the current literature. Interactive discussion sections will involve critical analyses of recent research papers.

CELL 616 Advanced Topics in Cancer Biology (4 cr.)
This course is designed to give students entering cancer research a broad background in cancer biology. The course is divided into three main sections, as follows:

I) Basic Cancer Biology and Mechanisms. Topics include discovery of oncogenes and tumor suppressor genes and their functions; mechanisms of cancer initiation; role of the immune system in cancer; role of the microenvironment in cancer; metastasis; stem cells; cancer cachexia.
II) Technology in Cancer Research and Treatment. Topics include next generation sequencing in research and diagnosis; predictive gene signatures; radiation treatment; MRI; genetic manipulation of model systems; targeted therapeutics and clinical trials
III) Organ Specific Cancer Incidence, Characteristics, and Treatment. Lectures in this section will cover the pathogenesis and treatment of specific cancers such as breast, prostate, gastrointestinal, skin, and blood tumors.

CELL 620 Model Systems Biology (3 cr.)
This course provides an introduction to the biology and genetics of the major animal model systems as well as laboratory demonstrations of state-of-the-art techniques. Students will gain a solid understanding of how mice, zebrafish, Xenopus, chickens, and flies are used as tools to study key cell and molecular biology problems. This will help

students better interpret the results of the many papers coming out each day in major journals. This course should also aid in making informed choices of thesis and qualifying exam topics. Grades will be based on student presentations of current topics and a final exam. Students at all levels are encouraged to participate.

CELL 665 Development, Differentiation, and Disease (3 cr.)
Orchestration of development requires precise timing, spatial coordination, and reciprocal signaling between cells to result in proper tissue generation and remodeling. Disruption of these normal cellular homeostatic mechanisms occurs in a number of diseases including cancer and in many cases has led to discoveries about the function of normal genes and interacting signaling pathways in development. In this class, mechanisms of growth and development of higher eukaryotes are covered, including important signaling events, pattern formation and cell movements resulting in the fully differentiated tissues and organisms. Consideration will be given to how stem cell population are positioned and maintained, as well as mechanisms that underlie the maintenance and function of individual tissues in the fully developed organism. Moreover, aberrations in these events are covered relative to their underlying contributions to the etiology and progression of specific disease and cancers.

CONJ 311 Diverse Patient Populations (2 cr.)
A Seminar Series for Health Professions Students. The goal of this seminar series is to provide students with the foundation needed for clinical practice across the aging and developmental spectrum from pediatrics to elderly care. The foundation includes attitudes, knowledge and skills that are needed to provide compassionate care for the changing population, patients with functional impacts and diverse patient groups.

CONJ 312 Introduction to Medical Research & Biostatistics (1 cr.)
Introduce skills needed to interpret medical research. Specific skill areas include maintaining a critical, current and operational knowledge of new medical evidence. An introductory knowledge base for individual research projects will be addressed.

CONJ 412 Medical Law (2 cr.)
Fundamental elements of Medical Law and its implications in the radiologic sciences along with discussion of the legal ramifications of the "Scope of Practice" for radiation therapists. A broad overview of the sources of law, the litigation process and the legal concept of standard of care are covered as they relate to radiation therapy.

CONJ 601 Research Rotation (1-16 cr.)
Students will learn new lab techniques and experimental approaches. Students are expected to spend approximately 20 hours a week engaged in activities to familiarize themselves with research projects and the laboratory environments.

CONJ 606MD MD-PhD Journal Club (0.5 cr.)
MD/PhD students weekly journal club. It is a mixture of faculty presentations and student presented journal club. Topics can range widely based on articles selected. Topic choice is up to the student. Students are expected to have read the article and be able to discuss the presentation in a thoughtful manner. Faculty are invited by the course director to present on their research.

CONJ 607 Seminar (0.5 cr.)
Ethics Seminar

CONJ 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

CONJ 640 Professional Development Fundamentals (1 cr.)
A focused selection of topics to give students a solid foundation to be successful as scientists and leaders. Topics will include: team dynamics, mentor relationships, negotiation, conflict management, basics of grant submission, presentations, writing, time management.

CONJ 664 Molecular Cell Biology (3 cr.)
This course is designed to introduce students to key aspects of cell structure and function as well as the macromolecular components and physiological mechanisms that underlie structure and function of cells. Sessions will focus on recent scientific discoveries involving: i) organelle biogenesis structure and function, ii) intracellular compartmentalization and protein/vesicular transport, iii) cytoskeleton architecture, cell motility and adhesion, iv) mechanisms of membrane transport and excitability, v) molecular mechanisms of signal transduction. In addition to addressing current scientific questions in cell biology, efforts will be made to familiarize students with recent technical advances in molecular, biochemical, microscopic, spectroscopic and electrophysiological techniques that have led to the explosive growth of this field.

CONJ 667 Organ Systems (3 cr.)
This course provides an introduction to mammalian physiology, with an emphasis on the roles and functions of major organs. During this course, the student is expected to gain a better understanding of the interplay and communication that coordinates cells into organ systems. Biological systems including the nervous system,

cardiovascular system, reproductive system, and digestive system will be discussed. Maintenance of physiological homeostasis under normal and abnormal conditions will be discussed, with emphasis on major diseases (e.g. asthma, hypertension, and diabetes).

CONJ 669 Principles of Chemical Biology (3 cr.)
This course is designed to introduce students to the theory and practice of chemical biology—a modern merger of medicinal chemistry and pharmacology. Essential organic chemistry and pharmacology will be discussed. This is then followed by various strategies for designing, discovering, and optimizing small molecules for targeting biological macromolecules as biological probes and/or therapeutics.

CPSY 601 Psychology Graduate Research (1-9 cr.)
Research in clinical psychology under supervision of individual faculty members.

CPSY 603 Psychology Research Dissertation (1-9 cr.)
Mentored work on dissertation literature review, design, methods, data collection, statistical analysis, and write up.

CPSY 604 Psychology Internship (9 cr.)
Intensive clinical immersion work, full-time professional experience.

CPSY 607 Psychology Practicum Seminar (1 cr.)
Group supervision and clinical forum to discuss practice central to clinical care, professional development, and individual differences.

CPSY 609 Psychology Clinical Practicum (1-5 cr.)
A supervised practicum in clinical psychology, clinical field work.

CPSY 610 Abnormal Psychology & Psychopathology I (3 cr.)
Models and theory of psychopathology, history of abnormal psychology, and psychological disorders including the current Diagnostic and Statistical Manual (DSM) and other classification approaches.

CPSY 611 Psychological Intervention I - Clinical Interview (3 cr.)
Topics to be discussed include clinical interviewing, principles of psychotherapy, models of psychotherapy, ethics and methods of evaluating outcomes in clinical contexts.

CPSY 613 Psychological Assessment I - Adult (3 cr.)
The course examines methods used to assess domains of psychological functions in adults. This includes assessment of cognition, behavior, emotions, and personality, with focus on diagnostic assessment and developmental factors.

CPSY 614 Ethical & Legal Considerations in Psychology (1 cr.)
Ethical and legal principles in psychology and their application to clinical and research practices.

CPSY 615 Cultural Considerations & Diversity (1 cr.)
Focuses on the sociocultural contexts and cultural practices that impact and reflect the human experience, with a focus on equity in the practice of psychology with individuals from diverse backgrounds and experiences.

CPSY 616 Advanced Integrative Knowledge in Psychology I (3 cr.)
Integration of neuroscience, biological bases of behavior, and cognitive psychology topics will be covered.

CPSY 620 Abnormal Psychology & Psychopathology II - Advanced Issues (3 cr.)
Complex differential diagnosis, personality, and theory of psychopathology development.

CPSY 621 Psychological Intervention EBT II - Adult (3 cr.)
This course will cover therapeutic interventions and prepare students to utilize evidence based and empirically supported treatments to identify, implement, and maintain effective interventions with adults.

CPSY 623 Psychological Assessment II - Child (3 cr.)
Focus on assessment of domains of psychological functions in children, including evaluation of cognition, behavior, emotions, and personality. The course focuses on diagnostic assessment.

CPSY 626 Advanced Integrative Knowledge in Psychology II (3 cr.)
Understanding how psychological, biological, behavioral, social, developmental, and cultural factors contribute to health and illness. Social psychology perspectives are applied to health psychology and issues surrounding wellness, pain, illness, and medical care.

CPSY 630 Advanced Measurement (3 cr.)
Selected advanced topics in quantitative methods in psychology including psychometrics, research methods and design.

CPSY 631 Psychological Intervention EBT III - Child (3 cr.)
This course focuses on specific evidence-based strategies for child and adolescent disorders. The course will prepare students to utilize empirically based treatments to identify, implement, and maintain effective interventions in children and families.

CPSY 632 Psychology Research Seminar (1 cr.)

Applied work related to the design, execution, and analysis of psychology experiments and writing.

CPSY 640 Psychology Supervision & Consultation (1 cr.)
Theories and methods regarding the provision of supervision and consultation, including a focus on consultation within interprofessional teams.

CPSY 641 Applied Health Statistics I: Descriptive, Associative & Comparative Statistics (4 cr.)
This first course in a 3-course series focuses on a conceptual understanding of analysis and interpretation of descriptive and inferential statistics. Students will develop skills in the performance and interpretation of common statistical tests, including tests of central tendency and dispersion, correlations, chi-square tests, t-tests and analysis of variance, and develop an understanding of when particular tests should be employed. This course will also cover sample size estimation/power calculation procedures for common hypothesis testing. Applying health statistics as part of a logical argument is emphasized as opposed to detailed knowledge of the underlying mathematics.

CPSY 642 Applied Health Statistics II: Generalized Linear Modeling (3 cr.)
This second course in a 3-course series focuses on conceptual understanding of generalized linear modeling. Students will develop skills in the performance and interpretation of techniques such as multivariate linear, logistic, gamma and negative binomial regression, and develop an understanding of when particular approaches should be employed. This course also will cover common functions within generalized linear modeling such as tests of interaction, moderator and mediator, as well as multilevel modeling, handling of complex sampling designs and common approaches to model selection. Applying health statistics as part of a logical argument is emphasized in this course as opposed to detailed knowledge of the underlying mathematics.

CPSY 643 History & Systems of Psychology (1 cr.)
This course intent is to provide students an overview of the historical, societal, scientific and theoretical factors that led to the development of the science of Psychology. In addition to a review of historical milestones, the course will explore the intersection of theory, practice and social trends and how they helped shape modern Psychology.

FSS 500 Food Systems Inquiry (4 cr.)
Provides a foundation for advanced academic engagement and inquiry in food systems and society. Establishes academic skills and graduate-level reading and writing proficiency integral to FSS coursework.

FSS 501 Concepts & Contexts in Food Systems & Society (4 cr.)
Discusses the history, drivers, and context of contemporary food system issues through lenses of class, race-ethnicity, and gender. Reviews the roles of discourse, ideology and epistemology in our understanding and shaping of the food system.

FSS 502 Academic Foundations (1 cr.)
Students attend in-person intensive designed to build a collegial scholar-practitioner community while addressing key concepts in and strategies for improving food system equity. Students will participate in activities and reflect on their experiences and program course work.

FSS 503 Critical Text-based Research (1 cr.)
Students develop critical reading skills and content knowledge through systematic engagement with literature relevant to their research and professional interest in food systems and society.

FSS 504 Capstone Preparation (1 cr.)
Students attend in-person intensive designed to build a collegial scholar-practitioner community while addressing key concepts in and strategies for improving food system equity. Students will participate in activities and reflect on their experiences and program course work.

FSS 505 Scholarly Communication (1 cr.)
Students develop and apply writing and communication skills relevant to their capstone projects and professional goals in food systems and society.

FSS 506 Capstone Completion (1 cr.)
Students attend in-person intensive designed to build a collegial scholar-practitioner community while addressing key concepts in and strategies for improving food system equity. Students will participate in activities and reflect on their experiences and program course work.

FSS 510 Food Policy & Politics (4 cr.)
Discusses the roles of policy and politics in determining who eats, what we eat, and who benefits and loses in the current food system. Examines literature, policy, and practice at various scales, focusing on social justice in the food system.

FSS 511 Food in Culture (4 cr.)
Discusses the role of cultural meanings and practices in food systems through the lenses of cultural studies and social equity. Investigates frameworks, issues and representations of race-ethnicity, class and gender in historical and contemporary food systems. Examines how culture is transmitted and preserved through food, and the ways in which food fosters social connections and divisions.

FSS 520 Food Systems Theory (4 cr.)
Explores theories from multiple disciplinary perspectives that are relevant to scholarship, movements, discourse and practice in food systems. Considers how to effectively apply theory and corresponding analytical frameworks to ask and answer questions about food systems and society.

FSS 550 Social Movements in the Food System (4 cr.)
Examines social movements and strategies for social change in the food system. Explores public, private and nonprofit contexts to illustrate and analyze advocacy and activist strategies used by groups working for social justice and social change.

FSS 560 Economic Justice in Food Systems & Society (4 cr.)
Examine concepts, perspectives and strategies relevant to advancing food system equity and social change. Topics vary from term to term.

FSS 580 Scholarship & Social Change (4 cr.)
Considers the role of scholarship in food system equity and social change. Through presentation and discussion of their research, students learn about a diverse array of topics and approaches as well as develop discursive strategies for engaging complex ideas and themes.

FSS 590 Independent Study (1 cr.)
Arranged course for faculty-guided research in food systems and society. As appropriate to their research, students articulate and refine researchable questions; collect, organize, and analyze data; develop arguments and evidence that address research questions; and develop chapter drafts for review.

FSS 598-A Capstone 1 (4 cr.)
Students define a capstone topic and develop their capstone proposal on a topic relevant to social justice and social change in the food systems.

FSS 598-B Capstone 2 (4 cr.)
Students explore contemporary issues and approaches in food systems equity and continue work on their capstone.

FSS 598-C Capstone 3 (4 cr.)
Students Examine contemporary issues and approaches in food systems equity and complete the Food Systems and Society capstone.

FSS 598-D Capstone Continuation (2 cr.)
Offered to students who do not complete their capstone project in 598-C and require additional capstone advising beyond FSS 598-C. Students may enroll by permission only; may be repeated two times for credit.

HIP 502 Independent Study (1-4 cr.)
This is an Independent Study course

HIP 505 Reading and Conference (1-5 cr.)
This is a Reading and Conference course

HIP 507A Evidence-based Medicine Seminar (0.5-2 cr.)
Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of patients. It is the integration of the results from clinical research and clinical judgment. The evidence-based medicine seminar introduces students to the broad array of clinical research designs used in published studies. Students learn basic approaches to evaluating the validity of various study designs used in published research and identify the advantages and disadvantages of various methods of presenting the results of a study (e.g., relative risk reduction versus absolute risk reduction). As they learn about clinical research design in other courses, the students have the opportunity to immediately apply that knowledge by critically reading recently published studies in the EBM seminar. This module is conducted through small group discussion and caps the learning process from the previous 18 months of HIP courses through critically reading and appraising the literature.

HIP 507B Physician-Scientist Seminar (0.5 cr.)
This twice-monthly seminar will be offered to all medical students interested in a career as a physician-scientist and for PhD students enrolled in the HIP program. Only students active in the MCR will receive credit. Every other session will be a discussion of a journal article of interest in a translational, clinical or population research area or on a topic connecting basic science to translational medicine to present for discussion with the overall objective of exploring and broadening interest in a physician-scientist career path. Students will choose and present the article along with their faculty mentors. On the alternate weeks, invited physician-scientists will give presentations regarding career development.

HIP 509 Systematic Reviews Practicum (1-6 cr.)
This is a Practicum course

HIP 510 Introduction to Clinical Research (1 cr.)
The specific goal of Introduction to Clinical Research is to provide an early education to students in the essential skills and structure of clinical research and in the basic process of building a patient-oriented research study. Discussions will include the essential elements of a career in clinical research, opportunities for obtaining early career funding, and the importance of mentorship. Although didactic methods will be employed, there will also be an emphasis on introducing

available resources to early career investigators. Subsequent courses will build on this foundation in specific areas (biostatistics, clinical research design, translational research, etc.).

HIP 511 Clinical Research Design I (2 cr.)
This course sequence is the cornerstone of HIP. The goal is to educate students in the basic competencies of clinical research and in the basic process of building a patient-oriented research study. Interactive classroom lectures and discussions are conducted with emphasis on causal inference, measures of association, bias, confounding, and strengths and weaknesses of various study designs. Students learn basic concepts in probability, estimation, and hypothesis testing as well as statistical methods frequently used in clinical research. The objectives of the course are to provide familiarity with basic statistical concepts and issues in clinical research. In the third term, the course provides in-depth study of research design with integration of biostatistical methods. More advanced topics include uses of more complex designs and modeling to control for confounding in experimental and observational studies. Evaluation of diagnostic testing is discussed, focusing on study design and implementation. Students will be asked to read current clinical literature to reflect on these themes.

HIP 511A Proposal Development (1 cr.)
Offered in conjunction with HIP 511, 512, 513 (Clinical Research Design I, II and III), this course offers a small group session experience in which students develop a hypothesis and clinical research study. Intertwined with lectures in HIP 511, 512, and 513, students will meet a total of 6 times in small groups led by experienced clinical research faculty members to discuss research ideas and methods for testing specific hypotheses. At each session, students complete a written assignment that is similar to required sections of any grant. In the end, the assignments come together as a complete grant proposal, with the exception of budget. Students in the small groups are expected to read and contribute to the development of the other proposals in the small group.

HIP 512 Clinical Research Design II (2 cr.)
This course sequence is the cornerstone of HIP. The goal is to educate students in the basic competencies of clinical research and in the basic process of building a patient-oriented research study. Interactive classroom lectures and discussions are conducted with emphasis on causal inference, measures of association, bias, confounding, and strengths and weaknesses of various study designs. Students learn basic concepts in probability, estimation, and hypothesis testing as well as statistical methods frequently used in clinical research. The objectives of the course are to provide familiarity with basic statistical concepts and issues in clinical research. In the third term, the course provides in-depth study of research design with integration of biostatistical methods. More advanced topics include uses of more complex designs and modeling to control for confounding in experimental and observational studies. Evaluation of diagnostic testing is discussed, focusing on study design and implementation. Students will be asked to read current clinical literature to reflect on these themes.

HIP 512A Biostatistics with STATA (1 cr.)
In this optional module, students will learn to use STATA to explore data and perform simple data analysis. Students will learn to work with files, some descriptive statistics, cross tabulations, and graphing.

HIP 513 Clinical Research Design III (2 cr.)
This course sequence is the cornerstone of HIP. The goal is to educate students in the basic competencies of clinical research and in the basic process of building a patient-oriented research study. Interactive classroom lectures and discussions are conducted with emphasis on causal inference, measures of association, bias, confounding, and strengths and weaknesses of various study designs. Students learn basic concepts in probability, estimation, and hypothesis testing as well as statistical methods frequently used in clinical research. The objectives of the course are to provide familiarity with basic statistical concepts and issues in clinical research. In the third term, the course provides in-depth study of research design with integration of biostatistical methods. More advanced topics include uses of more complex designs and modeling to control for confounding in experimental and observational studies. Evaluation of diagnostic testing is discussed, focusing on study design and implementation. Students will be asked to read current clinical literature to reflect on these themes.

HIP 514 Molecular & Cellular Approaches to Disease (1.5 cr.)
The power of contemporary methods in molecular and cell biology to reveal complex mechanisms of pathogenesis has increased geometrically over the past 25 years. With completion of the human genome project, and with new technologies for genomic screening and bioinformatics, clinician scientists have unique opportunities to rapidly define pathways of disease pathogenesis. They must be well trained in fundamental concepts of basic research technologies in fields of molecular and cell biology, biochemistry and molecular pharmacology. Similarly, basic researchers require training in clinical research methods and translational study design. The lectures review important molecular, cellular and biological approaches frequently encountered with an emphasis on how these can be applied clinical studies. The objectives are to provide a fully integrated experience for both basic and clinician scientists in fundamentals of translational clinical research with examples from successful

research projects. Three conceptually linked strategies are used: 1) lectures covering experimental approaches to translational projects, 2) in-class participation in topical discussions, and 3) project development in trainee' area of interest utilizing the methodologies covered in the course. This course is taught by clinician scientists with expertise in applying molecular biology to translational research, which allows for clinical correlation and application of the subject matter. Specific topics include genetic and genomic technologies, gene discovery, use of animal models, receptor pharmacology, use of bioregistries, approaches to infectious diseases, mechanisms of treatment resistance, rare disorders and gene therapy, study design and statistical considerations.

HIP 516 Protection of Human Subjects (1 cr.)
This course enables clinical researchers to recognize and appropriately address legal, regulatory, and ethical issues in research, with special attention to vulnerable subjects and regulatory issues unique to Oregon. This is accomplished by:

1) teaching basic concepts in law, federal regulation, study design, and ethics related to clinical research;
2) reviewing common problems encountered in human subjects protocols and informed consent documents to demonstrate how to identify and remedy deficiencies;
3) reviewing the roles and responsibilities of institutional review boards, investigators, and sponsors involved in the conduct of human research; and
4) reviewing the obligations of clinical researchers in relation to initial and continuing reviews, reporting of unanticipated problems, reporting changes in approved research, and consenting human subjects and monitoring safety in research as required by federal regulations.

The course includes discussion of the historical roots for current regulations, Oregon law, federal regulations, OHSU policies, and practical advice for navigating the compliance milieu related to human subjects research.

HIP 517 Scientific Writing & Data Presentation (1.5 cr.)
Success in clinical research rests on the researcher' ability to communicate the findings of research clearly and effectively. The purpose of this course is to provide insight into the peer-reviewed journal process in clinical medicine and surgery. The trainee also gains an understanding of the elements of clinical science writing that are expected in peer-reviewed publications. The topics covered include elements of the clinical science paper; writing the paper from concept to manuscript; defining the peer-reviewed literature; finding appropriate and best journals for submission; elements of peer review including how to review and how to respond to reviewers' comments. This module also explores the art of oral presentation of scientific data.

HIP 520 Medical Informatics (2 cr.)
Medical informatics is described as “the rapidly developing scientific field that deals with the storage, retrieval, and optimal use of biomedical information, data, and knowledge for problem solving and decision making.” An understanding of medical informatics is crucial to clinical researchers. The widespread adoption of electronic medical records and the emerging standards on which they are based will influence how researchers acquire and use patient data; the revolution in bioinformatics may fundamentally alter how we view and research disease; and growing concerns over confidentiality of health information, most notably HIPAA regulations, determine how patient information is stored and used. Course topics include fundamentals of medical computing, electronic medical records, data interchange and terminology standards, information retrieval from databases, security and confidentiality, and bioinformatics. The course consists of on-line lectures with assignments that include hands-on use of electronic medical records, decision support applications, and information retrieval systems; reading assignments; and threaded on-line discussions.

HIP 522 Fundamental of RCTs (1.5 cr.)
This course covers the principles of clinical trial design, implementation, and management, including single- and multi-center trials. Each trainee is expected to develop a working protocol for a clinical trial as a result of this class, and to read and critically appraise published trials. Conventional trials of drug treatment will be discussed, with special emphasis on conducting trials of alternative medicines, surgical or device therapy, and nutritional and other interventions requiring counseling. Each class period includes discussion, in a journal club format, of a recently published clinical trial that illustrates the lecture topic.

HIP 523 Data Science for Clinical & Translational Research (2 cr.)
This course provides an introduction to principles of clinical research informatics, including use of data sources such as clinical information systems, data management, collection and storage of clinical data, database design, and data security. This includes exercises in working with data to answer clinical questions. Course objectives include developing skills and comfort skills and comfort to construct and implement a data collection, management, and secure storage plan for clinical data; and developing the facility with clinical data to wrangle data to answer questions and test hypotheses.

HIP 526 Capstone - Mentored Experience (1-6 cr.)
The mentored experience is the centerpiece of HIP and is designed to create independent clinical investigators. The mentored experience results in an academic product, either a grant submission or peer-reviewed publication. Developing a

research proposal with a mentor allows the trainee the optimal opportunity to experience all the steps in this process. These include reviewing the background literature, developing a hypothesis and specific aims, designing an appropriate and fundable study to answer the hypothesis, formulating the statistical analysis, and refining the written work to maximize fundability. This exercise replicates the critical experience necessary to creating an independent, funded research program.

HIP 527 Systematic Reviews (2 cr.)
This course will introduce students to the methodology of systematic reviews by working through the steps of a review using examples and discussion to explore various methodological approaches and identifying quality standards. Students will be asked to read and evaluate systematic reviews, discuss the process of reviews, and to consider various methodological approaches, including the pros and cons or suitable context for each. At the end of the course, students will feel comfortable reading, evaluating and applying systematic reviews from the perspective of a user.

HIP 528 Applied Biostatistics I (3 cr.)
This course explores the application of fundamental biostatistics topics that are widely used in health sciences research, including categorical data methods, linear regression and others. Most topics will be covered on a conceptual and applied level by evaluating literature, exploring datasets and discussing interesting examples provided by instructor and/or guest faculty. Students will also provide examples of articles in their area of interest for discussion. The objective of this course is to expand upon the biostatistics foundation provided in earlier clinical research training courses (HIP 511, 512, 513) so that students can: (1) learn how to perform basic biostatistics analyses, (2) evaluate which methods or statistical tools may be appropriate for their own research projects, and, (3) communicate effectively with biostatistics collaborators to design, analyze and interpret data. Students will apply the concepts covered in class using real datasets through weekly homework and other applied practice opportunities. The primary software used in class will be STATA.

HIP 529 Applied Biostatistics II (3 cr.)
This course explores advanced biostatistics topics that are widely used in health sciences research, including logistic regression, time-to-event analyses, longitudinal approaches and others. Most topics will be covered on a conceptual level by evaluating literature, exploring datasets and discussing interesting examples provided by instructor and/or guest faculty. Students will also provide examples of articles in their area of interest for discussion. The objective of this course is to expand upon biostatistics foundation provided in earlier clinical research training courses (HIP 528) so that students can: (1) understand and critically evaluate analytic methods used in the medical literature, (2) decide which methods may be appropriate for their own research projects, and (3) communicate effectively with biostatistics collaborators to design, analyze and interpret data. The majority of the biostatistics material covered will be at the conceptual level; however, there may be some limited applied practice.

HIP 530 Leadership Skills in Team Science (2 cr.)
Participants learn practical, influential leadership and communication skills. After completing this course, you will be able to: increase your awareness of the impact you have on others; invite and work with different academic and political perspectives; build strong collaborative relationships; mentor and coach others; use dialogue and crucial conversations to set direction and move your research team to action. Each session of this course combines invigorating, practical skill building with the opportunity for students to contribute personal experiences in leadership and to learn from other students in a structured collective learning process.

HIP 531 Project Management (2 cr.)
This course teaches project management from the standpoint of implementing a clinical research project. It emphasizes practical tools and techniques that students can use immediately on real projects. The class walks through the project life cycle in the same sequence that project leaders will use in the workplace, such as defining scope, planning a project, developing a timeline, executing and controlling project work, and closing a project. As part of the class, students will apply some of the project management techniques to real projects.

HIP 532 Organizational Mindsets for Effective Research Careers (2 cr.)
This course focuses on understanding and strengthening your current work relationships within the context of an academic health center. You will identify your strengths and blind spots as an academic leader and will learn how to "reframe" challenging situations to increase your understanding and consider alternative courses of action. This course will allow you to better understand the perspectives of different leaders (e.g. Dean, department chair, research administration) and allow you to work more effectively in this context.

HIP 533 Community-based Research (2 cr.)
The goal of Community Based Research is to educate students about: 1) the rationale and benefits of engaging the end-users of research in study design and conduct; 2) differing levels of community engagement and participation in research projects; 3) different roles that community stakeholders and members can play in research; 4) challenges

and opportunities in conducting research with and in communities; and 5) logistical issues when involving community partners in research. Faculty with experience in clinical, health services, and community-based research will discuss theoretical and practical aspects of these topics. The course will employ didactic lectures and interactive exercises. Homework assignments will include directed reading and the development of a brief (2-page) protocol for a community-based research project.

HIP 534 Health Disparities Research (1 cr.)
The goal of Health Disparities Research is to educate students about: 1) disparities in health, health care, and research participation; 2) the social and cultural determinants of health and health disparities; and 3) challenges and opportunities in working with disadvantaged populations. Faculty with experience in clinical, health services, and disparities research will discuss theoretical and practical aspects of these topics. The course will employ primarily didactic methods, both small group breakout sessions and interactive exercises will also be employed. Homework assignments will include directed reading and preparation for class discussions.

HIP 536 Biomarkers of Psychological Stress (2 cr.)
This course discusses how to incorporate physiological biomarkers of psychological stress into clinical trials. it will cover an array of biomarkers, including hypothalamic-pituitary-adrenal (HPA) axis (mostly cortisol), autonomic nervous system activity (heart rate, heart rate variability, respiration rate), sleep measures, functional neuro-imaging, EEG, and cytokines. The logistics of implementation will be a focus (spontaneous measures or in response to a stress; state vs trait issues, confounds of the various measures, and quantitative analyses).

HIP 537 Introduction to Implementation Science (1.5 cr.)
Despite scientific progress, there is a lag between evidence and practice. An emerging science, called implementation science, seeks to reduce this gap and ensure evidence-based interventions (practices, programs, policies) are implemented in "real-world" settings. This interactive course is an introduction to and overview of implementation science in the context of clinical research. Students will receive an overview of the topic and focus on learning several of its essential components including:

- Purpose of and reason for implementation science
- Theories, frameworks, and conceptual models
- Mechanisms of change / Implementation strategies
- Measures
- Research methods and study design

Students will choose an evidence-based intervention from their field of study at the beginning of the course which they will use throughout to understand the above components. At the end of the course, students will present a research study they designed to implement their evidence-based intervention using the concepts learned throughout the course. Each week, students will be expected to read several articles, apply them to their intervention, and be prepared to share with the class.

HIP 538 Community-Engaged Research (2 cr.)
The goal of Community-Engaged Research is to educate students about: 1) the history and rationale for including marginalized, vulnerable, and difficult-to-reach populations in research; 2) the major frameworks for community-engaged research and how to match them with inquiry; 3) the advantages, disadvantages, and ethical, methodological, and logistical considerations of community-engaged research; 4) how to apply course concepts to their own research. Faculty with experience in clinical, health services, and community-engaged research will discuss theoretical and practical aspects of these topics. The course employs didactic lectures and interactive exercises.

MATH 630 Probability & Statistical Inference (3 cr.)
This course will introduce fundamental concepts underlying statistical data display, analysis, inference and statistical decision making. The topics include presentation and description of data, basic concepts of probability, Bayes theorem, discrete and continuous probability distributions, estimation, sampling distributions, classical tests of hypotheses on means, variances and proportions, maximum likelihood estimation, Bayesian inference and estimation, linear models, examples of nonlinear models and introduction to simple experimental designs. One of the key notions underlying this course is the role of mathematical modeling in science and engineering with a particular focus on the need for an understanding of variability and uncertainty. Examples are chosen from a wide range of engineering, clinical and social domains.

MBIM 503 Thesis (1-16 cr.)
This is a Thesis course

MBIM 601 Research (1-16 cr.)
This is a Research course

MBIM 602 Independent Study (1-10 cr.)
This is an Independent Study course

MBIM 603 Dissertation (1-16 cr.)
This is a Dissertation course

MBIM 605 Reading and Conference (1-5 cr.)
This is a Reading and Conference course

MBIM 605B Virology Journal Club (1 cr.)
Journal club

MBIM 605C Immunology Journal Club (1 cr.)
Journal club

MBIM 605E Virology Journal Club - Primate Center (1 cr.)
Journal club

MBIM 605F Microbial Pathogenesis Journal Club (1 cr.)
This is a Journal Club course

MBIM 607 Seminar (1-16 cr.)
This is a Seminar course

MBIM 608 Advanced Virology (4 cr.)
This course covers molecular biology and immunology of eukaryotic viruses. Particular emphasis is placed on structure, transcription and replication, entry, assembly and egress, latency, and oncogenesis.

MBIM 610 Introduction to Immunology (2 cr.)
This introductory course will provide students with an overview of how the immune system works and the special vocabulary and experimental systems that describe it. Reading and discussion of the textbook (Immunology by Janeway, et al, 5th Edition) with study questions and occasional experimental papers. The course is designed for two kinds of students; those specializing in other areas who want to learn enough immunology to gain access to the experimental literature and those with a particular interest in immunology as preparation for the Advanced Immunology course.

MBIM 612 Advanced Immunology (4 cr.)
This course is intended for students who have had introduction to Immunology or equivalent. The intention is to cover, in some depth, important concepts and some current issues in basic molecular and cellular immunology. The course will be primarily literature based, supplemented as necessary with lectures, review articles and textbook material. Students are expected to read the assigned material and to discuss questions in the class. The course is taught by a small number of faculty, each of whom covers one area. Because the area covered are chosen to reflect the area of major active research in immunology, the actual topics may vary from year to year. Recent areas covered include: T cell activation and the immune synapse, NK receptors and related molecules and the expanding family of MHC class I like ligands; T and B cell development; T and B cell memory; toll-like receptors; T cell trafficking.

MBIM 615 Dynamic Interface between Pathogen and Host (4 cr.)
This course will explore strategies by which microorganisms avoid and subvert host defenses to cause disease. Emphasis is on the molecular basis of microbial pathogenesis. We will cover several mechanisms shared by bacteria, viruses and parasites. Topics in the first half of the course included intracellular and extracellular infection strategies, microbial exploitation of the host vacuolar trafficking system, bacterial virulence gene regulation, secretion of effector molecules and toxins. The second part of the course will delve into host innate immune defenses, microbial avoidance and manipulation of immune signaling pathways, features of latent and persistent infections, and how commensal organisms interact with the host immune system. Finally, we will look into the future of microbial pathogenesis and discuss the role of "omics" in understanding pathogens and the potential of mathematical modeling of infections.

MGEN 503 Thesis (1-16 cr.)
This is a Thesis course

MGEN 601 Research (1-16 cr.)
This is a Research course

MGEN 603 Dissertation (1-16 cr.)
This is a Dissertation course

MGEN 605E Molecular/Medical Genetics Journal Club (1-8 cr.)
Journal club

MGEN 605F Mechanisms of Cancer Journal Club (1-8 cr.)
This course introduces students to the critical analysis of original research articles in Cancer Biology. Papers will be analyzed in terms of background, hypothesis, appropriate use of experimental methods, and objective interpretations of results. Covers a wide range of papers in biophysics, biochemistry, genetics, immunology, cell and biology, and pharmacology with an emphasis on seminal discoveries in cancer.

MGEN 606 Journal Club (1-8 cr.)
Journal club

MGEN 607A Departmental Seminar Series (1 cr.)
Genome Sciences integrates basic science and clinical faculty across OHSU who work in disciplines of genetics and genomics, epigenetics, rare disease genetics, genome technologies and computational biology, stem cell and developmental biology, cancer genetics, and gene therapy. The interdisciplinary nature of this seminar series is based on the combined basic science and clinical composition of the Department of Molecular & Medical Genetics that will

cultivate interactions between the basic sciences and the clinical researchers and practitioners. The goals of the Genome Sciences Seminar Series are to facilitate interactions among faculty and trainees and to provide an opportunity to expand breadth and depth of knowledge in a variety of Genetic research areas that both complement and expand attendees areas of research focus. This is a weekly seminar series, with presentations by external and internal genetics researchers that introduces students to new cutting-edge genome research performed in preeminent labs around the country.

MGEN 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

MGEN 611 Departmental Grand Rounds (1 cr.)
Students are required to register for and attend Departmental Grand Rounds during the second academic calendar year (3 terms total). Grand Rounds is required for completion of the PhD.

MGEN 622 Advanced Topics in Genome Sciences (3 cr.)
This course is designed to provide in-depth coverage of topics in Genome Sciences such as the use of genetic systems to probe complex problems, genetic approaches to identify novel genotype-phenotype associations, molecular genetics, single-cell profiling, CRISPR/cas9 editing, and quantitative genetics. Focus areas may include gene regulatory mechanisms and genome regulation underlying development, regeneration, degeneration, stem cell fitness, cancer evolution, and cancer predisposition syndromes. Emphasis will be on recent insights and emerging technologies. Readings will be based on selected reviews and articles from the current literature. Interactive discussions will involve critical analyses of recent research papers.

MGEN 623 Genetic Basis of Human Disease (3-4 cr.)
A team of faculty experts discusses topics including chromosomal basis of disease, cancer genetics, disorders of energy metabolism, amino acid disorders, blood coagulation disorders, congenital heart defects, disorders of extracellular matrix, platelet disorders, endocrine disorders and stem cell/gene therapy. Format is reading, journal club, and conference style.

MGEN 624 Gene & Cell Therapy (2 cr.)
This course presents an overview of various gene delivery systems (viral and non-viral), cell-based therapeutic approaches and their clinical applications. This course will review the most clinically advanced gene- and cell-therapeutics, promising pre-clinical approaches, and common challenges associated with gene- and cell-therapies.

MGEN 625 Applied Epigenetics (3 cr.)
This course covers epigenetic mechanisms existing in mammals, cutting-edge techniques and methods used to interrogate the epigenome. Students will learn about computational methods available for epigenetic analyses, data interpretation and display, and how to leverage publicly available epigenetic datasets for their own research.

MGRD 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

MGRD 628 Teaching Practicum/Assistantship (1-9 cr.)
The course will consist of a teaching methods workshop, followed by a Teaching Assistantship for one of the Fall CONJ courses. TAs will lead the review sessions. Weekly meetings with the CONJ course directors will inform the process. A culminating workshop with the course director and other TAs to discuss challenges and successes encountered during the course and strategies for improvement.

MGRD 650 Practice & Ethics of Science (1 cr.)
The goal of this course is to discuss topics pertaining to the proper conduct of scientific research. The boundary between appropriate and inappropriate conduct is often grey and deceptive. What constitutes dishonesty? How do investigators remain unbiased in their data gathering, analysis, and presentation? How is authorship determined? What ethical concerns or legal issues might you encounter if you become engaged in translational research? Other topics covered by the course are how to respond to inappropriate scientific conduct by an advisor or lab mate, how to manage stress and time, and how to build a supporting network. Following four lectures, the class will break up into small groups, each assigned to a separate room. Each group will be assigned a faculty “leader” who will facilitate an open discussion related to the topic of the course.

MGRD 660 Fall Intersession: Writing a Review (1-3 cr.)
Provides hands on experience in finding, reading, and analyzing, a body of literature in depth and organizing it into a logical sequence that covers a predetermined topic. Students can register for 1, 2 or 3 credit hours depending on depth of logical sequencing into an outline, a draft paper or a completed paper.

MGT 502 Independent Study (1-12 cr.)
Independent study allows a student to work one-on-one with a faculty member on selected topic(s) of interest. Registering for independent study requires pre-approval from the faculty member and the student's academic department. For letter grade only.

MGT 506 Special Topics (1-4 cr.)
Special topics courses are offered in areas of particular relevance to the research interests of faculty or in response to industry needs. Special Topic courses are subject to change and are offered intermittently.

MGT 507 Seminar (1-9 cr.)
The MGT seminar covers current topics in management in the healthcare industries.

MGT 508 Ethics in Healthcare Organizations (2 cr.)
Students will be exposed to the principles of clinical ethics as well as ethical principles that apply to businesses and other organizations that are connected to the healthcare field. Topics include personal values clarification, key clinical and business ethics principles, addressing ethical dilemmas, and policy development.

MGT 511 Quality Management (3 cr.)
In this course, students will gain a hands-on understanding of quality and process improvement methodologies that are relevant to healthcare and will apply that understanding to quality/process/performance improvement projects in their workplaces. Quality is defined as care that is safe, effective, efficient, patient centered, timely, and equitable. By the end of this course, students will be able to apply the Model for Improvement in their work places and to execute a quality improvement project. This will be accomplished by action learning projects that the students will conduct in their own work places.

MGT 518 Quality & Safety in Healthcare (4 cr.)
In this course students will gain a hands-on understanding of quality and process improvement methodologies that are relevant to healthcare and will apply that understanding to quality/process/performance improvement projects in their workplaces

MGT 519 Program Management (5 cr.)
This course introduces and implements concepts in planning, leading and managing projects in healthcare. Frameworks are presented and applied to integrate a set of projects in a program to achieve a shared objective. The importance of adapting to complexity and ambiguity is discussed as it applies in healthcare settings. Communication skills are explored and practice in leading and managing projects.

MGT 520 Organizational Mindsets for Managers (5 cr.)
This course focuses on developing mindsets to effectively respond to organizational challenges. It also focuses on developing the ability to understand and influence human behavior in healthcare organizations using ethical approaches to building coalitions and influencing change. Students will explore the interaction of personal and organizational values in shaping managerial action.

MGT 522 Influencing Change in Organizations (5 cr.)
This course focuses on designing effective organizations and managing change in organizations in which engineering, manufacturing, and/or scientific technologies are critical. Tools for assessment and redesign of organizations are emphasized. The course pays special attention to organizing for lateral coordination and integration, as this is a required capability in technology-intensive organizations. Topics also include: change methodology; roles in a change initiative; competencies and mind-sets required to effectively lead change; and the impact of change on people and organizations. Students are encouraged to design their own organizational change using a combination of the frameworks. Taking MGT 520 first is recommended.

MGT 530 Business Strategy in Healthcare (4 cr.)
This course explores the external and internal factors that influence strategy within the healthcare industry. Drawing upon previous coursework and strategic theory and frameworks, students research, analyze, prepare recommendations, and predict likely outcomes for organizational strategy.

MGT 532 Design & Innovation (5 cr.)
This course analyzes examples of innovation in healthcare and other industries. Frameworks and characteristics of innovative companies and leaders are studied and analyzed. Principles of design, including inquiry, inclusion, invention and implementation are introduced and practiced throughout the course. Barriers and opportunities for innovation that are unique to healthcare are studied and evaluated.

MGT 535 Career Management (1 cr.)
This course introduces students to strategies that will help them navigate the challenges and opportunities in the world of work. Students will examine their own beliefs about how to manage careers. They will learn what it means to develop a "working identity." Students will learn how to conduct career experiments, develop new professional networks, and craft their own career narratives.

MGT 536 Career Conversations (1 cr.)
In this course students will explore career development theories and practices to engender a more engaged workplace, enhance productivity, and developing a high performing workforce.

MGT 545 Application Project (1-2 cr.)
In the application project course, students apply the learnings from the MBA in Healthcare Management to their organizational setting. Students propose a project and

deliverables to their assigned faculty mentor, who provides guidance and supervision.

MGT 546 Payment Systems (2 cr.)
This course is designed to explore in depth the main payment systems in US healthcare. The framework and function of employer-based insurance, Medicare and Medicaid will be studied. Newer alternative healthcare payment frameworks will be explored. We will also visit the hot topics.

MGT 549 Business Intelligence (4 cr.)
This course describes and applies concepts from business intelligence and elements of data mining, data visualization and business analytics to support managerial decisions and business strategy for driving change. Business intelligence concepts and tools are used to discover patterns and forecast future trends, then communicate them in actionable language.

MGT 552 Portfolio Management (4 cr.)
This course presents and applies frameworks for the leadership and management of programs and portfolios. Frameworks are presented to integrate a set of projects to achieve a shared objective. Concepts for project prioritization and funding decisions are assessed for achieving strategic goals. Project management fundamentals are reviewed.

MGT 553 Capstone Project in Healthcare I (2 cr.)
Teams of students under the supervision of faculty advisors will contract for and deliver pro bono consulting services to health care organizations in the region, with particular preference for projects and organizations meeting the needs of underserved populations. The goal is to integrate and anchor the classroom learning for the students and to contribute value back to the community. Effective strategies for working together as a cross-professional team are an additional focus of learning. Must be taken in conjunction with MGT 554 in the following quarter.

MGT 554 Capstone (5 cr.)
Students integrate, synthesize and apply content from the graduate program toward solutions of real-time business problems and needs in healthcare. Frameworks are used to collect data and analyze organizational culture and strategy. Qualitative and quantitative analysis is used to assess the feasibility and viability of potential solutions. Recommendations based on data and analysis are presented in written reports and verbal presentations.

MGT 560 Healthcare Systems (5 cr.)
This course describes how the current U.S. health system is organized and the role of health reform. The course examines how healthcare in the U.S. differs from that in other industrialized countries and considers the prevalence and causes of health inequities. Ethical and practical questions and obstacles are considered in creating a high-functioning 21st century healthcare system.

MGT 561 Financial Reporting (4 cr.)
This course helps health care practitioners understand and work with financial statements and information. The course covers the fundamental accounting concepts necessary to understand financial statements and provides a practical, real-world model for understanding an organization's financial statements.

MGT 562 Healthcare Program Management (3 cr.)
This course focuses on the skills and tools needed to manage and develop a health care program, with detailed emphasis on business planning, program design, scheduling, and resource management, including human resources, capital equipment, and software infrastructure. Students gain an understanding of the basic tools of project management and how, when, and where those tools may apply to health care improvement or development projects. Upon completion of the course students will be able to establish a project plan that will permit the successful meeting of the objectives within the cost, time and available resource constraints.

MGT 563 The Regulation & Legislation of Healthcare Delivery (4 cr.)
The course reviews how governmental and non-governmental organizations influence health care delivery. Special emphasis is placed on current regulatory and legislative initiatives. Participants gain an increased understanding of the federal and state regulatory/reporting framework within which healthcare is delivered and the role of accreditation bodies within that framework. The course provides examples of the evolution of new legislative initiatives, both at the federal and state level, in order to demonstrate the complexity and impact of regulatory oversight on healthcare delivery. Guest lecturers provide the perspectives of experienced authorities in areas of Risk Management, Legislation, Environmental Safety, Healthcare Law, Internal Audit, Medicare Reimbursement, and Healthcare Compliance.

MGT 564 Strategic Planning in Healthcare (4 cr.)
This course focuses on interpretation and implementation of strategy. The course examines the major drivers that influence business planning in the healthcare environment. Students explore the connections from mission and vision to strategic planning to goal setting. Using frameworks, students research, analyze, and develop recommendations for long and short-term goals including motivation for change within the organization.

MGT 565 Leadership Skills for Healthcare (4 cr.)

This course offers tools for reflection, emotional self-regulation and communication with others who have different perspectives. The course also includes tools for resiliency, work-life alignment, and managing time, energy and attention in the course of a professional career.

MGT 569 Marketing & Strategic Communications (5 cr.)
This course introduces marketing and communications concepts and strategy within the healthcare industry. Specific consideration will be given to internal and external communication, connections among mission, strategy, and marketing, and using frameworks to make recommendations.

MGT 570 Operations & Quality Management (5 cr.)
This course describes and analyzes how concepts, practices and tools of quality, process improvement and operations management are used in healthcare. The course introduces fundamentals of operating systems then analyzes the application of concepts and tools in process management, lean and capacity management to improve healthcare operations and quality.

MGT 572 Financial Management (4 cr.)
This course addresses key financial areas for healthcare managers including how organizations are financed, benchmarking, and joint ventures. The course explores how organization type, strategy, and assets impact financial decision making.

MGT 575 Healthcare Economics (4 cr.)
This course is an introduction to the field of health economics. Economic tools and concepts are used to examine the demand for and provision of health care services. Current approaches, theories and findings in health economics are presented, while stressing advances in economics that can be used by managers in healthcare settings.

MGT 576 Executive Decision Making (5 cr.)
This course presents decision-making frameworks for improving the quality of strategic business decisions. Categories of business decisions and tools for each category are explored and analyzed. Concepts and tools in data analytics are presented and applied to support decisions, strategy, process improvement and performance management.

MGT 578 Managerial Decision Making (4 cr.)
This course presents decision-making frameworks for improving the quality of managerial and strategic decisions in healthcare. Categories of professional decisions and tools for each category are explored and analyzed. Decision tools are introduced and applied to assist in the assessment of decision options and alignment with the organizational strategy.

MGT 590 Effective Business Writing (1 cr.)
Tailored to meet the individual writing needs of management professionals, this course reviews and practices standard conventions in grammar and punctuation, and innovative stylistics using a highly interactive format. The course addresses both electronic (email) and traditional (letter, summary, report) managerial writing tasks with the goal of clearer, more concise business communication. For native speakers of English and bilinguals with a native level of written English.

MGT 592 Strategic Communications (4 cr.)
This course covers key topics in strategic communications in healthcare organizations. This includes frameworks for developing effective and strategic communication, written and spoken communication, and communication across a variety of media, audiences, and contexts.

MP 503 Thesis (1-16 cr.)
This is a Thesis course

MP 507 Seminar (1 cr.)
This is a current topics/student presentation seminar covering diagnostic and therapeutic medical physics issues. This is a mandatory seminar for all incoming students.

MP 521 Radiological Anatomy & Physiology (3 cr.)
This course covers anatomy and physiology with correlating images for use by medical physicists, therapists, and dosimetrists. This course adheres to the AAMP requirements for Cross Sectional Anatomy. This course also adheres to the CAMPEP Standards for Graduate Program requirements for Anatomy and Physiology.

MP 531 Radiophysics (3 cr.)
This course expands students' understanding of concepts and applications of atom and nuclear physics to enable their continued study in nuclear engineering and health physics. Content includes fundamental concepts of nuclear and atomic physics, atomic and nuclear shell structure, radioactive decay, radiation interactions, radiation biology, and characteristics of fission.

MP 535 Radiation Shielding & External Dosimetry (3 cr.)
This course covers theoretical principles of shielding for neutron and gamma radiation; external dosimetry fundamentals for neutrons, photons, and charged particles; applications to problems of practical interest; analytical and numerical solutions emphasized.

MP 536 Advanced Radiation Detection (3 cr.)
This course covers the principles and mechanisms underlying radiation detection and measurement through the study of radiation interactions, counting statistics and error

propagation, and gas-filled, scintillation, and semiconductor detectors for the measurement of alpha, beta, gamma/x-ray, and neutron radiation. Fundamentals are reinforced through the study of the practical aspects of radiation detection and measurement, as applicable to clinical medical physics.

MP 537 Shielding for Medical Physicists (3 cr.)
This is a radiation protection, radiation therapy and diagnostic shielding course. This should be taken after all medical physics track-specific courses have been completed; this should be taken at the end of year 2.

MP 541 Diagnostic Imaging Physics I (3 cr.)
This course introduces the student to the production and usage of ionizing radiation in medicine. The course will cover x-ray production, x-ray spectrum characteristics and manipulation, and how x-rays are utilized to obtain anatomical information in diagnostic imaging. Imaging modalities to be covered in the course are general and portable planar radiography, mammography, and fluoroscopy (including interventional radiography). Throughout this course, students will be introduced to a clinical imaging department, and the imaging equipment utilized in practice.

MP 542 Diagnostic Imaging Physics II (3 cr.)
This course introduces students to Computed Tomography (CT) and Ultrasound (US) imaging, and their applications in medicine. The course will cover x-ray production, detection, and image processing as it relates specifically to CT, as well as general acoustic physics principals and how they are applied to US imaging. Additionally, clinical radiation protection and dosimetry in diagnostic imaging will be taught. (This is a continuation of MP 541-Diagnostic Imaging Physics I).

MP 543 Advanced Diagnostic Imaging Physics (3 cr.)
This course will introduce students to the areas of health informatics and magnetic resonance imaging (MRI). The health informatics portion of the course will specifically cover picture archiving and communication systems (PACS), including DICOM standards, data transfer and storage, digital image displays, and clinical implementation of PACS systems. The MRI portion of the course will provide instruction on the physical principles behind nuclear magnetic resonance (NMR) and how these phenomenon are exploited in MRI. Advanced MRI techniques and applications, along with clinical testing requirements, will also be covered.

MP 544 Nuclear Medicine Imaging (3 cr.)
This course introduces the students to the uses of radionuclides in medical imaging. The theory & application of detectors and imaging systems in nuclear medicine including collimators, scintillation probes, cameras, SPECT, PET, and hybrid technologies (SPECT/CT, PET/CT, and PET/MRI) will be covered.

MP 545 Diagnostic Imaging Physics Practicum (3 cr.)
This course will provide an introduction to the medical physicist's role in a clinical department. It will provide an initial overview of clinical procedures performed in diagnostic radiology to provide an opportunity to integrate the principles learned throughout the graduate program as they apply to the field of Diagnostic Imaging Physics. This will include clinical observations of procedures in radiography, fluoroscopy, emergency department, OR, interventional radiology, CT. MRI, US and Nuclear Medicine. Student will additionally have hand-on experience in regulatory testing of x-ray equipment and observations of testing for CT and other x-ray modalities.

MP 546 Diagnostic Imaging Physics Lab I (2 cr.)
This course is designed to familiarize students sub-specializing in Diagnostic Imaging Physics with the clinical applications of coursework from MP 541 & 542. This is the first of two lab courses which coordinate clinical practices and student learning. Students will be working with clinical physicists as they perform physics testing as required by state and federal agencies and accrediting bodies. In addition to lab work performed in clinical areas, student will also attend lectures on related subjects and produce laboratory reports for each individual lab section.

The course will cover applied practice of Diagnostic Imaging Physics in all areas where medical imaging equipment is utilized (Diagnostic Radiology, Interventional Radiology, Cardiac Catheterization Lab, etc.) Topic will include current testing and troubleshooting practices of the following imaging modalities: general x-ray, portable x-ray, fluoroscopy (fixed rooms and c-arms), mammography, and ultrasound.

MP 547 Diagnostic Imaging Physics Lab II (2 cr.)
This is the second of two lab courses designed to familiarize students sub-specializing in Diagnostic Imaging Physics with the clinical applications of coursework from MP 541 & 542. The course will cover applied practice of Diagnostic Imaging Physics in all areas where medical imaging equipment is utilized (Diagnostic Radiology, Interventional Radiology, Cardiac Catheterization Lab, etc.) Topics will include current testing and troubleshooting practices of the following imaging modalities: Computed Tomography (including specialized systems), Nuclear Medicine (SPECT and PET), MRI, Acquisition Displays, and Dental Imaging (panoramic, cephalometric, intraoral, etc.)

MP 561 Radiation Therapy Physics I (3 cr.)
This course covers the physics of radiation generation and delivery relevant to the field of clinical radiation oncology. Topics will include external beam radiation therapy; dosimetric calculations; high dose-rate and low dose-rate

brachytherapy; electron beam dosimetry and treatment planning; photon beam dosimetry and treatment planning; special techniques in radiotherapy; and clinical radiation protection and quality assurance. (This course is a prerequisite for MP 562; Therapy I and II courses must be taken in series).

MP 562 Radiation Therapy Physics II (3 cr.)
This course covers the physics of radiation generation and delivery relevant to the field of clinical radiation oncology. Topics will include external beam radiation therapy; dosimetric calculations; high does-rate and low dose-rate brachytherapy; electron beam dosimetry and treatment planning; photon beam dosimetry and treatment planning; special techniques in radiotherapy; and clinical radiation protection and quality assurance. (This is a continuation of MP 561-Radiation Therapy Physics I).

MP 563 Therapy Physics Lab I (2 cr.)
The course will cover the applied practice of therapeutic radiation physics for clinical radiation oncology. Topics will include current methodologies in treatment delivery and planning algorithms; best practices and protocols for quality assurance; special techniques in radiotherapy; and oncology.

MP 564 Therapy Physics Lab II (2 cr.)
The course will cover the applied practice of therapeutic radiation physics for clinical radiation oncology. Topics will include current methodologies in SRS and ARC QA, treatment planning QA, adaptive radiotherapy, eye plaque brachytherapy, and HDR brachytherapy.

MP 565 Radiation Therapy Physics Practicum (3 cr.)
This course will provide an introduction to the medical physicist's role in a clinical department. It will provide an overview of clinical medical procedures performed in radiation medicine to provide an opportunity to integrate the principles learned throughout the graduate program as they apply to the field of Therapeutic Radiologic Physics. Students will be in a clinical radiation therapy setting working under the guidance of a certified medical physicist. Each student is expected to participate in a minimum of 15 tasks that may vary from clinic to clinic; however, participation is required in the following categories: Core Tasks, Quality Assurance, Treatment Planning, and Special Techniques.

MP 570 Radiation Biology for Medical Physicists (3 cr.)
This radiation biology course focuses on radiation protection aspects of whole body irradiation, radiation effects from partial body irradiation, and theory behind calculations used to related radiation doses with outcomes. Target audience is graduate-level students interested in radiation biology as it pertains to diagnostic imaging and therapeutic medical physics. Topics include: radiation syndromes, rational behind dose limits, normal tissue complications & tumor effects of irradiation.

MP 601 Research (1-16 cr.)
This is a Research course

MP 603 Dissertation (1-16 cr.)
This is a Dissertation course

MP 607 Seminar (1 cr.)
This is a current topics/student presentation seminar covering diagnostic and therapeutic medical physics issues. This is a mandatory seminar for all incoming students.

NEUS 503 Thesis (1-12 cr.)
This is a Thesis course

NEUS 601 Research (1-16 cr.)
This is a Research course

NEUS 603 Dissertation (1-16 cr.)
This is a Dissertation course

NEUS 605 Reading and Conference (1-5 cr.)
Reading and conference

NEUS 606 Neuroscience Journal Club (0.5-8 cr.)
Journal Club

NEUS 606A Developmental Neuroscience Journal Club (1 cr.)
This journal club will focus on discussing modern literature focused on developmental neuroscience. Students will be required to read one review and one original article per week and discuss the overall goal as well as specific details of each article figures. Topics will vary from quarter to quarter and some examples will include cortical migration, axonal growth, specification of neuronal subtypes and others.

NEUS 607 Neuroscience Seminar (2 cr.)
First year students are required to participate in the Vollum Seminar Course. The basis of the series is the Vollum Institute Seminar Series, which includes leading neuroscientists from around the world. Prior to the seminar, students meet to discuss publications by the speaker, attend the seminar and then have lunch with the speaker.

NEUS 608 Professional Experience (0.5-4 cr.)
Participation in an intensive advanced learning experience offered by biomedical societies, not for profit organizations, or institutes. Examples include Cold Spring Harbor Laboratories Workshops/Courses, the Allen Institute trainings/workshops. Arrangements for suitable experiences will be made in consultation with the student's research mentor and the program director.

NEUS 609 Professional Practicum (1-9 cr.)
Practicum or internship experience in biomedical organizations. Examples include PNNL, OHSU Tech Transfer, and supervised guest lectures. Application of principles and skills in biomedical sciences to real situations under the guidance of professionals in the field. Arrangements for suitable sites/experiences will be made in consultation with the student's research mentor and the program director.

NEUS 610 Teaching Practicum & Assistantship (3 cr.)
Teaching assistantship experiences with the core courses for NGP. Application of teaching principles and skills in biomedical sciences classes under the guidance of course directors. Arrangements for suitable core courses will be made in consultation with the student's research mentor.

NEUS 614 Neurophysiology & Pharmacology of Pain (2 cr.)
An advanced topics seminar that will focus on the neural mechanisms of pain and analgesia. This class will meet once a week for 2 hours, and include some didactic material, but will emphasize student-led discussion guided by an extensive reading and resource list and under the direction of faculty from OHSU and WSU Vancouver. Student evaluations will be based on presentations and contribution to the discussions.

NEUS 616 Graduate Fellowship Workshop (1.5 cr.)
Graduate fellowships are recognized nationally as a means to acknowledge and support outstanding graduate students in pursuit of their advanced degree objectives. One such prestigious graduate fellowship is the National Science Foundation Graduate Research Fellowship (NSF GRFP), which recognizes exceptional graduate students who are pursuing full-time research-based degrees in STEM. The NSF GRFP is highly competitive, and those planning to apply should devote sincere effort to their application. This workshop will largely focus on crafting a complete NSF GRFP so that the barrier to submission in October is reduced. Selected components of other fellowships will also be crafted if time permits (e.g., NIH-style CV, personal statement).

NEUS 617 Manuscript Writing & Reviewing (1.5 cr.)
From the beginning to the end of one’s career in science, the presentation, writing, and evaluation of data in manuscripts and grants is the currency of our profession. Yet, these skills are not innate and require not only training, but also constant practice. Mastering these skills is not a substitute for creative ideas, or for the effective design and execution of experiments, but they are essential to their impact. This course does not address basic writing skills such as use of active voice, English grammar, sentence structure, paragraph structure, etc. These skills are taught in the Vollum Writing workshop for those interested.

NEUS 618 Navigating the Complexities of Graduate Training (1.5 cr.)
A successful graduate student career involves more than experiments, publications, and presentations; it involves learning to navigate the complex sociopolitical structure and environment of academia. This course provides an essential and broader holistic approach to preparing students for graduate success by providing students with the context and tools to navigate the complexities of academic culture, mentor-mentee relationships, and mental health in graduate school.

NEUS 619 Effective Scientific Presentations (1.5 cr.)
Scientists need to speak with confidence and impact to convey the significance of their findings. We need to do this with our peers as well as non-scientific audiences. Doing this effectively is challenging and requires deep reflection on what the main message is and the audience that it is being conveyed to. This course will focus on ways to help participants make effective slides and posters, develop verbal and non-verbal presentation skills and handle questions from the audience.

NEUS 620 NGP Bootcamp (1.5 cr.)
The goals of Bootcamp are to provide a common knowledge base of neuroscience and molecular/cellular fundamentals; demystify tools of the field by providing hands-on experience with commonly used techniques; introduce new students to a variety of faculty and helpful resources for ensuring a successful graduate career; facilitate bonding and community building of our incoming first-year cohort.

NEUS 621 Professional Development at Scientific Conferences (0.5 cr.)
Attending scientific conferences, workshops, and seminars are critical experiences for graduate students to learn about their field, get feedback on their work, to see their work in the context of the field, meet new colleagues, spark collaborations, improve presentation skills, network with potential postdoc mentors, and many other benefits. Not all of our students have had the opportunity to attend conferences before graduate school, and all of our new students could benefit from a primer on how to get the most of out a scientific conference. This nano course will also underscore lessons learned in other Summer B offerings (NEUS 610C, D).

NEUS 622 Rigor & Reproducibility in Neuroscience Research (1 cr.)
This course is designed to help NGP meet the programmatic and NIH/NINDS goals of providing a broad education in neuroscience with a strong foundation in experimental design, statistical methodology, and quantitative reasoning. Course sessions cover basic concepts of experimental design

and statistical assessment of datasets and methodologies common in neuroscience as well as provide a quantitative neurophysiology primer.

NEUS 624 Cellular Neurophysiology (4 cr.)
This course presents the fundamental principles of how nerve cells work. Starting with ion channels themselves, it integrates them into the functioning of individual neurons. The way in which voltage-dependent ion channels act in concert to generate action potentials and synaptic potentials is discussed in the framework of basic physical laws. The mechanisms of transmitter release and the postsynaptic actions of transmitter are studied. The overall aim is to provide students with a quantitative understanding of how individual cells communicate with each other. This course is the first in a sequence of three courses presented sequentially in the first term.

NEUS 625 Cellular & Molecular Neurobiology (4 cr.)
This is a survey course designed to introduce the cell and molecular mechanisms underlying the development, structure and function of the nervous system. The course is divided into three general topic areas: Development, Cell Biology and Signaling in the Nervous System.

NEUS 626 Neurobiology of Disease (3 cr.)
This course has the following general goals:

- To provide a foundation in the underlying mechanisms of neurological psychiatric disease. The course takes a theme-oriented approach to probe fundamental molecular, cellular and organismal mechanisms, rather than a disease-specific approach. The intent is to engage students who are interest in basic aspects of brain function.
- To provide a toolbox of topical methods and issues relevant to the neurobiology of disease.
- To provide a sampling of neurological and psychiatric disorders that serve as training examples for the themes addressed in goal one.
- To provide hands-on exposure to clinical situations through live patient presentations, multimedia presentations, and visits to clinics, hospital wards, and other clinical settings. Clinical demonstrations stress hands-on interactive experience so that graduate students experience first-hand the impact of neurological and psychiatric disease on brain function, and on the social fabric of the patient's life, their families and their community.

NEUS 627 Systems Neuroscience (4 cr.)
This course is an introduction to the functional anatomy, electrophysiology, and pharmacology of the central and peripheral nervous systems. Emphasis is placed on the functional organization and processing of information in the major input and output systems of the brain, including the somatosensory, motor, visual, auditory and autonomic and hormonal regulatory systems, and on the higher integrative functions of the nervous system, including learning, emotion, motor control, and sleep. The course will consist of lectures and readings in primary literature.

NEUS 630 Fluorescence Microscopy Toolbox for Cell Biologists (1 cr.)
This is a course designed to further a student's knowledge about fluorescence-based light microscopy methods commonly used in basic research. Essential theory of approaches and instrumentation will be discussed. Emphasis will be given to present practical information on the different experimental strategies. As an example, the session on multi-color immunofluorescence will include discussion of controls to run for monitoring specificity of detection. Discussion of how to prepare a specimen and how to take images will be followed by the discussion of basic principles of digital image analysis and presentation. The course will end with presentations on advanced technologies with high impact to current research.

NEUS 637 Advanced Topics in Developmental Neuroscience (3 cr.)
Advanced graduate course designed to provide an overview of the major aspects of nervous system formation, plus more in-depth presentations of specific topics in the field of neural development and differentiation. Emphasis will be on recent insights into the molecular and cellular mechanisms that underlie specific aspects of neural development, including pattering of the early nervous system, neurogenesis, neuronal migration and axonal outgrowth, synaptogenesis and plasticity, cell death, and neural stem cells in regeneration. Readings will be based on selected reviews and articles from the current literature. Interactive discussion sections will involve critical analyses of recent research papers.

NEUS 638 Advanced Optical Techniques in Neuroscience (1 cr.)
Theoretical and practical design and implementation of advanced microscopy techniques including two-photon microscopy and super-resolution microscopy including PALM, STED and TIRF.

NEUS 639 Topics in the Auditory System (2 cr.)
Auditory scientists need to understand the field in breadth from basic to translational science, and from periphery to central function. The ability to communicate and collaborate with a broad range of auditory scientists is necessary to be successful in research and to obtain funding. The goal of the course is to provide an overview of emerging topics in the auditory system and the associated disorders, and provide students with these skills. This course can be used to

document training in the auditory system for NRSA proposals, especially important for trainees coming from non-auditory fields.

NEUS 639A Auditory System Topics (3 cr.)
Auditory scientists need to understand the field in breadth from basic to translational science, and from periphery to central function. The ability to communicate and collaborate with a broad range of auditory scientists is necessary to be successful in research and to obtain funding. The goal of the course is to provide an overview of emerging topics in the auditory system and the associated disorders, and provide students with these skills. This course can be used to document training in the auditory system for NRSA proposals, especially important for trainees coming from non-auditory fields.

NEUS 639B Auditory System Essay (1 cr.)
The goal of the 1-credit part of NEUS 639 is that students will integrate and apply what they learn in NEUS 639A by writing a critical review of papers in the field. This course can be used to document training in scientific writing.

NEUS 641 G-Protein Coupled Receptors (2 cr.)
Lecture list: Diversity of GPCR's; Ligand Binding/Pharmacology/High-low Affinity States; Rhodopsin-The Mother of GPCR's; Structural Studies/G-Protein Interactions; Biased Signaling; Homologous Modulation; Heterologous Modulation; Associated Proteins; Associated Proteins Signaling; Synaptic Activation; Effector Compartmentalization

NEUS 642 Python Programming (2 cr.)
The objective of the course is to provide competence in python programming as applied to specific neuroscience datasets such that thesis students can incorporate programming into their thesis work.

NEUS 643 Statistical Image Analysis for Neuroscience (2 cr.)
This course connects the statistical concepts taught in CONJ 620 Biostatistics with the real-life statistical analysis of neuroscience data, especially in the analysis of cellular imaging and microscopy data. In the context of neuroscience and its commonly used data types, students will load, explore, assess, preprocess and analyze these common data types using well-established analysis methods using R/Bioconductor.

NEUS 644 Racial Equity in Scientific Research & Beyond (3 cr.)
This course provides foundational knowledge and skills required to address racial inequities. Students will develop a systems perspective on the historical basis, structure, and impact of systemic racism outside and within the scientific enterprise. Students will tackle three common barriers to equity: learning, discussing, and addressing racial inequities. This course is meant to empower students by developing the knowledge and skill set to become active agents of change within their own environments, both within and outside of their program or institution.

NUTN 501A Academic Foundations (1 cr.)
Academic Foundations is a two-week orientation that will help students prepare for their journey as a graduate student and intern. The program includes information and learning about the matriculation process as well as an introduction to classmates, the faculty, coursework and general expectations for courses and supervised practice. Students will have the opportunity to participate in an interprofessional orientation activity with students in the Schools of Nursing, Dentistry, Pharmacy, and other School of Medicine students. The course provides a foundation for advanced academic engagement and inquiry and establishes academic skills. It is designed to build a collegial student-faculty-practitioner community.

NUTN 501B Transition to Clinical Nutrition (1 cr.)
Transition to Clinical Nutrition is a one-week intensive course on clinical nutrition that will help students prepare for their transition from community nutrition to their clinical nutrition supervised practice experiences. Students will review fundamental concepts in medical nutrition therapy and practice the necessary skills, behaviors, and attitudes to make the transition to a healthcare environment.

NUTN 501C Transition to Professional Practice (1 cr.)
Transition to Professional Practice is a two-week intensive course that will help students prepare for their transition to the professional world. The course will discuss preparation for the registration exam for dietitians as well as the maintenance of the registered dietitian credential. There will be emphasis on effective written and verbal communication skills as related to work experiences and goal setting for the future. Students will prepare for professional experiences such as professional positions upon graduation.

NUTN 502 Independent Study (0.5-4 cr.)
Independent Study-Topic to be determined by student's course of study.

NUTN 503 Thesis (1-3 cr.)
This is a Thesis course

NUTN 504 Supervised Practice (1-7 cr.)
Supervised Practice provides students with experience in community nutrition, food service management, clinical nutrition, and advanced practice settings. Students practice and apply principles and skills in dietetics and nutrition to real situations under the guidance of professionals in the field.

Student choice rotations take place in spring term. Evaluations by preceptors follow competencies defined by the Accreditation Council for Education in Nutrition and Dietetics. Supervised Practice occurs during summer and fall terms for public health and community nutrition, and food service management; winter and spring terms focus on clinical rotations and clinical staff experience. Students are required to complete a minimum of 1200 hours of supervised practice over the course of the program.

NUTN 505 Reading and Conference (0.25-0.5 cr.)
A professional book club series is sponsored each year for students of the GPHN, faculty, preceptors and members of the community. Three nutrition-related books are read and discussed. Books selected for discussion provide a balance depiction of a nutrition-policy issue, a nutrition-ethics issue, and/or a nutrition-history or current nutrition trend. Students enrolled in this course work in small groups to host one of the book club discussions by preparing a list of discussion questions, designing an informative flyer to announce the book and the session, marketing the discussions sessions to interested parties, inviting guest speakers and introducing the topic.

NUTN 506 Capstone Project (1-4 cr.)
This is a Capstone Project course

NUTN 507 Nutrition Seminar (1-3 cr.)
Each seminar series is centered on a nutrition-related theme and provides students an opportunity to use traditional methods to present an evidenced-based review of a related topic. Students write an abstract, develop learning objectives, and give an oral presentation of their topic using PowerPoint or another visual media platform. In addition, each student hosts one of the presentations and provides peer editing of each abstract, peer critique of each presentation, and actively participates in each discussion.

NUTN 508 Journal Club (1-16 cr.)
Journal club

NUTN 510 Public Health Nutrition (2 cr.)
This course provides an overview of public health nutrition, including a discussion of the social determinants of health, hunger and food insecurity, health literacy, cross cultural awareness, and more. Content includes nutrition public policy and nutrition assistance programs aimed at improving public health. The course also explores best practices in nutrition education and counseling. Students work in small teams to prepare an annotated bibliography and oral presentation on food and nutrition needs, concerns, and resources for a particular phase of lifespan.

NUTN 511 Pathophysiology & Medical Nutrition Therapy (2 cr.)
This course provides an overview of the pathophysiology of common chronic diseases and disorders, and the application of medical nutrition therapy. Topics may include nutrition physical exam, diabetes, cardiovascular disorders, disorders of the upper and lower GI, and neonatal and pediatric nutrition therapy. In this series of classes, a number of speakers will share their areas of expertise by serving as guest lecturers. The course will be composed of formal lecture, small group activities, and facilitated discussions.

NUTN 512 Advanced Pathophysiology & Medical Nutrition Therapy (2 cr.)
This course builds upon the nutrition fundamentals covered in NUTN 511 while focusing on more complex conditions such as metabolic disorders, trauma, burns, oncology, and organ transplantation.

NUTN 513 Food Service & Clinical Management (1 cr.)
This course is designed to provide students with strategic application of principles of Food Service and Clinical Management. It will be primarily focused on the areas of finance (with the creation of a budget), human resources, communication strategies (through email and other media), and needs assessment. As a term project, students will complete a feasibility study for a product, program, or service.

NUTN 514 Nutrition Research & Scientific Communication (3 cr.)
The Nutrition Research course is a three credit hour course that provides an introduction to nutrition-based research including discussions of different types of research designs and their strengths and limitations, exploring a nutrition-related research question, conducting a critical review of the literature related to that research question, carrying out the analysis plan, and preparing a manuscript for publication of the results. Students work in teams to conduct various aspects of the research project centered on NHANES cross-sectional data.

NUTN 516A Nutrition Physical Exam (2 cr.)
The nutrition-focused physical exam (NFPE) is presented as an integral part of the Nutrition Care Process and Model (NCPM). Findings of the NFPE are considered in the context of other nutrition assessment information, including biochemical data, food/nutrition-related history, anthropometric measurements, and client history. Cases seen during weekly round sessions at the OHSU Hospital provide the clinical context for classroom discussions.

NUTN 516B Nutrition Physical Exam Lab (1 cr.)

The nutrition-focused physical exam (NFPE) is presented as an integral part of the Nutrition Care Process and Model (NCPM). Findings of the NFPE are considered in the context of other nutrition assessment information, including biochemical data, food/nutrition-related history, anthropometric measurements, and client history. Cases seen during weekly round sessions at the OHSU Hospital provide the clinical context for classroom discussions.

NUTN 521 Energy Metabolism (3 cr.)
This course reviews biochemical processes and nutrients involved in energy production. The digestion, absorption, transport, storage and metabolism of carbohydrates and lipids are covered in depth. Micronutrients essential to these systems including many B vitamins, and minerals are covered as they relate to energy production. At the end of the quarter, perturbations in energy balance during various states of health and disease are discussed. These topics include energy balance during exercise, in obesity or during critical illness.

NUTN 522 Antioxidant, Bone and Protein Metabolism (3 cr.)
This course is organized into three main sections, which include protein structure, function and metabolism, nutrient effects on bone and antioxidant roles of various nutrients. Specific nutrients of study include protein, the fat soluble vitamins, vitamin B6 and biotin, as well as key macro-and micro-minerals, including calcium, magnesium, zinc, selenium, copper, boron, manganese and molybdenum.

NUTN 527 Nutritional Epidemiology (2 cr.)
Nutritional Epidemiology is a 2 credit hour course designed to introduce basic concepts and methods in epidemiology and nutritional epidemiology. The focus of the course is on considerations related to the design, analysis, and interpretation of population-based nutrition studies. Topics will include methods for assessing dietary intake, adjustment for energy intake, use of biomarkers in nutrition-related studies, methodological challenges in nutritional epidemiology research, and the application of nutritional epidemiology research to health policy.

NUTN 528 I-CAN Nutrition (1 cr.)
In this one-credit course students will work with an interprofessional team in providing services through Interprofessional Care Access Network (I-CAN). Through I-CAN students will broadly study the health care needs of disadvantaged and underserved populations in partner neighborhoods by assessing social determinants of health and health care demands in individual clients/patients. At the same time, the program seeks to establish a model for interprofessional education designed to prepare students for the evolving health care delivery system of the near future. This course will be specifically aimed at understanding and providing nutrition care to disadvantaged and underserved populations while learning about the social determinants of health.

NUTN 529A Nutritional Physiology (3 cr.)
This course provides in-depth knowledge of essential physiologic concepts with a focus on nutrition. Physiologic processes related to the central and peripheral (including autonomic) nervous systems; cardiovascular, respiratory, renal, digestive, endocrine and reproductive systems; innate and adaptive immunity, microcirculation, neural control of skeletal, cardiac and smooth muscle, and acid-base balance are discussed at biochemical, cellular, organ, system, and organism levels. Exemplar pathological conditions will be used throughout the course to demonstrate disruption of normal physiology in disease. Emphasis is on integration of concepts as a basis for understanding interrelationships among complex physiologic and pathophysiologic processes, throughout the lifespan. This course prepares students for more detailed exploration of pathophysiology in future clinical nutrition courses and experiences.

NUTN 529B Nutritional Physiology (3 cr.)
This course provides in-depth knowledge of essential physiologic concepts with a focus on nutrition. Physiologic processes related to the central and peripheral (including autonomic) nervous systems; cardiovascular, respiratory, renal, digestive, endocrine and reproductive systems; hematopoiesis, innate and adaptive immunity, microcirculation, neural control of skeletal, cardiac and smooth muscle, and acid-base balance are discussed at biochemical, cellular, organ, system, and organism levels. Exemplar pathological conditions will be used throughout the course to demonstrate disruption of normal physiology in disease. Emphasis is on integration of concepts as a basis for understanding interrelationships among complex physiologic and pathophysiologic processes, throughout the lifespan. This course prepares students for more detailed exploration of pathophysiology in future clinical nutrition courses and experiences.

NUTN 530 Maternal, Infant and Child Nutrition (3 cr.)
Maternal, Infant and Child Nutrition is a 3 credit hour course that will cover nutritional needs and concerns for pregnant women, the developing fetus, infants and children through adolescence. The course will include several guest lectures from clinicians and researchers in this field.

NUTN 531 Sports Nutrition (2 cr.)
This course will explore the metabolism of nutrients and nutritional needs for optimal human performance; specific recommendations for training and competition, and dietary guidelines for active individuals. Discussions will include current research findings concerning energy metabolism,

fluid and electrolyte balance, vitamin-mineral supplementation, use of ergogenic aids, and exercise in extreme environments.

NUTN 532 Nutrition for the Older Adult (2 cr.)
Nutrition for the Older Adult is a 2 credit course that will address the aging process and its impact on nutritional needs of the elderly. Topics will include assessment of nutrition status, developing medical nutrition plans, food insecurity and available programs and end-of-life care. The course will include several guest lectures from clinicians and researchers in the field.

NUTN 534 Motivational Interviewing for Health Care Professionals (2 cr.)
In this two-credit course students will learn the theoretical and empirical tenets of Motivational Interviewing and practice the clinical skills necessary to use this approach in health care settings. Motivational interviewing is a collaborative conversation, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of acceptance and compassion. At the completion of the course, students will be able to demonstrate the ability to use motivational interviewing strategies to promote health behavior change.

NUTN 535 Oncology Nutrition (2 cr.)
This two-credit elective will explore the relationship between nutrition and cancer prevention, treatment and survivorship in primarily the adult population. Discussions will focus on current research in oncology nutrition, and provide guidance for clinical practice. The course will be composed of formal lecture, guest presentations, and small group activities.

NUTN 537 Sports Nutrition Practicum (1 cr.)
This course is designed to facilitate the development of clinical skills in providing nutrition care to collegiate athletes. The course will primarily serve as a practicum in which the student will provide nutrition counseling for athletes for two to three hours per week, and allow the opportunity for students to continue to develop documentation skills of services provided.

NUTN 538 Global Nutrition (2 cr.)
This course introduces the student to nutrition in a globalized world. The purpose of this course is to familiarize the student with 1) Existing and emerging issues in global nutrition that influences health, survival, and development capacity of people in developing societies, and 2) approaches to improving nutritional well-being and knowledge in diverse populations. The course focuses on distribution and determinants of nutrition which has direct impacts on both over- and under-nutrition. Topics include Nutrition & Social Determinants of Health, Micronutrient Deficiencies, Nutrition in Communicable and Non-Communicable Disease (NCD), Nutrition Interventions, Policy, Research Methods and Tools, Basic Techniques of Anthropometric Assessments and Preparing for International Work.

An introductory course in human nutrition is required for this course. Supplemental readings will be provided. This course is offered online and consists of a mix of didactic lectures, guest speakers, student projects and videos.

NUTN 539 Obesity from Cell to Society (2 cr.)
This course is an elective course centered on the understanding the current evidence for treatment and prevention of obesity. This course aims to examine current treatments and public policies used to address the obesity crisis and stimulate debate about effectiveness of current options and thought about new approaches to deal with this critical health issues. The class will be based on a reverse classroom model where lectures will be viewed as videos prior to class, and classroom time will be focused on discussion and case studies. This series adopts a multi-disciplinary approach and includes a variety of different perspectives about the issue of obesity.

NUTN 540 Sustainable and Equitable Food Systems (2 cr.)
This course surveys the interdisciplinary filed of food systems, providing an overview of the historical development of food systems, focusing on factors that determine opportunities and outcomes in terms of health, equity, sustainability, and access. Explores contemporary issues and approaches in food systems policy and practice, considering criteria, principles, and strategies for the development of sustainable and equitable food systems. Key issues explored include food policy, food insecurity, urban food environments, alternative food initiatives, and perspectives on food systems change. Students in the course consider and contextualize nutritionally focused interventions and outcomes in terms of food systems' social dimensions. This course is Online, asynchronous.

NUTN 634 Motivational Interviewing for Health Care Professionals (2 cr.)
In this two-credit course students will learn the theoretical and empirical tenets of Motivational Interviewing and practice the clinical skills necessary to use this approach in health care settings. Motivational interviewing is a collaborative conversation, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of

acceptance and compassion. At the completion of the course, students will be able to demonstrate the ability to use motivational interviewing strategies to promote health behavior change. Students enrolled at the 600 level will complete an additional assignment requiring an audio recorded work sample lasting 20 minutes. The work sample assignment will be tailored to the students' area of clinical practice and evaluated using a reliable treatment fidelity instrument.

PAST 502 Independent Study (1-5 cr.)
Independent study

PAST 506A Community Outreach Project I (1 cr.)
For their Community Outreach Project (COP) students select a health promotion/disease prevention topic of interest from Healthy People 2030, research and write a paper, design and develop a curriculum for an educational presentation, and implement the project to a group of specifically targeted community members. The course culminates with the design and presentation of a digital poster, and the option to archive the paper and the poster.

PAST 506B Community Outreach Project II (1 cr.)
For their Community Outreach Project (COP) students select a health promotion/disease prevention topic of interest from Healthy People 2030, research and write a paper, design and develop a curriculum for an educational presentation, and implement the project to a group of specifically targeted community members. The course culminates with the design and presentation of a digital poster, and the option to archive the paper and the poster.

PAST 506C Community Outreach Project III (1 cr.)
For their Community Outreach Project (COP) students select a health promotion/disease prevention topic of interest from Healthy People 2030, research and write a paper, design and develop a curriculum for an educational presentation, and implement the project to a group of specifically targeted community members. The course culminates with the design and presentation of a digital poster, and the option to archive the paper and the poster.

PAST 506D Community Outreach Project IV (1 cr.)
For their Community Outreach Project (COP) students select a health promotion/disease prevention topic of interest from Healthy People 2030, research and write a paper, design and develop a curriculum for an educational presentation, and implement the project to a group of specifically targeted community members. The course culminates with the design and presentation of a digital poster, and the option to archive the paper and the poster.

PAST 506E Community Outreach Project V (1 cr.)
For their Community Outreach Project (COP) students select a health promotion/disease prevention topic of interest from Healthy People 2030, research and write a paper, design and develop a curriculum for an educational presentation, and implement the project to a group of specifically targeted community members. The course culminates with the design and presentation of a digital poster, and the option to archive the paper and the poster.

PAST 507A Electrocardiography (1 cr.)
The purpose of this course is to introduce, define, describe and summarize information about the cardiac diagnostic tool known as the electrocardiogram (ECG). Each week the course focuses on key evaluative skills and associates them with characteristic physiologic and pathologic findings. The use of this diagnostic method in the care of patients is also discussed. At the end of this course students will have a broad foundational understanding of how to utilize and interpret a rhythm strip as well as a 12-Lead electrocardiogram.

PAST 509 Clinical Practicum I (3-9 cr.)
This is the first of a three-term course designed to provide students opportunities to apply their developing knowledge and skills in real and simulated clinical settings. Interactive learning and specialized workshops (e.g. point-of-care ultrasound, radiology interpretation, physical diagnosis, electronic health record) provide hands-on experiences for the demonstration and application of clinical topics. Discussion of hypothetical case scenarios will reinforce students’ ability to frame clinical questions, and to search, interpret and evaluate the medical literature, including its application to individualized patient care. When possible, these sessions will augment the material being taught in the Clinical Medicine courses. In addition to didactic and small group activities, students will have the opportunity to work directly with patients in clinic-based experiences working with a PA or physician “mentor”.

PAST 509A Clinical Practicum II (3 cr.)
This is the second of a three-term course designed to provide students opportunities to apply their developing knowledge and skills in real and simulated clinical settings. This course builds upon the themes introduced in the first term with continued interactive learning and specialized workshops that provide hands-on experiences for the demonstration and application of clinical topics. Applying the concepts of evidence-based medicine to hypothetical case scenarios will reinforce students' ability to apply sound clinical reasoning to patient care. When possible, these sessions will augment the material being taught in the Clinical Medicine courses. In addition to didactic and small group activities, students will continue to work directly with patients in clinic-based experiences working with a PA or physician "mentor".

PAST 509B Clinical Practicum III (3 cr.)
This is the third of a three-term course designed to provide students with opportunities to apply their developing knowledge and skills to clinical situations. This course builds upon the themes introduced in the first two terms with continued interactive learning and virtual exposure to application of clinical topics. Students will continue to work through hypothetical case scenarios to formulate diagnostic and therapeutic plans that are based on evidence. When possible, these sessions will augment the material being taught in the Clinical Medicine courses. Students will be exposed to a variety of clinical applications including the problem-oriented physical examination, lab and diagnostic study interpretation, principles of billing and coding, POCUS, evidence-based medicine and interpretation of the medical literature. Course content may be delivered in a variety of methods, and may include assigned reading material, virtual sessions, video recordings, and/or in-person lectures.

PAST 510 Physical Diagnosis (4 cr.)
Through a series of lectures and demonstrations, students learn the basics of physical examination techniques and the correct and efficient use of medical equipment. Each organ system is presented and components of the examination, including the general appearance, vital signs, head/ears/eyes/nose and throat, cardiopulmonary, abdominal, lymphatic and neuromuscular, are discussed. The approach to the examination of geriatric and pediatric patients is described, as is the examination of the breast, pelvic and genitourinary systems. The complete screening physical examination is discussed at the conclusion of the course, and point-of-care ultrasound as a physical examination adjunct is presented. The wide range of normal findings is the primary emphasis of the course, and clinical correlations are presented as a means of introducing abnormal findings. Students are introduced to and practice the descriptive use of medical terminology to communicate examination findings.

PAST 511 Physical Diagnosis Lab (2 cr.)
Based on the physical examination techniques learned in the lecture portion of the course in a clinical setting, students practice non-invasive examinations on each other. This laboratory course provides the opportunity to learn the examiner role while also developing a newfound understanding of the patient experience under the guidance of experienced faculty. Lab sessions are facilitated by faculty who provide guidance regarding appropriate examination techniques, patient positioning, gowning and draping. Emphasis is initially placed on mastery of individual body systems; by the end of the course students will be performing complete physical examinations. Student write-ups of each session provide a valuable introduction to medical documentation. Hands-on intimate examination techniques (breast, pelvic, rectal and genitourinary) are taught separately utilizing standardized patients at the conclusion of the course.

PAST 515 Clinical Medicine Tutorial I (3 cr.)
Clinical Medicine Tutorials I is the first of a three-term course designed to facilitate the development of clinical reasoning skills. This course utilizes a problem-based learning (PBL) format with small groups of 6-8 students and a faculty facilitator. A fictional family is followed throughout the year whose members seek care for a variety of medical conditions commonly seen in an ambulatory setting. Students are divided into groups with a faculty facilitator. Each week, one or more of these “patients” is seen for a particular medical problem, and students work as a group to address various aspects of the patient’s case. By working through these cases, students learn to formulate differential diagnoses, order and interpret diagnostic tests, and develop assessments and treatment plans. Additional aspects of clinical practice are discussed and practiced including collection a history, writing an HPI, case presentations, providing patient education and prescription writing. Researching and applying evidenced-based medicine to guide their medical decision-making is emphasized.

PAST 516 Clinical Medicine Tutorial II (3 cr.)
Clinical Medicine Tutorials II is the second of a three-term course designed to facilitate the development of clinical reasoning skills. This course utilizes a problem-based learning (PBL) format with small groups of 6-8 students and a faculty facilitator. A fictional family is followed throughout the year whose members seek care for a variety of medical conditions commonly seen in an ambulatory setting. Students are divided into groups with a faculty facilitator. Each week, one or more of these "patients" is seen for a particular medical problem, and students work as a group to address various aspects of the patient' case. By working through these cases, students learn to formulate differential diagnoses, order and interpret diagnostic tests, and develop assessments and treatment plans. Additional aspects of clinical practice are discussed and practiced including collection a history, writing an HPI, case presentations, providing patient education and prescription writing. Researching and applying evidenced-based medicine to guide their medical decision-making is emphasized.

PAST 517 Clinical Medicine Tutorial III (3 cr.)
Clinical Medicine Tutorials III is the third of a three-term course designed to facilitate the development of clinical reasoning skills. This course utilizes a problem-based learning (PBL) format with small groups of 6-8 students and a faculty facilitator. A fictional family is followed throughout the year whose members seek care for a variety of medical conditions

commonly seen in an ambulatory setting. Students are divided into groups with a faculty facilitator. Each week, one or more of these "patients" is seen for a particular medical problem, and students work as a group to address various aspects of the patient' case. By working through these cases, students learn to formulate differential diagnoses, order and interpret diagnostic tests, and develop assessments and treatment plans. Additional aspects of clinical practice are discussed and practiced including collection a history, writing an HPI, case presentations, providing patient education and prescription writing. Researching and applying evidenced-based medicine to guide their medical decision-making is emphasized.

PAST 518A Principles of Professional Practice I (3 cr.)
This is the first of a continuing course series designed to cover a variety of topics on the patient/provider relationship, interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families and other health professionals. Themes covered this term will be further expanded upon throughout the academic year. They are a fundamental part of establishing a robust platform for clinical practice. Summer quarter topics include patient-provider communication, population health, professionalism, professional practice, wellness, bias in medicine, cultural humility and ethics. Discussions about cultural dimensions of medical practice and social determinants of health aim to familiarize students with a variety of human variations and systemic factors that may significantly impact health outcomes. The foundations of medical ethics will be explored. The history of the PA profession and medical practice will also be discussed. Finally, an introduction to Health Promotion/Disease Prevention will include overviews of public health, behavioral changes, patient history taking and education. Lecture, small group format, videotaping and opportunities for role-playing are utilized.

PAST 518B Principles of Professional Practice II (2 cr.)
This course builds upon Principles of Professional Practice I (518A). Multiple teaching methods are used to engage students in learning about the health beliefs and health risks of a variety of cultures, communities and populations. The role of public health and concepts of disease prevention are explored further, and students continue to learn and apply the principles of effective patient-provider communication and health promotion. The concepts of medical ethics and professionalism introduced in the summer term continue to be developed.

Lectures, assigned readings, small group discussions, and activities, are designed to facilitate the understanding and application of professional practice skills. Speakers include practitioners and professors from OHSU as well as local community members.

PAST 520 Principles of Professional Practice III (2 cr.)
This course builds upon the principles learned in Principles of Professional Practice I and II (518A and 518B). Multiple teaching methods are used to engage students in learning about the health beliefs and health risks of a variety of cultures and special populations. The concepts of health promotion and disease prevention are explored further, and students continue to learn and apply the principles of effective patient-provider communication and health promotion. The course will also build upon the principles of professionalism and medical ethics discussed in the summer and fall terms.

PAST 521 Principles of Professional Practice IV (2 cr.)
This course builds upon the principles learned in Principles of Professional Practice I, II, and III. Multiple teaching methods are used to engage students in learning about the health beliefs and health risks of a variety of cultures and special populations. The role of public health and concepts of disease prevention are explored further, and students continue to learn and apply the principles of effective patient-provider communication and health promotion. The concepts of medical ethics build upon the principles of professionalism learned in the previous terms. Course content may be delivered in a variety of methods, and may include assigned reading material, virtual sessions, video recordings, and/or in-person lectures.

PAST 523 Allergy, Immunity and Infection (4-5 cr.)
This course deals with the basic and clinical science in immunity, allergy and infection, and introduces, discusses, analyzes and evaluates the diagnosis and treatment of various disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of allergic, immune-mediated and infectious diseases common to medical practice.

PAST 524 Skin, Muscle and Bone (3 cr.)
This course deals with the basic and clinical science in rheumatology, the musculoskeletal and integumentary systems. It introduces, discusses, analyzes and evaluates the diagnosis and treatment of various disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the

patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of skin, muscle and bone diseases common to medical practice.

PAST 525 Blood, Cancer and Palliation (2 cr.)
This course deals with the basic and clinical science in neoplasia, oncology and the hematologic system, and introduces, discusses, analyzes and evaluates the diagnosis and treatment of various disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of blood-based disorders, neoplastic conditions and the palliative care medicine associated with end-of-life. Cancer topics not specifically addressed in this course will be discussed in future courses.

PAST 526 Applied Clinical Skills I (2 cr.)
Applied Clinical Skills I is a required 2-credit course designed to help PA students make a smooth transition from the didactic/classroom setting to the clinical phase of the program. The course orients students to the structure, goals, and expectations of the clinical year. A focus of the course is on the recognition and application of professional behaviors essential to clinical practice. In addition, through hands-on/skills-based activities, students develop an understanding of and basic competence in performing a variety of procedures and skills pertinent to clinical practice in general outpatient, hospital, and acute care settings, which can be further with more intense, personalized instruction in the clinical setting during clinical rotations. The curriculum includes didactic material as well as hands-on opportunities to practice skills on inanimate models as well as fellow classmates. Students will complete the provider courses in Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS).

PAST 528 Introduction to Epidemiology & Evidence-Based Medicine (2 cr.)
This course introduces students to the basic principles of epidemiology, evidence-based practice, study design, and statistics. Students will learn to identify and evaluate epidemiologic processes and determine appropriate interventions. They will learn information literacy and evidence-based practice, including how to locate and evaluate medical literature, and apply evidence-based medicine to clinical practice. These elements will be brought together to inform the identification, creation, and analysis of clinical questions.

PAST 535 Medicine I (5 cr.)
This course deals with basic and clinical science of the cardiac, pulmonary and renal systems, and introduces, discusses, analyzes and evaluates the diagnosis and treatment of various disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of cardiac, pulmonary and renal disorders common to medical practice.

PAST 538 Human Development & Reproduction (4 cr.)
This course deals with basic and clinical science in human reproduction, reproductive health, urogynecology, pediatrics and geriatrics. While many didactic year courses focus on adult medicine, this course explores medicine across the lifespan beginning at preconception and pregnancy and extending through the end of life. The "well-child" visit and the approach to the "functional assessment" are presented, and health maintenance in the young and the aged is stressed. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of reproductive, pediatric and geriatric disorders common to medical practice. Course content may be delivered in a variety of methods, and may include assigned reading material, virtual sessions, video recordings, and/or in-person lectures.

PAST 539 Brain & Behavior (4 cr.)
This course deals with basic and clinical science of the brain and neurologic system and introduces, discusses, analyzes and evaluates the diagnosis and treatment of various neurologic and behavioral disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of neurologic, ophthalmologic and

psychiatric / mental health disorders common to medical practice.

PAST 540 Emergent & Surgical Medicine (2 cr.)
This course revisits medical and behavioral disorders from the surgical and emergent perspectives and prepares students to recognize various surgical and emergent disease processes and their management. Foundational patient care information unique to these settings is presented, and students are exposed to the PA role. At the end of this course students will have a broad understanding surgical and emergent disorders common to medical practice and will be prepared to take an ACLS course and the skills-based course Applied Clinical Skills, offered during the Transition to the Clinical Year. Course content may be delivered in a variety of methods, and may include assigned reading material, virtual sessions, video recordings, and/or in-person lectures.

PAST 541 Applied Clinical Skills II (4 cr.)
Applied Clinical Skills II is a required 4-credit course taught in the second (clinical) year of the program. The course occurs during the winter term, which is approximately midway through the clinical phase of the program. The course continues the theme of professional aspects of clinical practice by instructing students about healthcare delivery systems, policy issues that affect practice, quality improvement, laws and regulations regarding professional practice, licensure and certification, creating a professional curriculum vitae and applying for jobs, to name a few. Students participate in additional hands-on/skills-based activities to supplement and reinforce the skills taught on their clinical rotations.

PAST 541A Bridge to Professional Practice I (2 cr.)
Bridge to Professional Practice I (Bridge-1) is the first of five longitudinal courses taught in the clinical phase of the program designed to help students prepare for professional practice. Bridge-I is a required 1-credit course in the first (summer) term of the clinical year. Students will return to campus to participate in a variety of didactic, hands-on, and interactive activities that will assist students as they transition from the role of a student to clinician. The five BPP courses will share common themes and are intended to build upon each other to emphasize the evolving nature of professional development. While some of the skills, knowledge, and competencies of professional practice will be acquired during PA training, others will be developed and mastered as physician assistants progress through their careers.

PAST 541B Bridge to Professional Practice I (2 cr.)
Bridge to Professional Practice I (Bridge-1) is the first of five longitudinal courses taught in the clinical phase of the program designed to help students prepare for professional practice. Bridge-I is a required 1-credit course in the first (summer) term of the clinical year. Students will return to campus to participate in a variety of didactic, hands-on, and interactive activities that will assist students as they transition from the role of a student to clinician. The five BPP courses will share common themes and are intended to build upon each other to emphasize the evolving nature of professional development. While some of the skills, knowledge, and competencies of professional practice will be acquired during PA training, others will be developed and mastered as physician assistants progress through their careers.

PAST 542 Bridge to Professional Practice (3 cr.)
Bridge to Professional Practice occurs just before graduation, when students return to campus to complete a comprehensive review course to prepare them to pass the physician assistant national certification exam (PANCE), which is a requirement in order to obtain a license to practice medicine. This course includes a series of professional practice topics, focused board review sessions, and practice exams based on the content blueprint of the PANCE exam.

PAST 544 Medicine II (4 cr.)
This course deals with basic and clinical science of human nutrition, the gastrointestinal, hepatobiliary and endocrine systems, and introduces, discusses, analyzes and evaluates the diagnosis and treatment of various disease processes commonly seen in primary and specialty care. Each week the course focuses on key physiologic and pathophysiologic mechanisms of disease followed by an exploration of the patient assessment and management of associated disease states. The diagnostic and laboratory methods used in the care of patients are discussed, and relevant pharmacotherapeutic interventions are examined. At the end of this course students will have a broad understanding of nutritional, gastrointestinal, hepatobiliary and endocrine disorders common to medical practice.

PAST 545 Clinical Medicine I (6 cr.)
This is the first in a series of courses designed to provide a comprehensive study of diseases and disorders across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly, applied to the principles of clinical medicine. Emphasis will be on disease processes common to preventative, emergent, acute, chronic, and rehabilitative patient encounters, serving as an introduction to evaluation, diagnosis, and management. This is a 12-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical medicine in the areas of Infectious Disease, Hematology/Oncology, Neurology, Psychiatry, Dermatology, and EENT. Pediatric, Geriatric, Oncologic, and Infectious Disease topics not specifically addressed in this course will be discussed in future courses.

PAST 546 Clinical Medicine II (6 cr.)
This is the second in a series of courses designed to provide a comprehensive study of diseases and disorders across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly, applied to the principles of clinical medicine. Emphasis will be on disease processes common to preventative, emergent, acute, chronic, and rehabilitative patient encounters, serving as an introduction to evaluation, diagnosis, and management. This is a 12-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical medicine in the areas of Cardiology, Pulmonology, Nephrology, Gastroenterology, and Nutrition.

PAST 547 Clinical Medicine III (6 cr.)
This is the third in a series of courses designed to provide a comprehensive study of diseases and disorders across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly, applied to the principles of clinical medicine. Emphasis will be on disease processes common to preventative, emergent, acute, chronic, and rehabilitative patient encounters, serving as an introduction to evaluation, diagnosis, and management. This is a 12-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical medicine in the areas of Endocrinology, Reproductive health, Palliative and Hospice medicine, Musculoskeletal system, Pediatrics, Geriatrics, and Emergency Medicine.

PAST 557A Clinical Medicine & Basic Science III A (4 cr.)
This is one of a series of courses designed to provide a comprehensive study of diseases and disorders across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly, applied to the principles of basic science and clinical medicine. Emphasis will be on disease processes common to preventative, emergent, acute, chronic, and rehabilitative patient encounters, serving as an introduction to evaluation, diagnosis, and management. This is a 5-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of basic science and clinical medicine in the areas of Endocrinology, Reproductive health, Gynecology and Genitourinary.

PAST 557B Clinical Medicine & Basic Science III B (5 cr.)
This is one of a series of courses designed to provide a comprehensive study of diseases and disorders across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly, applied to the principles of basic science and clinical medicine. Emphasis will be on disease processes common to preventative, emergent, acute, chronic, and rehabilitative patient encounters, serving as an introduction to evaluation, diagnosis, and management. This is a 7-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of basic science and clinical medicine in the areas of Palliative and Hospice Medicine, Musculoskeletal, Pediatrics, Geriatrics, and Emergency Medicine.

PAST 565 Basic Science I (2 cr.)
This is the first in a series of courses that will introduce students to the fundamentals of medical physiology and pathophysiology across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. This course will introduce students to clinical medicine through the study of human physiology and the phenomena that produce alterations or pathology in human physiologic function. Content is delivered in an organ system-based approach with an emphasis on pathological processes common to emergent, acute, and chronic disease and is aligned with the clinical medicine series. This is a 12-week course that is lecture based with small group work and application activities. It will introduce students to the fundamental physiological and pathophysiological processes relevant to Infectious Disease, Hematology/Oncology, Neurology, Psychiatry, Dermatology, and EENT.

PAST 566 Basic Science II (2 cr.)
This is the second in a series of courses that will introduce students to the fundamentals of medical physiology and pathophysiology across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. This course will introduce students to clinical medicine through the study of human physiology and the phenomena that produce alterations or pathology in human physiologic function. Content is delivered in an organ system-based approach with an emphasis on pathological processes common to emergent, acute, and chronic disease and is aligned with the clinical medicine series. This is an 11-week course that is lecture based with small group work and application activities. It will introduce students to the fundamental physiological and pathophysiological processes relevant to Cardiology, Pulmonology, Nephrology, Gastroenterology, and Nutrition.

PAST 567 Basic Science III (3 cr.)
This is the third in a series of courses that will introduce students to the fundamentals of medical physiology and pathophysiology across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. This course will introduce students to clinical medicine through the study of human physiology and the phenomena that produce alterations or pathology in human physiologic function. Content is delivered in an organ system-based approach with an emphasis on pathological processes common to emergent, acute, and chronic disease and is aligned with the clinical medicine series. This is a 12-week course that is lecture based with small group work and

application activities. It will introduce students to the fundamental physiological and pathophysiological processes relevant to Endocrinology, Reproductive health, Palliative and Hospice medicine, Musculoskeletal system, Pediatrics, Geriatrics, and Emergency Medicine.

PAST 570 Independent Study (1-9 cr.)
Independent study

PAST 571 Intro to Pathophysiology/Mechanisms of Disease (3 cr.)
This course provides an overview of fundamental scientific and physiologic principles applicable in medicine. Concepts in pathophysiology related to altered structure and function will be presented as a foundation for future learning about disease states during the medicine courses. Course content emphasizes the basics of cell biology, biochemistry, genetics, immunity and infection, microbiology, and provides an overview of hematopoiesis and hemostasis. Students will be provided with the underlying principles of fluid balance and acid-base balance. Course content is delivered in a variety of methods, and may include assigned reading material, virtual or in-person sessions, and/or video recordings.

PAST 572 Intro to Pharmacotherapeutics (2 cr.)
Students are introduced to the clinical use of pharmacotherapeutic agents through this foundational course that includes basic pharmacologic information about drug absorption, distribution, metabolism and elimination (ADME). The concepts of drug mechanism of action, adverse effects and toxicities are discussed, and students will learn prescription-writing processes and legalities as well as the use of therapeutic informatics. An overview of some of the major classes of drugs will be introduced, and at the conclusion of this introductory course students will have a basic preparation from which to assimilate appropriate drug management to be presented throughout the medicine course series that begin in fall term.

PAST 575 Clinical Pharmacotherapeutics I (1 cr.)
This is the first in a series of courses designed to provide a comprehensive study of clinical pharmacotherapeutics utilized across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. Emphasis will be on pharmacotherapeutics common to preventative, emergent, acute, chronic, and rehabilitative patient encounters. This is a 12-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical pharmacotherapeutics in the areas of Infectious Disease, Hematology/Oncology, Neurology, Psychiatry, Dermatology, and EENT.

PAST 576 Clinical Pharmacotherapeutics II (1 cr.)
This is the second in a series of courses designed to provide a comprehensive study of clinical pharmacotherapeutics utilized across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. Emphasis will be on pharmacotherapeutics common to preventative, emergent, acute, chronic, and rehabilitative patient encounters. This is a 11-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical pharmacotherapeutics in the areas of Cardiology, Pulmonology, Nephrology, Gastroenterology, and Nutrition.

PAST 577 Clinical Pharmacotherapeutics III (1 cr.)
This is the third in a series of courses designed to provide a comprehensive study of clinical pharmacotherapeutics utilized across the human lifespan including prenatal, infant, children, adolescents, adults, and elderly. Emphasis will be on pharmacotherapeutics common to preventative, emergent, acute, chronic, and rehabilitative patient encounters. This is a 12-week course that is predominantly lecture and case-based. This course will introduce students to the fundamentals of clinical pharmacotherapeutics in the areas of Endocrinology, Reproductive health, Palliative and Hospice medicine, Musculoskeletal system, Pediatrics, Geriatrics, and Emergency Medicine.

PAST 581 Supervised Clinical Experience I (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 582 Supervised Clinical Experience II (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 583 Supervised Clinical Experience III (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 584 Supervised Clinical Experience IV (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 585 Supervised Clinical Experience V (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 586 Supervised Clinical Experience VI (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 587 Supervised Clinical Experience VII (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 588 Supervised Clinical Experience VIII (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 589 Supervised Clinical Experience IX (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 590 Supervised Clinical Experience X (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PAST 591 Supervised Clinical Experience XI (5 cr.)
This is a 5 credit 4-week clinical rotation that may be completed during the clinical year. All students participate in clinical training activities in a variety of settings at program-provided sites. This can be one of the following: PC1-3, Peds, BM, Surg, EM, Inpt, Elect 1-3.

PHPH 503 Master's Thesis (1-16 cr.)
This is a Thesis course

PHPH 601 Research (1-16 cr.)
This is a Research course

PHPH 603 Dissertation (1-16 cr.)
This is a Dissertation course

PHPH 606 Journal Club (0.5-1 cr.)
This is a Journal Club course

PHPH 607 Seminar (0.5-1 cr.)
This is a Seminar course

PHPH 610NN Nano Course (0.5 cr.)
Nano courses are short special-topics courses that capitalize on timely subject matter, visiting expertise, and/or highlight new developments in a field.

PHPH 614 Neurophysiology & Pharmacology of Pain (2 cr.)
An advanced topics seminar that will focus on the neural mechanisms of pain and analgesia. This class will meet once a week for 2 hours, and include some didactic material, but will emphasize student-led discussion guided by an extensive reading and resource list and under the direction of faculty from OHSU and WSU Vancouver. Student evaluations will be based on presentations and contribution to the discussions.

PHPH 617 Drug Discovery and Development (2 cr.)
This course will provide students with an introduction to key preclinical stages of the drug discovery process, from target identification and validation, through assay development, high throughput screening, hit identification, pharmacokinetics and finally selection of candidate molecules for clinical development.

PHPH 618 Receptor Pharmacology (2 cr.)
This course will provide students with an introduction to the molecular mechanisms of drug action and the principles of drug-receptor interactions.

PHPH 621 The Visual System (2 cr.)
The goals of this course are:

- To understand the basic cellular and physiological mechanisms underlying visual perception.
- To critically review fundamental as well as recent published papers on important topics in vision research.
- To examine the current understanding and treatment of several blindness diseases.

The materials will be divided into two courses to be offered in alternate years: One course will focus on the Cellular and Developmental Biology of the Visual System, and the other on the Neuroanatomy and neurophysiology of the Visual System.

PHYS 510A Advanced Human Physiology (3 cr.)

This course is a survey of the physiology in which each of the major systems (neuromuscular, cardiovascular, respiratory, renal, digestive, endocrine) is examined in the contest of physical principles (diffusion, bulk flow, etc.). The coordination of whole body homeostasis is a recurrent theme that is emphasized with the addition of each new system. The integrative aspects are emphasized by examining the systems compensatory responses to various disease processes.

PHYS 510B Advanced Human Physiology (3 cr.)
This course is a survey of the physiology in which each of the major systems (neuromuscular, cardiovascular, respiratory, renal, digestive, endocrine) is examined in the contest of physical principles (diffusion, bulk flow, etc.). The coordination of whole body homeostasis is a recurrent theme that is emphasized with the addition of each new system. The integrative aspects are emphasized by examining the systems compensatory responses to various disease processes.

RDTT 303 Practical Radiation Therapy (0.5 cr.)
Gain practical knowledge from the field of Radiation Therapy. Utilizing the virtual classroom, students learn practical technical skills in a simulated clinical environment. Guest lecturers will give presentations based on their experience as Radiation Oncology Professionals.

RDTT 305 Medical Terminology (3 cr.)
Basic structure of medical words including prefixes, suffixes, roots, and combining forms are used to establish a foundation in the language of health care. Correct spelling, pronunciation, and meaning of terms are stressed.

RDTT 309 Clinic (2-8 cr.)
Clinical education in an affiliated radiation therapy department under the supervision of a registered radiation therapist. Includes application of equipment manipulation and operation, patient care, patient positioning, and radiation protection. Requires clinical objectives, evaluations, patient logs, clinic/didactic journal and attendance.

RDTT 310 Introduction to Radiation Therapy I (3 cr.)
Introduction to the profession of radiation therapy, the radiation oncology team, basic treatment skills and team/patient communication concepts. Clinical safety training includes; environmental, infection control, radiation safety, MRI safety and BLS certification. This pre-clinical course incorporates lectures, virtual simulation and clinical experiences to prepare students for clinical placements.

RDTT 311 Introduction to Radiation Therapy II (3 cr.)
Introduces the health care team and various aspects of the radiation therapy field. Includes concepts of surgical, radiation, and medical oncology along with immunotherapy, credentialing, accreditation, professional organizations, hospital organization, and billing and insurance information. Class also includes clinical education in an affiliated radiation therapy department under the supervision of a registered radiation therapist.

RDTT 313 Radiographic Technique (3 cr.)
Introduces theory and practical application of film/screen composition, care and use, sensitometry, latent image formation and development, automatic film processing, subtractive/duplication of radiologic image and quality assurance.

RDTT 314 Simulation (3 cr.)
Course is designed to provide knowledge base for assessing, comparing, and recommending the type of radiation therapy equipment, procedure and technique, patient positioning and immobilization for appropriate tumor localization and treatment delivery. The responsibilities of the radiation therapist with regards to the treatment prescription, documentation of treatment parameters and delivery, and patient condition and education will be examined. Class activity includes laboratory experience using a treatment simulator.

RDTT 316 Sectional Anatomy and Imaging Modalities (2 cr.)
Sectional anatomy content introduces students to medical imaging methods currently used in the field of radiation therapy. Students will identify normal anatomical structures via a variety of imaging formats. Basic anatomical relationships will be compared using topographical and cross-sectional images. The course will present the principles diagnostic imaging procedures and the physical principles of image formation in each modality.

RDTT 320 Basic Patient Care Skills in Radiation Therapy (3 cr.)
Introduction to the basic principles of infection control, asepsis, proper body mechanics, and the application of vital signs. Issues discussed include how ethics are applicable to practice, concept of health promotion, and communication within the context of health care.

RDTT 321 Patient Care in Radiation Oncology (6 cr.)
Concepts of oncologic patient care, procedures, related toxicity's, and patient management as they relate in the radiation therapy setting. Evaluation of the multi-disciplinary treatment approach to care for the radiation therapy patient. Skills in venipuncture technique and equipment are taught.

RDTT 328 Quality Improvement and Change Management (2 cr.)
Course is designed to focus on the components of quality improvement (QI) programs in radiation oncology. Topics will include developing a culture of safety through quality control

and assurance checks for the clinical aspects of patient care and medical records. (ARST) The role of the various radiation therapy team members in continuous quality improvement will be discussed.

Continuous quality improvement (CQI) project development and evaluation and assessment techniques will be emphasized. Human resource concepts and regulations impacting the radiation therapist will be examined. Accreditation agencies and the radiation therapist's role in the accreditation process will be emphasized. Change Management methodology, process improvement and organization concepts will be presented and discussed.

RDTT 331 Radiation Therapy Physics I (3 cr.)
Introduction to basic concepts of radiation therapy physics. Course includes atomic structure, radioactive decay, production of x-rays, interaction of ionizing radiation with matter, and the various radiation therapy units.

RDTT 332 Pathophysiological Processes I (3 cr.)
This course introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. It includes the foundational concepts of cellular adaptation, injury, and death; inflammation and tissue healing; fluid and electrolyte imbalances; and physiologic response to stressors, as well as additional pathophysiological processes. Students will learn to make selective clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes.

RDTT 333 Pathophysiological Processes II (3 cr.)
This sequel to Pathophysiological Processes I continues to explore pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes and communicating with other health professionals regarding pathophysiological processes. The course addresses additional pathophysiological processes not contained in Pathophysiological Processes I.

RDTT 340 Radiobiology (3 cr.)
Biological effects of ionizing radiation at the molecular, cellular and organismal levels with emphasis on vertebrates; both acute and chronic radiation effects are considered.

RDTT 400 Introduction to Medical Research Methods (2 cr.)
This course will provide an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their work, social, local and global environment. Course prepares students for independent research in radiation oncology.

RDTT 401 Independent Research (1 cr.)
This course is designed to provide the student with an opportunity to explore a particular area of interest in the field of radiation therapy. The student will work independently, with faculty advisement, in the process of selection, organization, and written paper that will demonstrate results of an investigational research study.

RDTT 403 Practical Radiation Therapy (0.5 cr.)
Gain practical knowledge from the field of Radiation Therapy. Utilizing the virtual classroom, students learn practical technical skills in a simulated clinical environment. Guest lecturers will give presentations based on their experience as Radiation Oncology Professionals.

RDTT 405A Radiation Oncology I (3 cr.)
These courses include the fundamentals of clinical radiation oncology in regards to treatment methods and patient management. Given a specific tumor, an evaluation process will be done that includes: etiology, epidemiology, clinical detection, diagnostic procedures, pathology, anatomy, mechanisms of spread, general treatment methods, radiation oncology treatment plans, side effects/patient care and prognosis of disease.

RDTT 405B Radiation Oncology II (3 cr.)
These courses include the fundamentals of clinical radiation oncology in regards to treatment methods and patient management. Given a specific tumor, an evaluation process will be done that includes: etiology, epidemiology, clinical detection, diagnostic procedures, pathology, anatomy, mechanisms of spread, general treatment methods, radiation oncology treatment plans, side effects/patient care and prognosis of disease.

RDTT 405C Radiation Oncology III (3 cr.)

These courses include the fundamentals of clinical radiation oncology in regards to treatment methods and patient management. Given a specific tumor, an evaluation process will be done that includes: etiology, epidemiology, clinical detection, diagnostic procedures, pathology, anatomy, mechanisms of spread, general treatment methods, radiation oncology treatment plans, side effects/patient care and prognosis of disease.

RDTT 407 Radiation Therapy Registry Review (3 cr.)
This course provides a review of basic radiation therapy concepts and critical topics, including oncology, radiation protection, radiobiology, patient care, physics concepts and radiation oncology treatment techniques, as preparation for the national board exams (ARRT). Preparation includes webinars, guest lectures, and board review sessions. The student will demonstrate a working knowledge of radiation therapy principles and readiness through mock examinations, discussions and individual assessments.

RDTT 409 Clinic (1-12 cr.)
Clinical education in an affiliated radiation therapy department under the supervision of a registered radiation therapist. Includes application of equipment manipulation and operation, patient care, patient positioning, and radiation protection. requires clinical objectives, evaluation, patient logs, clinic/didactic journal and attendance.

RDTT 411 Dosimetry I (2 cr.)
Introduction to the basic concepts of clinical dosimetry and treatment planning. Course includes methods of dose calculations and patient contouring, dose definitions, and isodose summations. Treatment planning in the computer lab will accompany lecture material.

RDTT 412 Dosimetry II (1-2 cr.)
This class builds on the concepts introduced in RDTT 411. The course will examine specific techniques of calculation used in the clinical environment and will develop a rational for the basic calculation techniques. Treatment planning in the computer lab will accompany lecture material.

RDTT 413 Dosimetry III (1-2 cr.)
Course will cover evaluation and interpretation of treatment planning information. Treatment planning will be covered using specific anatomical sites. Treatment planning in the completer lab will accompany lecture material.

RDTT 430 Radiation Therapy Physics II (4 cr.)
Introduction to basic concepts of radiation therapy physics. Course includes measurement of ionizing radiation, calibration of megavoltage x-ray and electron beams, dosimetry of radiation fields, manual treatment planning processes.

RDTT 431 Radiation Therapy Physics III (3 cr.)
Introduction to basic concepts of radiation therapy physics. Course includes computer treatment planning, computer systems, brachytherapy sources and treatment planning.

RDTT 432 Radiation Therapy Physics IV (3 cr.)
Introduction to basic concepts of radiation therapy physics. Course includes quality assurance for radiation therapy, radiation protection, radiation therapy applications of diagnostic imaging, and special topics.

RDTT 450 Independent Research, Patient Education I (1 cr.)
In this course students will conduct a comprehensive literature review to determine best practices in radiation oncology related to a specific diagnosis, and the patient education practices associated with that. Students will complete an assessment of current patient education materials available and integrate information literacy concepts for the development of a research paper and patient education capstone. Students will work independently on the research component and in a group for the capstone component, with faculty advisement throughout the process.

This course is a prerequisite for RDTT 453 final presentation of the Patient Education Capstone Project to relevant stakeholders.

RDTT 451 Independent Research, Patient Education II (1 cr.)
In this course students will conduct a comprehensive literature review to determine best practices in radiation oncology related to a specific diagnosis, and the patient education practices associated with that. Students will complete an assessment of current patient education materials available and integrate information literacy concepts for the development of a research paper and patient education capstone. Students will work independently on the research component and in a group for the capstone component, with faculty advisement throughout the process.

This course is a prerequisite for RDTT 453 final presentation of the Patient Education Capstone Project to relevant stakeholders.

RDTT 452 Independent Research, Patient Education III (1 cr.)
In this course students will conduct a comprehensive literature review to determine best practices in radiation oncology related to a specific diagnosis, and the patient education practices associated with that. Students will complete an assessment of current patient education materials available and integrate information literacy concepts for the development of a research paper and

patient education capstone. Students will work independently on the research component and in a group for the capstone component, with faculty advisement throughout the process.

This course is a prerequisite for RDTT 453 final presentation of the Patient Education Capstone Project to relevant stakeholders.

RDTT 453 Patient Education Capstone (2 cr.)
In this course students will present a final research capstone project that demonstrates knowledge and application of evidence-based patient education practices gained through conducting research and clinical education. Students will select a specific oncology diagnosis group within radiation oncology, evaluate current educational materials available, recognize best practices and assess current gaps, considering the patient perspective throughout. Students will work in defined groups with faculty advisement throughout the research and development stages of the Capstone Project. Final project quality should be appropriate for potential patient dissemination.

School of Medicine – MD Program

AMBL 709B Ambulatory Primary Care (4 cr.)
The purpose of the Ambulatory Internal Medicine elective is for students to develop skills in patient communication, population management, clinical diagnosis/reasoning and management in the care of both acutely ill and complex chronically ill adults. In this experience students work one-on-one with experienced faculty in the outpatient internal medicine clinic. Students will see patients independently, obtain an accurate history and physical exam, develop a differential diagnosis and plan. They will interpret labs and others test results and communicate with patients and care givers. As part of this experience, students will work collaboratively in an interprofessional team as part of patient centered medical home.

AMBL 709G Ambulatory Practice-Good Sam (4 cr.)
In this multi-specialty clinic, students work with the Internal Medicine Faculty in their private practices. They are exposed to patients of multiple social and economic backgrounds and gain experience in hands on primary care of complex patients. During the rotation, the student will spend time with our geriatrician as well. Their sessions with the Internal Medicine faculty will expose them to the diverse opportunities of internal medicine including HIV care and preventive medicine. The electronic medical record and interdisciplinary approach to patients will expose them to innovative methods of outpatient medicine. The emphasis on evidence-based approaches and availability of real-time electronic information resources enhances the learning experience. Students participate in our noon conference lecture series as well as continuity clinic conference.

AMBL 709S Ambulatory Practice-Providence St. Vincent (4 cr.)
Three months advance notice to sign up or cancel. Students learn the principals of longitudinal care of adults. Students are exposed to a unique model for ambulatory education that emphasizes continuity of care among patients, residents, attending, and care teams in a patient-centered medical home. The demography of our patients includes the full range of ethnicity, socioeconomic status, and disease burden and acuity. Excellent access to medical information allows students to answer everyday medical questions in real time. Students attend daily morning reports and noon conference. Exceptional exposure to community-based practice setting that emphasizes intellectual curiosity and provides students an opportunity to participate in primary care internal medicine.

AMBL 709VC Ambulatory Primary Care - Vancouver Clinic (4 cr.)
Expose students to a traditional outpatient model, a transitional care clinic (post-acute discharge-type clinic run by hospitalists, sometimes seeing patients for as many as 6 months before sending them back to PCP), and a "neighborhood clinic" type of model. Both the transitional and neighborhood clinic models integrate dietitians, pharmacists, social workers, and mental health specialists into the care delivery, and focus on value-based care. This interdisciplinary approach will expose students to innovative methods of outpatient medicine. The emphasis on evidence-based approaches and availability of real-time electronic information resources will enhance the learning experience. Students will also have an opportunity to participate in our noon conference lecture series as well as continuity clinic conference as part of our partnership with the Legacy Salmon Creek Internal Medicine Residency Program.

AMBL 741S Ambulatory Practice-Continuity-St. Vincent (8 cr.)
In this multi-specialty clinic, students work with the Internal Medicine Faculty in their private practices. They are exposed to patients of multiple social and economic backgrounds and gain experience in hands on primary care of complex patients. During the rotation, the student will spend time with our geriatrician as well. Their sessions with the Internal Medicine faculty will expose them to the diverse opportunities of internal medicine including HIV care and preventive medicine. The electronic medical record and interdisciplinary approach to patients will expose them to innovative methods of outpatient medicine. The emphasis on

evidence-based approaches and availability of real-time electronic information resources enhances the learning experience. Students participate in our noon conference lecture series as well as continuity clinic conference.

ANAT 710A Anatomy Teaching Elective (1 cr.)
This elective provides an opportunity for advanced medical students to expand their knowledge of anatomy in areas of interest to them, to gain experience in teaching their colleagues, and to participate in developing and delivering aspects of curriculum.

ANST 701A Anesthesiology Research (2-12 cr.)
The Research Elective Request form must be signed off by the faculty member, department clerkship coordinator and the Curriculum and Student Affairs office prior to starting. Students may arrange for laboratory or a clinical research experience in anesthesiology, primarily in the pulmonary and cardiovascular physiology or pain management. Times of year and durations of research electives are flexible and will be determined by the time schedules of students and mentors; however, students should plan on spending a minimum of 4 weeks on a project. The research elective is intended for students who think they might be interested in pursuing a career in academic anesthesiology who would like more experience with the scientific process. Please refer to the department website (www.ohsu.edu/anesth) “Research” for topics and mentors.

ANST 701Z Anesthesiology Research-AWAY (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

ANST 709A Anesthesiology (4 cr.)
Students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with either a faculty physician or both a faculty physician and an anesthesiology resident. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and non-operative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical skills involved with airway management, tracheal intubation, and IV infusion therapy. This elective requires weekly written assignments and a final exam, submitted through Sakai.

ANST 709AP Acute Pain Management (4 cr.)
This elective is intended for students with an interest in acute and perioperative pain medicine. Students will have an opportunity to participate in inpatient management of patients experiencing or at risk of acute postoperative pain, trauma related pain, acute on chronic pain, and acute cancer pain. Students will be expected to get involved in the decision making for and care of these complex patients. Students will be exposed to a variety of procedural interventions including thoracic and lumbar epidural continuous catheters, spinal anesthetics, and single shot and continuous perineural catheters for the most common regional acute pain nerve blocks placed under ultrasound guidance and landmark techniques. Students will spend time on the Acute Pain Service at the university hospital, and education will be acquired through daily rounds with the acute pain attending and team. Students will also rotate through the regional anesthesia services at the university hospital and the CHH surgery center. Educational components will include the attendance of regional anesthesia resident didactics, problem-based learning modules, and assigned readings.

ANST 709CP Chronic Pain Clinic (4 cr.)
This elective is intended for students with an interest in pain medicine. Students will have an opportunity to participate in outpatient care of patients with chronic and cancer-related pain. The more common conditions managed include back and neck pain, pelvic pain, chronic pain syndromes, headache migraines, diabetic neuropathy, cancer pain, and post-operative pain. The multifactorial components of pain care including pharmaceutical, procedural, behavioral, and alternative therapies will be explored and there will be a dedicated time for students to observe the complementary services provided at the OHSU Comprehensive Pain Center. Students will be exposed to a variety of procedural interventions including trigger point injections, Botox injections, joint injections, nerve blocks, radiofrequency ablations, and nerve stimulators. Educational components will include the attendance of pain fellow didactics, case-based modules, and assigned readings.

ANST 709D Anesthesiology ICU (6 cr.)
Students receive supervised instruction in components of critical care medicine specific to post-operative care of surgical and cardiac and thoracic patients. The rotation emphasizes: 1) airway management, 2) circulatory support, 3) metabolic demands, 4) infection prevention in critically ill patients. This will emphasize the physiological changes that occur in our post-operative patients and give the students good understanding of said applied physiology.

ANST 709E Global Anesthesia (3 cr.)
One MS4 each year is offered the opportunity to travel to an underserved international community and do anesthesia along with an OHSU faculty. The purpose of the elective is to learn about some of the issues and barriers to global health in general, and global anesthesia specifically. There are typically several available trips per year, so the selected student can choose among them for a date range that fits with their

schedule and a country/culture in which they are interested. This opportunity is funded by a fellowship created by retired physicians John and Betty Thompson, and requires attending a pre- and post-dinner, as well as keeping a journal during the trip.

ANST 709H Anesthesiology - PeaceHealth Sacred Heart (4 cr.)
Students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with an attending faculty physician. This elective requires weekly written assignments and a final exam, submitted through Sakai. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and non-operative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical skills involved with airway management, tracheal intubation, and IV infusion therapy. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community clinics.

ANST 709N Neuroscience Critical Care (5 cr.)
The Neuroscience Critical Care Elective is designed to have clinical responsibilities for medical students in a step-wise fashion over the course of their rotation. Rotations are typically in a four-week block in the Neuroscience Critical Care Unit (NSICU).

The medical student is expected to attend all activities in the NSICU during this rotation. Rounds are structured toward active participation with distinct roles for each member of the team (attending, fellow, resident, nurses, pharmacist, and social worker). Detailed critical care rounds occur with a "systems-approach" to each patient and special emphasis is laid on bedside teaching as it pertains directly to patient care. Multiple goal-directed rounds occur through the course of the day (Combined Neurosurgical rounds, Critical Care rounds, radiology rounds, Evening rounds). The expectation is to provide exposure to a few procedures during this rotation. These procedures would include lumbar puncture, intubation, arterial and central venous line placements and SWAN-ganz catheter placement. Medical students are expected to keep an ongoing log of procedures that they have observed over the course of their training.

ANST 709P Pain Management (4 cr.)
Students receive supervised instruction in clinical aspects of pain management including post-operative and post traumatic acute pain problems managed by epidurals, patient-controlled analgesia (PCA), various regional blocks (i.e. intercostal, brachial plexus, etc.), and management of a full range of chronic pain and cancer pain problems. The multidisciplinary approach to pain control is emphasized. Students must have completed their Medicine and Surgery clerkships prior to entering the elective.

ANST 709SC Anesthesiology - St. Charles Bend (4 cr.)
Students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with an attending physician. This elective requires weekly written assignments and a final exam, submitted through Sakai. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and non-operative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical skills involved with airway management, tracheal intubation, and IV infusion therapy. Students will be expected to attend weekly Grand Rounds, clinical conferences, and other continuing medical education activities as assigned by their attending. St. Charles Bend is located in Bend, OR, approximately 160 miles southeast of the main OHSU campus. St. Charles (Bend) is designated as a Level II Trauma Center by the Oregon Public Health Division. Bend is the only Level II Trauma Center east of the Cascades. St. Charles (Redmond) is a certified Level III Trauma Center. Pioneer Memorial Hospital (Prineville) is a Level IV Trauma Center.

ANST 709SJ Anesthesiology - St Joseph, CA (4 cr.)
Students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with an attending faculty physician. This elective requires weekly written assignments and a final exam, submitted through Sakai. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and non-operative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical skills involved with airway management, tracheal intubation, and IV infusion therapy. It does NOT satisfy rural requirement.

ANST 709T Anesthesiology-Tillamook (4 cr.)
Students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with an attending physician. This elective requires weekly written assignments and a final exam, submitted through SAKAI. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and nonoperative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical

skills involved with airway management, tracheal intubation, and IV infusion therapy.

ANST 709X Anesthesia Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Anesthesia. Students must make special arrangements with a faculty member and the department for an individual program of study. Students must obtain departmental approval to enroll in this course.

ANST 709Z Anesthesiology - AWAY (1-4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

ANST 710X Anesthesiology Special Elective (2 cr.)
2 week version of ANST 709X

ANST 741B Anesthesiology Continuity (8 cr.)
Throughout this 8-week immersive experience, continuity will be provided by the patient population and preceptor. Students will learn clinical aspects of anesthesiology by working in the operating room, preoperative clinic, CVICU, as well as acute pain service.

ANST 741H Anesthesiology - PeaceHealth Sacred Heart Continuity (8 cr.)
In this continuity course, students receive supervised instruction and gain experience with the clinical aspects of anesthesiology by working in the operating room with an attending faculty physician. This elective requires weekly written assignments and a final exam, submitted through Sakai. The course emphasizes: 1) perioperative patient care with a focus on intraoperative anesthetic and non-operative pain management, 2) using scientific principles and practices of anesthesiology to develop individual patient plans, and 3) developing technical skills involved with airway management, tracheal intubation, and IV infusion therapy. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy.

ANST 741X Anesthesia Special Elective Continuity (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Anesthesia. Students must make special arrangements with a faculty member and the department for an individual program of study.

ARTH 709H Arthritis/Rheumatology - Eugene (4 cr.)
Students are expected to learn diagnosis/therapy of common rheumatic disorders, interpretation of lab tests and musculoskeletal x-rays, and simple procedures such as joint injections. Problems commonly seen include osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus, osteoporosis, gout, bursitis, vasculitis and fibromyalgia. Students participate in approximately five outpatient clinics per week averaging 1-2 new patients each clinic or 4-5 return patients. No call responsibilities. Students assist and possibly perform joint aspiration/injection, tendon injections, and bursa injections. Conferences include medical Grand Rounds at Sacred Heart Medical Center, Rheumatology journal club, and daily tutorials based on assigned reading. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy.

ARTH 710A Arthritis/Rheumatology-OHSU (2 cr.)
Students are expected to learn diagnosis/therapy of common rheumatic disorders, interpretation of lab tests and musculoskeletal x-rays, and simple procedures such as joint injections. Problems commonly seen include osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus, osteoporosis, gout, bursitis, vasculitis and fibromyalgia. Students will participate in outpatient clinics and reading assignments, and may have some inpatient exposure as well. Students participate in approximately five outpatient clinics per week averaging 1-2 new patients each clinic or 4-5 return patients. No call responsibilities. Students assist and possibly perform joint aspiration/ injection. Conferences include Grand Rounds, Rheumatology Grand Rounds, Rheumatology Journal Club, X-Ray Conference, Clinical Case Conference and didactic sessions. The rotation is based at OHSU and the VA.

ARTH 710B Rheumatology Deschutes, Bend (2 cr.)
Students will learn how to approach a chief complaint and determine a differential diagnosis. They will then learn how to workup, diagnose, and initiate treatment. This will include common scenarios such as knee pain as well as specific rheumatologic conditions such as rheumatoid arthritis, osteoarthritis, systemic lupus, gout, vasculitis, osteoporosis, etc. The student will study and observe musculoskeletal ultrasound and bone densitometry and will observe and/or perform joint aspirations and injections of joints and/or bursae. They will gain experience in interpreting lab tests, x-rays, and other pertinent imaging. The rotation will take place in an outpatient setting in Bend, Oregon and will include hands on experience with patients as well as chart review and reading assignments. Students will be expected to write up and present patient encounter notes. There will be no nighttime call or weekend responsibilities. Emphasis and

content will be adjusted to the student's prior experience and career goals. Housing will be provided by OHSU.

BLHD 710 Blood & Host Defense (13 cr.)
Students who complete this block will recognize the normal blood and immune system structure and function. They will learn about important diseases of blood and immunity including their pathogeneses, presentation, diagnostic tests and management. Students will understand and apply principles of professionalism, ethics, communication, epidemiology, bio statistics, informatics, health policy, patient interviewing and physical examination in relation to the hematologic and immunologic systems.

CARD 709A Cardiology Consult - OHSU (4 cr.)
Students are expected to refine their skills at taking a cardiac history and performing an examination of the cardiovascular system. They will learn how to perform a consultation on a patient at the request of another physician and to interact productively with other physicians who have primary responsibility for the care of the patient. They will learn the role of common diagnostic tests used in cardiology for management of patients. They will gain experience in interpretation of electrocardiograms and be exposed to the role of non-invasive testing as needed. It may be possible to arrange experience watching exercise treadmill testing (primarily VA rotation). Commonly seen conditions include evaluation of chest pain syndromes, coronary artery disease, heart failure, risk assessment prior to non-cardiac surgery, valvular heart disease, and infective endocarditis. Students respond to requests for consultation by evaluating the patient, analyzing the data, preparing a diagnostic and management plan, record a note in the patient record, and present the patient to the attending physician. Students regularly interpret electrocardiograms and review them with the attending physician.

CARD 709G Cardiology Arrhythmia (4 cr.)
Cardiology/Arrhythmia Consult at Good Samaritan Hospital. Daily work with Attending Cardiologist. Objective is to gain basic experience in clinical cardiology, particularly electrophysiology. Student responsibilities include seeing patients in the hospital and in clinics, and attending/assisting in procedures such as pacemaker or defibrillator placement, electrophysiology studies, and ablation procedures. Students also practice reading approximately five EKG's per day, and review with attending physician. Daily internal medicine conference and weekly cardiology conference.

CARD 709H Cardiology - PeaceHealth Sacred Heart (4 cr.)
Students will be working with physicians from Oregon Cardiology, a high-volume practice. They will be exposed to a full spectrum of cardiac pathology including heart artery disease, cardiac dysrhythmias, heart valve disease, and heart failure. During the rotation, students will see both new and follow-up patients in a variety of hospital and clinical settings such as the ICU, office, catheterization lab, and operating room. Students will be expected to learn how to organize and present a routine cardiac history and physical exam, formulate assessments and plans based on their patient encounters. Focused reading of guidelines, textbooks and pertinent literature should support these assessments. Students will be exposed to the full range of cardiac diagnostic and therapeutic modalities which may include open heart surgery, cardiac catheterization, echocardiography, nuclear cardiology, electrocardiography, electrophysiological testing and non-invasive stress testing. Students will be expected to understand the basic utility of these modalities as they apply in the broad context of medical care. At the end of their rotation students will better be able to: 1) recognize commonly encountered cardiac pathophysiology; 2) know how to initiate a course of treatment/investigation/consultation based on their assessments; 3) understand the role cardiologists play in caring for the medical and surgical patient; 4) become familiar with the manifestations and treatment of common cardiac pathology.

CARD 709SV Inpatient Cardiology Experience Providence St. V (4 cr.)
This elective course is limited to students who are accepted into COMPADRE program.

Students can expect to learn how to obtain a focused cardiac history and physical examination while managing cardiovascular disease predominantly in the inpatient setting. This rotation will help you learn the indications, contraindications, and limitations to noninvasive cardiac testing while becoming more proficient with ECG interpretation and auscultation of heart sounds with a focus on the development of those skills necessary for an internist’s practice in a resource limited setting. A secondary goal is for the student to develop an understanding of the internist’s capabilities and limitations regarding the management of cardiovascular diseases, increasing the skills which can help bring the knowledge of the subspecialist to the practice of the generalist.

CARD 709V Cardiology Consult - VAMC (4 cr.)
Students are expected to refine their skills at taking a cardiac history and perform an examination of the cardiovascular system. They will learn how to perform a consultation on a patient at the request of another physician and to interact productively with other physicians who have primary responsibility for the care of the patient. They will learn the role of common diagnostic tests used in cardiology for management of patients. They will gain experience in interpretation of electrocardiograms and be exposed to the

role of non-invasive testing as needed. It may be possible to arrange experience watching exercise treadmill testing (primarily VA rotation). Commonly seen conditions include evaluation of chest pain syndromes, coronary artery disease, heart failure, risk assessment prior to non-cardiac surgery, valvular heart disease, and infective endocarditis. Students respond to requests for consultation by evaluating the patient, analyzing the data, preparing a diagnostic and management plan, record a note in the patient record, and present the patient to the attending physician.

CARD 710A Cardiology Consult - OHSU (2 cr.)
Students are expected to refine their skills at taking a cardiac history and performing an examination of the cardiovascular system. They will learn how to perform a consultation on a patient at the request of another physician and to interact productively with other physicians who have primary responsibility for the care of the patient. They will learn the role of common diagnostic tests used in cardiology for management of patients. They will gain experience in interpretation of electrocardiograms and be exposed to the role of non-invasive testing as needed. It may be possible to arrange experience watching exercise treadmill testing (primarily VA rotation). Commonly seen conditions include evaluation of chest pain syndromes, coronary artery disease, heart failure, risk assessment prior to non-cardiac surgery, valvular heart disease, and infective endocarditis. Students respond to requests for consultation by evaluating the patient, analyzing the data, preparing a diagnostic and management plan, record a note in the patient record, and present the patient to the attending physician. Students regularly interpret electrocardiograms and review them with the attending physician.

CARD 710D Preventive Cardiology (2 cr.)
This elective course will give learners exposure to clinical evaluation and management of patients at different levels of risk for ischemic cardiovascular disease, including standard care diagnostic approaches and therapeutic decisions ranging from lifestyle changes and supplemental therapy, to use of medications, to invasive procedure such as cholesterol dialysis (LDL Apheresis).

CARD 710G Cardiology Arrhythmia (2 cr.)
Cardiology/Arrhythmia Consult at Good Samaritan Hospital. Daily work with Attending Cardiologist. Objective is to gain basic experience in clinical cardiology, particularly electrophysiology. Student responsibilities include seeing patients in the hospital and in clinics, and attending/assisting in procedures such as pacemaker or defibrillator placement, electrophysiology studies, and ablation procedures.

CARD 710V Cardiology Consult - VAMC (2 cr.)
Students are expected to refine their skills at taking a cardiac history and perform an examination of the cardiovascular system. They will learn how to perform a consultation on a patient at the request of another physician and to interact productively with other physicians who have primary responsibility for the care of the patient. They will learn the role of common diagnostic tests used in cardiology for management of patients. They will gain experience in interpretation of electrocardiograms and be exposed to the role of non-invasive testing as needed. It may be possible to arrange experience watching exercise treadmill testing (primarily VA rotation). Commonly seen conditions include evaluation of chest pain syndromes, coronary artery disease, heart failure, risk assessment prior to non-cardiac surgery, valvular heart disease, and infective endocarditis. Students respond to requests for consultation by evaluating the patient, analyzing the data, preparing a diagnostic and management plan, record a note in the patient record, and present the patient to the attending physician. Students regularly interpret electrocardiograms and review them with the attending physician.

CPR 710 Cardiopulmonary & Renal (9-18 cr.)
Students who complete this block will understand the structure and function of the cardiovascular, renal and pulmonary systems in health and disease, not only as individual organ systems but as they integrate in specific physiological and pathophysiological states. Students will learn to collect and interpret clinical data and relate specific changes in these data parameters to physiological changes, which will guide the choice of therapeutic interventions. They will understand and apply principles of professionalism, inclusion, ethics, communication, epidemiology, bio statistics, informatics, health policy, patient interviewing and physical examination in relation to the lung, heart and kidney organ systems, in a way that promotes the imprinting of knowledge and the curiosity to keep updating it. It is expected that during their clinical experiences and as graduate physicians the participants will have a solid knowledge base on which to continue perfecting their skills, becoming lifelong learners, who approach and treat their patients' ailments in an efficient yet compassionate, respectful, and scientifically sound manner.

CPX 702 Clinical Performance Examination (1 cr.)
The Clinical Performance Examination (CPX) is a required summative assessment of clinical and professional skills. It has been developed by a group of OHSU clinical faculty representing the core clinical experiences. The CPX consists of cases that mirror common problems students should be prepared to identify and manage following the completion of their core clinical experiences. In comparison with previous OSCEs or CSAs taken, this exam assesses a wider range of skills with each patient. Students encounter standardized

patients in each scenario and students will be responsible for some or all of the following in each scenario: history taking, physical exam, patient-physician interaction, communication, and post-encounter assessment and planning.

CPX 702R Clinical Performance Examination Remediation (1 cr.)
Remediation version of CPX 702.

CSUR 709A Cardiothoracic Surgery Sub-Internship - OHSU (6 cr.)
The purpose of the Cardiothoracic Surgery clinical experience is for students to participate in the surgical management of adult cardiac and thoracic surgery patients. Students will learn all aspects of cardiothoracic surgery, including valve replacements, coronary artery revascularization, aortic dissection repair, surgical arrhythmia ablation, heart transplantation, lung resection, esophageal procedures and mediastinal exploration. Students will attend didactic lectures, one-on-one faculty teaching sessions, clinical rounds, and scrub into cases. Students will see patients in the clinic, on the ward, and in the CVICU.

CSUR 709Z Cardiothoracic Surgery - AWAY (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

CSUR 710A Cardiothoracic Surgery Introduction - OHSU (3 cr.)
The purpose of the Cardiothoracic Surgery clinical experience is for students to participate in the surgical management of adult cardiac and thoracic surgery patients. Students will learn all aspects of cardiothoracic surgery, including valve replacements, coronary artery revascularization, aortic dissection repair, surgical arrhythmia ablation, heart transplantation, lung resection, esophageal procedures and mediastinal exploration. Students will attend didactic lectures, one-on-one faculty teaching sessions, clinical rounds, and scrub into cases. Students will see patients in the clinic, on the ward, and in the CVICU.

DERM 701A Dermatology Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Dermatology. Projects must be planned, reviewed, and approved prior to the beginning of the elective. The Research Elective Request form must be approved by the supervising faculty member, department clerkship director, and the Curriculum & Student Affairs office four weeks prior to starting.

DERM 701Z Dermatology Research Away (1-12 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

DERM 709A Clinical Dermatology (4 cr.)
This general elective is intended for those students pursuing primary care or non-dermatologic subspecialties who are interested in learning the basics of dermatology. Students are exposed to the breadth of dermatology and spend the majority of their time in OHSU and VA faculty clinics. Clinics are also held at Lake Oswego and Beaverton. Students may be expected to travel to these sites, which are within 10 miles of the main OHSU campus. Rotations on the inpatient consultation service, dermatologic surgery (including exposure to the Mohs procedure), and dermatopathology are also available.

DERM 709B Dermatopathology (2 cr.)
Students in this elective gain experience in the microscopic diagnosis of skin disease. Students work closely with both dermatology and pathology residents as well as participate in daily sign-outs of cases with the faculty dermatopathologist at the microscope. Students attend all departmental educational conferences, Grand Rounds and weekly didactics alongside the students in the Clinical Dermatology elective.

DERM 709C Subspecialty Dermatology (4 cr.)
This advanced elective is intended for students interested in pursuing a career in Dermatology. Students spend much of their time in the OHSU faculty clinics focused on subspecialty areas of Dermatology including psoriasis, atopic dermatitis, contact dermatitis, pediatric dermatology, autoimmune dermatology and Mohs surgery. Experience in the Dermatology VA clinics and Dermatopathology may also be provided. Clinics are also held at Lake Oswego and Beaverton. Students may be expected to travel to these sites, which are within 10 miles of the main OHSU campus.

DERM 709H Dermatology - PeaceHealth Sacred Heart (4 cr.)
The purpose of the Eugene Dermatology elective is for Students to gain experience and proficiency in the care of patients with a wide range of dermatologic diseases. Students will learn basic clinical dermatology with an emphasis on mastering standard terminology, common dermatologic diseases and common procedures. Students will assist with and perform KOH slide preparations, biopsies, and excisions. Students will see patients in both a private office and a multidisciplinary clinic, while working under the supervision of an attending dermatologist. Students will also have exposure to dermatopathology and Mohs surgery.

DERM 709PE Pediatric Dermatology (4 cr.)

This elective is intended for students interested in pursuing a career in either Primary Care or Dermatology seeking concentrated experience in pediatric dermatology. Students spend most of their time in the OHSU faculty clinics, focused on subspecialty topics in Pediatric Dermatology, including: advanced management of atopic dermatitis, infantile hemangiomas and other vascular birthmarks, and procedural clinic. Clinics are also held at Lake Oswego, Beaverton, Orenco Station and Happy Valley. Students may be expected to travel to these sites, which are all within 15 miles of the main OHSU campus.

DERM 709VD VIRTUAL Dermatology (4 cr.)
This virtual elective is intended for students interested in gaining foundational knowledge of Dermatology and should benefit both those interested in pursuing careers in dermatology as well as in primary care. At the end of the course students should be better able to identify clinical manifestations of dermatologic disease, describe appropriate evaluation and initial management strategies. The course is provided online covering both general and complex medical dermatology and is organized by daily themes.

DERM 709Z Dermatology - AWAY (4 cr.)
Medical students are responsible for making their own arrangements for an away rotation, including receiving the department's review and approval prior to leaving for the rotation. The student must submit approval forms to Education and Student Affairs Office prior to leaving for rotation.

DERM 710A Clinical Dermatology (2 cr.)
This general elective is intended for those students pursuing primary care or non-dermatologic subspecialties who are interested in learning the basics of dermatology. Students are exposed to the breadth of dermatology and spend the majority of their time in OHSU and VA faculty clinics. Clinics are also held at Lake Oswego and Beaverton. Students may be expected to travel to these sites, which are within 10 miles of the main OHSU campus. Rotations on the inpatient consultation service, dermatologic surgery (including exposure to the Mohs procedure), and dermatopathology are also available.

DERM 710B Dermatopathology (1 cr.)
Students in this elective gain experience in the microscopic diagnosis of skin disease. Students work closely with both dermatology and pathology residents as well as participate in daily sign-outs of cases with the faculty dermatopathologist at the microscope.

DERM 710Z Dermatology - Away (2 cr.)
2 week version of DERM 709Z

DERM 741X Dermatology Special Elective Continuity (8 cr.)
This special elective is intended for the student pursuing primary care who is interested in learning the basics of dermatological care across the lifespan. The student will be exposed to the breadth of dermatology and spend the majority of their time in the OHSU and VA faculty clinics. The student will focus on topics including psoriasis, atopic dermatitis, contact dermatitis, pediatric dermatology, autoimmune dermatology, skin cancer, and Mohs surgery. Rotations on the inpatient consultation service, dermatologic surgery and dermatopathology are also available. Students will interact with a variety of faculty to ensure exposure to both common and uncommon dermatological problems.

DEVH 710 Developing Human (12 cr.)
Students who complete this block will learn an overview of the anatomy, physiology, and pharmacology related to the life cycle from conception through pregnancy, childbirth, pediatrics, adolescence, adulthood, and aging. They will explore sexual function in all humans, reproductive health, and reproductive pathology, as well as the presentation, clinical evaluation and management of common diseases of children and older adults. Students will be introduced to principles of palliative care and gender affirming care. Additionally, they will continue to develop and apply principles of professionalism, ethics, communication, epidemiology, biostatistics, informatics, health policy, patient interviewing and physical examination in relation to the developing human and reproduction.

EMED 709A Sub-I Emergency Medicine-OHSU (6 cr.)
This sub-internship elective is intended for students considering emergency medicine as a career. It provides students an intensive and comprehensive experience in Emergency Medicine in which students participate in the daily care of emergency patients with attending staff and residents, attend the departmental conference, and attend weekly student-specific lectures covering a broad range of topics in Emergency Medicine. Students will be assigned shifts at OHSU and DCH. While completion of all core rotations prior to your Sub-I in emergency medicine is not required, it is highly recommended.

EMED 709C Introduction to Emergency Medicine (4 cr.)
This elective provides students with an introduction to the field of Emergency Medicine. Students participate in the daily care of patients with attending staff and residents, attend weekly lectures covering a broad range of topics in Emergency Medicine, and participate in a suturing skills and basic ultrasound workshop with a PGY3 EM resident.

EMED 709D Pediatric Emergency Medicine - OHSU (4 cr.)
This elective provides students with an introduction to Pediatric Emergency Medicine. Students focus on the

specialty care of pediatric patients. Students will also attend weekly lectures and didactics sessions. Students are assigned shifts in the Pediatric Emergency Medicine Department of Doernbecher Children's Hospital.

EMED 709E Pediatric Emergency Medicine - Legacy Randall (4 cr.)
This elective provides students with an introduction to community Pediatric Emergency Medicine. Students focus on the specialty care of pediatric patients. Students will have opportunities to care for patient population of non-accidental trauma, burns and pediatric psychiatry. This rotation will be able to provide students with hands-on pediatric orthopedics experience and other procedures.

EMED 709FL Rural Emergency Medicine PeaceHeatlh Harbor Medical Center (4 cr.)
Rural Emergency Medicine PeaceHeatlh Harbor Medical Center provides critical services for its communities, including facilitating earlier evaluation and entry into the healthcare system, stabilization and initiation of treatment, and coordinated transfer to various departments. Students will gain exposure to, and learn to diagnose and manage a wide range of clinical cases and injuries. Students will gain experience in H&P and differential diagnosis. Students will gain hands-on experience in managing urgent/emergent care. Students will also have the opportunity to develop skills in common emergency medicine procedures.

EMED 709G Emergency Medicine - Legacy Good Samaritan (4 cr.)
This elective provides students with an introduction to all aspects of Emergency Medicine. Students participate in the daily care of emergency patients with attending staff and attend weekly lectures covering a broad range of topics in Emergency Medicine. An introduction to pre-hospital care and toxicology will also be included.

EMED 709H Emergency Medicine - PeaceHealth Sacred Heart (4 cr.)
Students will be assigned shifts in the Emergency Departments at Sacred Heart Medical Center at RiverBend, a 432 bed quaternary care, Level II trauma facility, and at University District offering students an excellent educational and clinical experience. You will have an introduction to all aspects of Emergency Medicine; working one-on-one with Board certified Emergency Medicine physicians. Students participate in the daily care of emergency patients with attending staff and attend weekly lectures covering a broad range of topics in Emergency Medicine. An introduction to pre-hospital care and toxicology will also be included. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus.

EMED 709J Emergency Medicine-Rogue Valley (4 cr.)
A month at the Asante Rogue Regional Medical Center in Medford offers students an excellent educational and clinical experience. We are a 50K visit/year community hospital, and act as the trauma referral center for a large swath of southern Oregon and northern California. Students here work directly with board certified ED attendings--there are no residents or other students to compete with. Our emphasis is on clinical learning: you'll get direct one-on-one lectures, see lots of patients, and get immediate feedback on presentation skills. We prefer students who are planning on a residency in Emergency Medicine--this will be a great rotation for you to broaden your horizons and to complement your academic center learning experience.

EMED 709M Emergency Medicine Adventist (4 cr.)
This elective is intended to introduce students to emergency medicine in an urban community setting. Students should expect to practice and develop their ability to take a focused history and physical, develop thorough differential diagnoses, and make decisions regarding treatment and dispositions for patients. Rotators should expect to have the opportunity to practice common EM skills such as suturing, splinting, and ECG and radiology interpretation.

EMED 709SC Rural Emergency Medicine-St Charles (4 cr.)
This elective provides students with an introduction to all aspects of Emergency Medicine. Students participate in the daily care of emergency patients with attending staff. Students will be assigned shifts in the Emergency Departments at St. Charles Redmond, St. Charles Prineville, and St. Charles Madras. Students will be expected to attend weekly Grand Rounds, Inter-Professional Education presentations, and other continuing medical education activities as assigned by their attending. St. Charles facilities are located Central Oregon, specifically the Tri-county area that includes; Crook (Prineville), Deschutes (Redmond) and Jefferson (Madras) Counties. These campuses range from approximately 122 - 151 miles southeast of the main OHSU campus. St. Charles (Redmond) is a certified Level III Trauma Center. St. Charles (Prineville and Madras) are both Level IV Trauma Centers.

EMED 709SS Rural Emergency Medicine Providence Seaside (4 cr.)
Providence Seaside Hospital Emergency Medicine provides critical services for its communities, including facilitating earlier evaluation and entry into the healthcare system, stabilization and initiation of treatment, and coordinated transfer to various departments. Students will gain exposure to, and learn to diagnose and manage a wide range of clinical cases and injuries. Students will gain experience in H&P and differential diagnosis. Students will gain hands-on experience

in managing urgent/emergent care. Students will also have the opportunity to develop skills in common emergency medicine procedures.

EMED 709X Emergency Medicine Special Elective (4 cr.)
Students may make special arrangements with the department for individual programs of study.

EMED 709Z Emergency Medicine - AWAY (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

EMED 710A Introduction to Emergency Medicine (2 cr.)
This elective provides students with an introduction to the field of Emergency Medicine. Students participate in the daily care of patients with attending staff and residents, attend weekly lectures covering a broad range of topics in Emergency Medicine, and participate in a suturing skills, splint application, and basic ultrasound lab with a PGY3 EM resident. Students will be assigned shifts at OHSU and possibly the Peds ED in Doernbecher.

EMED 710F Emergency Ultrasound (2 cr.)
This 2 week hands-on rotation will serve as an introduction to emergency bedside ultrasound (US). Rotating students will be introduced to the core Emergency Medicine applications of bedside US (FAST, Cardiac, RUQ, Renal, DVT, Thoracic, Pregnancy and procedures) and will receive training in general ultrasound physics and principles as well as image acquisition and interpretation. Students will be expected to demonstrate competency in all three areas by the end of the rotation. The skills gained during the rotation will be applicable not just in the Emergency Department but in other fields utilizing bedside US. Rotation Guidelines and Curriculum: The rotation consists of three components: formal didactics, clinical time and self-study.

EMED 710M Emergency Medicine Adventist (2 cr.)
This elective is intended to introduce students to emergency medicine in an urban community setting. Students should expect to practice and develop their ability to take a focused history and physical, develop thorough differential diagnoses, and make decisions regarding treatment and dispositions for patients. Rotators should expect to have the opportunity to practice common EM skills such as suturing, splinting, and ECG and radiology interpretation.

EMED 710X Emergency Medicine Special Elective (2-Week) (2 cr.)
2 week version of EMED 709X

EMED 710Z Emergency Medicine Away (2 cr.)
2 week version of EMED 709Z

EMED 741G Emergency Medicine - Legacy Good Samaritan Continuity (8 cr.)
This continuity rotation provides students with an introduction to all aspects of Emergency Medicine. Students participate in the daily care of emergency patients with attending staff and attend weekly lectures covering a broad range of topics in Emergency Medicine.

EMED 741H Emergency Medicine - PeaceHealth Sacred Heart Continuity (8 cr.)
This continuity rotation offers an excellent educational and clinical experience to students motivated to learn about emergency medicine. Students will be assigned shifts in the Emergency Departments at Sacred Heart Medical Center at RiverBend, a 432 bed quaternary care, Level II trauma facility in Springfield, OR, and at University District in Eugene.

EMED 741Z Emergency Medicine Continuity-Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Emergency Medicine at an outside institution. Students must make special arrangements with an away institution.

ENDC 709A Endocrine Metabolism-OHSU/VAMC (4 cr.)
Students learn essentials of the evaluation and management of inpatient and outpatient clinical endocrinology and metabolism. Problems commonly seen include diabetes, lipid diseases, metabolic bone disease, disorders of thyroid, pituitary, adrenal and gonadal functions. Outstanding opportunity to learn about many disorders frequently not seen or discussed in other areas. Students see 5-12 patients per week in the University and VA Med Center General Endocrinology, Diabetes, Bone and Mineral and Obesity clinics, as well as 5-10 patients per week on the inpatient Endocrine consult service.

ENDC 710A Endocrine Metabolism-OHSU/VAMC (2 cr.)
Students learn essentials of the evaluation and management of inpatient and outpatient clinical endocrinology and metabolism. Problems commonly seen include diabetes, lipid diseases, metabolic bone disease, disorders of thyroid, pituitary, adrenal and gonadal functions. Outstanding opportunity to learn about many disorders frequently not seen or discussed in other areas. Students see 5-12 patients per week in the University and VA Med Center General Endocrinology, Diabetes, Bone and Mineral and Obesity clinics, as well as 5-10 patients per week on the inpatient Endocrine consult service.

ETOX 709A Medical Toxicology (4 cr.)
The Oregon Poison Center Medical Toxicology rotation is highly recommended for students with interests in

Emergency Medicine, Pediatrics, Family Medicine, Internal Medicine, Psychiatry, or Occupational medicine. The student's role will be in discussing cases throughout our calling area (Oregon, Alaska, and Guam) and participating in conferences, bedside consultations, and assigned reading materials. A weekly presentation on a historical toxic event is required. This is an excellent review of basic pharmacology as it applies to therapeutic use of medications and overdose situations. Additional topics covered include environmental toxicology, occupational toxicology, drug abuse toxicology, and laboratory screening for drugs. Oregon Poison Center staff provide students with an excellent opportunity to become familiar with the recognition and management of acute toxicologic emergencies.

ETOX 710A Medical Toxicology (2 cr.)
The Oregon Poison Center Medical Toxicology rotation is highly recommended for students with interests in Emergency Medicine, Pediatrics, Family Medicine, Internal Medicine, Psychiatry, or Occupational medicine. The student's role will be in discussing cases throughout our calling area (Oregon, Alaska, and Guam) and participating in conferences, bedside consultations, and assigned reading materials. A weekly presentation on a historical toxic event is required. This is an excellent review of basic pharmacology as it applies to therapeutic use of medications and overdose situations. Additional topics covered include environmental toxicology, occupational toxicology, drug abuse toxicology, and laboratory screening for drugs. Oregon Poison Center staff provide students with an excellent opportunity to become familiar with the recognition and management of acute toxicologic emergencies.

FAMP 705H Labor & Delivery Skills (1 cr.)
This elective provides a special opportunity for interested medical students to gain a comprehensive introduction to prenatal care and labor and delivery support. Topics covered will include various aspects of prenatal care, the normal birth process, labor support techniques, dealing with stalled labor, positions, dealing effectively with shoulder dystocia, operative vaginal delivery with vacuum extractions and forceps, and neonatal transition to life.

Learning Objectives:
1. Describe important aspects of prenatal care and normal mechanisms of labor.
2. Describe effective techniques used to support a laboring mother
3. Demonstrate hands-on skills and familiarity with techniques used to support a laboring mother.
4. Describe common problems with abnormal labor and techniques used to enhance likelihood of vaginal birth
5. Describe common emergent situations during birth and how they can best be handled
6. Describe how to assess and care for the infant immediately after birth

FAMP 705IH Immigration Health (1 cr.)
The Immigrant Health Elective will introduce the ways social issues affecting immigrants intersect with the mental and physical health of immigrants. This includes the effects of family separation and detention, of being undocumented, and of occupational hazards amongst farm-working communities. After this course, we hope learners will have a greater understanding of the intersection between community, law, and medicine—especially in the case of asylum and deportation. Furthermore, we hope to create an awareness of the important role medical providers can have in asylum and deportation cases. We will bring together various perspectives on immigrant and refugee health in Portland and opportunities for students to become more involved within our community. The course will also cover the psychological and physical evaluation process used to write affidavits for people seeking asylum/facing deportation. We hope that through hearing first-hand from people facing deportation in Oregon, each student will gain better insight into the diverse experiences that exist among immigrants. There is a possibility for students to volunteer at the OHSU Human Rights Clinic depending on the timeline for the in-person space, which is currently in development.

FAMP 705NA Introduction to Native Health (0.5 cr.)
This course is the first introduction and course work launching the Native Health Experience. Within a 9 week block, students will begin learning about and discussing with their cohort and faculty leads major topical subjects and concepts that underpin the medical systems serving Native patients. At the conclusion of this course students should be able to: 1. Consider and discuss how colonialism, bias, and historical trauma have shaped health systems and experiences for Native patients 2. Consider and discuss where culturally dominant views of health from both Native perspective and Western Medical perspective 3. Recognize the role place and land play in the health of Native patients 4. Begin growing local relationships and knowledge of the Native community locally and regionally.

FAMP 705SD Social Determinants of Health (2 cr.)
Course purpose statement: This elective is for students who wish to gain a greater understanding of Social Determinants of Health in Oregon. Students will have assignments to help them better understand unique cultural and socioeconomic elements. We will be using didactics and other sources to help students discover and discuss the impacts if Social Determinants of Health and how healthcare is changing to meet these unique demands.

FAMP 709A Sub-I Family Medicine (6 cr.)

A four-week sub-internship in Family Medicine is available for medical students interested in a family medicine residency who have completed the core. The sub internship is an intensive, rigorous experience in which students will spend two weeks on inpatient service and two weeks in one of four OHSU Family Medicine outpatient clinics. As much as possible, sub interns will be given opportunities to demonstrate skills at the level of an incoming intern. On inpatient service students will be responsible for closely following patients, managing their care under the guidance and supervision of residents and faculty, and presenting their patients at morning report. Students will also be expected to work with their teams on early evening coverage of patient calls, ER visits, and inpatient care. In clinic, students will work with a senior resident or faculty preceptor, seeing a wide variety of patients independently and observing or being observed by their preceptors during the course of patient care. Under the supervision of their preceptors, students will be expected to write chart notes and /or do dictations and to help provide ancillary care such as interpreting x-rays, reading ECGs, etc.

FAMP 709AB Family Medicine Inpatient (4 cr.)
The purpose of the Family Medicine Inpatient Elective is for students to develop clinical diagnosis, reasoning and communication skills in the care of adult, pediatric and potentially obstetric patients with a wide range of acute, chronic, and multi-organ system disease in the inpatient hospital setting. Students will be able to use their knowledge and clinical reasoning skills to perform basic history and physical examinations, develop differential diagnoses, order and interpret diagnostic studies, and devise basic treatment plans. On the Family Medicine service, students will learn how access, continuity, care coordination, and psychosocial factors affect the health of individuals and families and learn how to apply these factors to the care of individuals in the inpatient setting.

FAMP 709D Community Family Medicine - PeaceHealth Sacred Heart (4 cr.)
The course will provide a community experience with a Family Medicine clinic or combined Family Medicine and Internal Medicine primary care clinic. Students will spend time with chronic disease management, in-clinic office procedures or preventative care. Students may also gain experience with older adult populations and round in skilled nursing facilities to gain greater understanding of transition of care needs, palliative care and management of patients through the lifespan. As much as possible, students will be given opportunities to demonstrate skills at the level of an incoming intern. In clinic, students will see patients independently and observe or be observed by their preceptors during the course of patient care. Under the supervision of their preceptors, students will be expected to write chart notes and to help provide ancillary care. PeaceHealth Sacred Heart Medical Center has three hospitals; University District in Eugene, RiverBend in Springfield, and Cottage Grove Hospital in Cottage Grove, Oregon (locations are approximately 100 miles south of the main OHSU campus). Students participating in rotations in this community will work one on one with their attending with increased autonomy.

FAMP 709HA Addiction Medicine-Serenity Lane (4 cr.)
The purpose of the Multidisciplinary Addiction Medicine elective is for students to gain experience and proficiency in the multidisciplinary care of patients with addiction. Students will participate in the diagnosis and treatment of alcohol and chemical dependency, including management of withdrawal and detoxification. They will participate as team member in complex care of patients with comorbid psychiatric conditions as well as chronic pain. Students will see patients in a consultative role on floor of acute detox facility, at residential rehabilitation care center and outpatient clinic. Students will learn the pathophysiology of addiction, a multimodal treatment approach, and the socioeconomic impact of the opioid epidemic.

Students will not remain in the observer learner role but will be expected to participate one on one with patients as part of a team. Supervision and back-up appropriate to skill and experience to be provided by staff physicians, psychiatrists, mental health staff and counselors. Students will be expected to attend primary addiction counseling groups and specialized mental health care group therapy as an observer and facilitator.

FAMP 709KF Rural Inpatient Family Medicine-Klamath Falls (6 cr.)
The purpose of this elective is for students to develop clinical diagnosis, reasoning, and communication skills in the care of adult patients with a wide range of acute and chronic, multi-organ system disease in the hospital setting. Students will be able to use their knowledge and clinical reasoning skills to perform basic history and physical examinations, develop differential diagnoses, order and interpret diagnostic studies, and devise basic treatment plans. Students will focus on quality improvement and patient safety in the hospital setting. Attendance at noontime lectures, morning report, inpatient rounds, and regular independent study is expected. Students completing clinical experiences at a Campus for Rural Health site will automatically be enrolled in a required inter-professional community-based project course on their first Campus for Rural Health rotation and have the option of enrolling again in subsequent rotations.

FAMP 709L Rural Sub-I Family Medicine - Campus for Rural Health - Klamath Falls (6 cr.)

Klamath Falls Family Medicine Sub-Internship is an intensive, rigorous experience in which the students will spend one week on the inpatient wards with the resident medical team. Students work nine half days per week in the Cascades East Family Practice Clinic, under a faculty or resident preceptor. Thursday Behavioral Science programs should also be attended. There is some flexibility in order to meet the student's specific objectives. For example, students may spend a week on OB service and on inpatient service. Students completing clinical experiences at a Campus for Rural Health site will automatically be enrolled in a required inter-professional community-based project course on their first Campus for Rural Health rotation and will enroll in a half-credit course in subsequent rotations.

FAMP 709M Integrative Medicine Clinic (4 cr.)
In this elective, students will gain an understanding of the definition and tenants of integrative medicine as well as its importance in an allopathic medical practice. Students will develop skills in accessing information on evidenced based modalities and will have the opportunity to witness these in practice at: clinics within OHSU (including Family Medicine at CHH, Richmond and the Comprehensive Pain Center), National University of Naturopathic Medicine (NUNM), University of Western States (UWS) and Oregon College of Oriental Medicine (OCOM). Students will also use their knowledge of integrative medicine and its modalities to create a wellness self-care prescription for themselves. They will be aided in personalizing their elective experience in order to focus more heavily on areas of interest.

FAMP 709MA Family Medicine Sub-I-OHSU/St. Charles Health System- Madras Rural Track Program (6 cr.)
A four-week sub-internship in Family Medicine is available for medical students interested in a rural family medicine residency. The sub internship is an intensive, rigorous experience in which students will spend time on the inpatient floor at the St. Charles Madras Critical Access Hospital and at the St. Charles Madras Family Care Clinic. During their rotation, students will live in the rural community and explore the lifestyle of a rural physician. As much as possible, sub interns will be given opportunities to demonstrate skills at the level of an incoming intern. On inpatient service students will be responsible for closely following patients, managing their care under the guidance and supervision of faculty, and presenting their patients in morning rounds. In clinic, students will work with a faculty preceptor, seeing a wide variety of patients independently and observing or being observed by their preceptors during wellness exams, women's health visits, disease management, sports medicine, behavioral health warm handoffs and more.

FAMP 709NA Native American Family Medicine (4 cr.)
This elective is for students who wish to gain greater understanding of Native American Health within a clinical Family Medicine environment. Additionally, students will have culturally immersive experiences that will help them better understand unique cultural and socioeconomic components of Urban Indian health. Students will rotate within the Native American Rehabilitation Association (NARA) clinic sites. The mission of NARA is to provide education, physical and mental health services and substance abuse treatment that is culturally appropriate to American Indians, Alaska Natives and anyone in need.

FAMP 709NR Native American Family Medicine - Rural (4 cr.)
This elective is for students who wish to gain greater understanding of Native American Health within a rural settings. Additionally, students will have culturally immersive experiences that will help them better understand unique cultural and socioeconomic components of Urban Indian health.

FAMP 709P Sub-I Family Medicine at Providence Milwaukie (6 cr.)
A four-week sub-internship in Family Medicine is available for students who meet the required prerequisites through the Providence Oregon Family Medicine Residency. The sub-internship is an intensive, rigorous, and rich experience in which students will spend two weeks on inpatient service and two weeks at either PMG Milwaukie Clinic or PMG Southeast Clinic. Our clinics and providers are dedicated to caring for patients across their life span, especially to those who are poor and vulnerable. As much as possible, sub-interns will be given opportunities to demonstrate skills at the level of an incoming intern. On inpatient service, students will be responsible for closely following patients, managing their care under the guidance and supervision of residents and faculty, and presenting their patients at morning rounds. Students will also be expected to work with their teams on early evening coverage of patient calls, ER visits/admissions, and inpatient care. In clinic, students will work with a senior resident or faculty preceptor, seeing a wide variety of patients independently and observing or being observed by their preceptors during the course of patient care. Under the supervision of their preceptors, students will be expected to write chart notes and help provide ancillary care such as interpreting x-rays, reading ECGs, etc.

FAMP 709RB Roseburg Family Medicine Sub-I (6 cr.)
The sub internship is an intensive, rigorous experience in which students will spend two weeks on inpatient service and two weeks at Aviva's Family Medicine outpatient clinics. As much as possible, sub interns will be given opportunities to demonstrate skills at the level of an incoming intern. On inpatient service students will be responsible for closely

following patients, managing their care under the guidance and supervision of residents and faculty, and presenting their patients in morning rounds. Students will also be expected to work with their teams on early evening coverage of patient calls, ER visits, and inpatient care. In clinic, students will work with a senior resident or faculty preceptor, seeing a wide variety of patients independently and observing or being observed by their preceptors during the course of patient care. Under the supervision of their preceptors, students will be expected to write chart notes and /or do dictations and to help provide ancillary care such as interpreting x-rays, reading ECGs, etc. Aviva is an FQHC serving the underserved in a rural location and faculty have many interests including Lifestyle Medicine and Addiction Medicine.

FAMP 709T Focused Clinical Elective (4 cr.)
This elective is geared toward students who wish to either augment their family medicine experience with clinical experience or add exposure to outpatient clinical care. Students will have a myriad of clinic possibilities and Spanish-speaking clinics are potentially available. Student will gain exposure to common diagnoses in an environment that encourages problem solving and use of electronic information resources. Students will also learn about the patient centered medical home, population health and the role of the physician in health policy advocacy. Students will care for patients of all ages in an ambulatory clinic.

FAMP 709TR Rural Focused Clinical Elective (4 cr.)
This elective is geared toward students who wish to experience rural medicine with robust outpatient clinical care by working with family physicians in rural Oregon. Students will care for patients of all ages in an ambulatory rural clinic. Students will have a myriad of outpatient patient care experiences; and dependent on the site placement, students may also have possibilities to provide patient care in the rural ER, labor and delivery, and inpatient services. During their rotation, students will live in the rural community and explore the lifestyle of a rural physician. Workload expectations for this elective will include six total clinic sessions per week, community activities based on student interest/preceptor recommendations, and independent study.

FAMP 709V Sub-I Family Medicine at OHSU Health Hillsboro Medical Center (6 cr.)
A four-week sub-internship in Family Medicine is available for 4th year medical students who have completed their core clerkships and are interested in rotating at a family medicine residency. The sub internship is an intensive, rigorous experience in which students will spend two weeks on inpatient service at OHSU Health Hillsboro Medical Center and two weeks at the OHSU South Hillsboro Primary Care outpatient clinic, an OHSU Hillsboro Medical Center Family Medicine Residency teaching site. As much as possible, sub interns will be given opportunities to demonstrate skills at the level of an incoming intern. On inpatient service, students will be responsible for closely following patients, managing their care under the guidance and supervision of experience family medicine faculty, and presenting their patients at afternoon report. Students will also be expected to work with their teams on early evening coverage of patient calls, ER visits, and inpatient care. Some cross cover for newborn and labor and delivery is possible. In clinic, students will work with a faculty preceptor, seeing a wide variety of patients independently and observing or being observed by their preceptors during the course of patient care. Under the supervision of their preceptors, students will be expected to write chart notes and /or do dictations and to help provide ancillary care such as interpreting x-rays, reading ECGs, etc. One day of the outpatient rotation will involve community outreach such as spending a day seeing vineyard workers with the Salud outreach van or going to a long term care facility with a geriatrician.

FAMP 709W Sub-I Family Medicine at SWWMC (6 cr.)
SW Washington Family Medicine Sub-Internship is an intensive inpatient and outpatient experience. The medical student will spend 2 weeks on our inpatient medicine service, 1 week on our Pediatric and Obstetrics team, and one week in our outpatient clinic. The medical student can expect to follow 1-4 patients (pre-rounding to presentations, daily progress notes) on our medicine team. Additionally, they can expect to follow and participate on deliveries, round on newborns, and follow inpatient pediatric patients. Outpatient clinic experience includes experiencing the variety of our outpatient scope, including but not limited to Sports med clinic, Endocrine clinic, Behavioral Health clinic, Gyn clinic, and Procedure clinic.

FAMP 709X Family Medicine Special Elective (4 cr.)
Students may make special arrangements with the Family Medicine department for individual programs of study in any area pertinent to family medicine. If interested, contact, via email, the Family Medicine Course Coordinator, as far in advance as possible to discuss the application process.

FAMP 709Z Family Medicine - AWAY (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

FAMP 710AI Principles of American Indian & Alaska Native Health: Intro to History, Culture, and Health Systems (2 cr.)
American Indian and Alaska Natives (AIAN) face significant health disparities compared to the general population. Many of the health disparities that affect AI/AN patients result from social injustices, structural racism, and the resultant poverty.

Our hope for this block is that it might be an entry into thinking more widely about the health of AIAN health disparities driven by historical and present-day injustices that persist in our country and our systems of care. This elective will provide time to think, read, watch, listen, and experience writing, art, and music to help contextualize and deepen understanding of the cultural richness, resilience, and ongoing presence of AI/AN peoples in addition to learning about the health systems that care for AI/AN patients.

FAMP 710B Reproductive Health in Family Medicine (2 cr.)
This elective will focus on the student's development of knowledge and skills in the area of reproductive health, including contraception and routine clinical preventive services; with potential to include early pregnancy ultrasound, miscarriage management, and abortions. The student will work with faculty during their clinic hours at Family Medicine clinics and during South Waterfront's Reproductive Health Friday morning clinic. The student will have self-study time to review core literature in the field (provided by the faculty), identify target quality benchmarks at either the state or national level, and the interplay of routine clinical and public health programs in the provision of reproductive health. The student will complete a brief educational activity based on a clinical case and present to faculty (e.g., short presentation, evidence summary). This may be included in the Department of Family Medicine's Reproductive Health Newsletter, if the student elects this option. The elective will allow the student to explore the breadth of reproductive healthcare services provided to patients in a Family Medicine outpatient setting.

FAMP 710EM Exercise is Medicine (2 cr.)
Students will actively participate in patient care within a busy primary care, family, and sports medicine clinic, in addition to experiencing the orthopedic operating room and outpatient clinic. This elective is clinically oriented with emphasis placed on physical examination techniques and the diagnosis and treatment of musculoskeletal injuries, as well as usual primary care and lifestyle medicine topics. Opportunities will exist for the student to participate with their attending physicians at Lewis and Clark College sports medicine training room clinics and events. Other experiences may also include medical coverage for several athletic events here in Portland. The student may attend sports medicine conferences, family medicine grand rounds and case conferences. Some weekend commitments and travel to Vancouver may be required. This rotation is for those students with a strong interest in Family Medicine, Lifestyle Medicine, and Primary Care Sports Medicine whose goal is to provide a link between the rapidly expanding core of knowledge related to sports medicine and its application to patients in the primary care setting.

FAMP 710S Sports Medicine - OHSU (2 cr.)
Students will actively participate in patient care in the OHSU Sports Medicine Clinics. This elective is clinically oriented with emphasis place on physical examination techniques, and the diagnosis and treatment of musculoskeletal injuries as well as care of the athlete. These concepts will be applied to the care of professional and elite athletes, as well as grade school, high school, college and recreational athletes in the Portland Metro area. Opportunities will exist for the student to participate with their attending physicians at Portland State University, Lewis and Clark College sports medicine clinics and events. Experience may also include medical coverage for several other athletic events here in Portland. The student will also attend sports medicine conferences, family medicine grand rounds and case conferences. Some weekend commitments may be required. This rotation is for those students with a strong interest in Primary Care Sports Medicine whose goal is to provide a link between the rapidly expanding core of knowledge related to sports medicine and its application to patients in the primary care setting.

FAMP 710X Family Medicine Special Elective (2 cr.)
Students may make special arrangements with the Family Medicine department for individual programs of study in any area pertinent to family medicine. If interested, contact, via email, the Family Medicine Course Coordinator, as far in advance as possible to discuss the application process.

FAMP 710Z Family Medicine - Away (2 cr.)
2 week version of FAMP 709Z

FAMP 713X Family Medicine Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

FAMP 730 Family Medicine Core Clinical Experience (6 cr.)
The purpose of the Family Medicine Core Clinical Experience is for students to learn how access, continuity, comprehensiveness, coordination, and context of care by family medicine physicians improves the health of individuals, families, and communities. Students will also learn about the patient centered medical home, population health and the role of the physician in health advocacy. Students will care for patients of all ages with chronic and acute disease processes, also addressing preventative medicine, in a variety of settings, which may include ambulatory clinics, nursing facilities, hospitals, athletic training rooms, and urgent care.

FAMP 730R Family Medicine Core-Remediation (6 cr.)
Remediation version of FAMP 730.

FAMP 731A Family Medicine Continuity Core (12 cr.)

The purpose of the Family Medicine Core Clinical Experience is for students to learn how access, continuity, comprehensiveness, coordination, and context of care by family medicine physicians improves the health of individuals, families, and communities. The Continuity Core Clinical Experience is to augment the Family Medicine Core Experience with an additional four weeks in the same clinical environment to allow for an enhanced continuity experience. Working with their clinic, students tailor the experience to allow exploration of specific aspects of the field of Family Medicine in greater depth (for example additional adolescent, maternity, or geriatric care, inpatient, procedures, or sports medicine). Students will learn how access, continuity, comprehensiveness, coordination, and context of care improve the health of individuals, families, and communities. Students will also learn about the patient centered medical home, population health and the role of the physician in health advocacy and will complete a clinic-based project. Dedicated time is built in for project work and medical knowledge study. Students should approach this experience with flexibility of schedule and transportation as students will care for patients of all ages with chronic and acute disease processes, also addressing preventative medicine, in a variety of settings, which may include ambulatory clinics, nursing facilities, hospitals, home visits, group visits, athletic training rooms, and urgent care. Students will simultaneously satisfy requirements for: Family Medicine core clinical experience and the continuity experience.

FAMP 731B Family Medicine Continuity Core - Rural - Immersive (18 cr.)
The purpose of the Family Medicine Core Clinical Experience is for students to learn how access, continuity, comprehensiveness, coordination, and context of care by family medicine physicians improves the health of individuals, families, and communities. The Family Medicine Rural Immersive Experience will allow students an opportunity to immerse themselves in, and to explore the career choice of, rural Family Medicine for twelve weeks. As student skills progress, a high level of autonomy is allowed. Students care for the full spectrum of patients with chronic and acute disease processes, also addressing preventative medicine, and participate in the multitude of procedures available to the field of Family Medicine. Students will be engaged with the community through work on a community project and dedicated time is incorporated to complete this work as well as medical knowledge study. Students who complete the Rural Immersive will gain a comprehensive understanding of Family Medicine in a rural context and will learn concepts in rural medicine, FM Core, and community health. Continuity concepts will span the twelve weeks. Students will simultaneously satisfy requirements for: Family Medicine core clinical experience, the rural experience, and the continuity experience.

FAMP 731C Family Medicine Continuity Core - Rural (12 cr.)
Students will be placed in a rural community for 8 weeks, sites are located across the state of Oregon and placed dependent upon site/faculty availability. This course will fulfill your Family Medicine Core, Rural patient care, and continuity graduation requirements.

FAMP 731RA Family Medicine Continuity Core - Metro - Remediation (12 cr.)
Remediation version of FAMP 731A.

FAMP 731RB Family Medicine Continuity Core - Rural - Immersive - Remediation (18 cr.)
Remediation version of FAMP 731B.

FAMP 731RC Family Medicine Continuity Core-Rural - Remediation (12 cr.)
Remediation version of FAMP 731C.

FAMP 741GR Comprehensive Geriatric Family Medicine Continuity (8 cr.)
Students will participate in comprehensive geriatric family medicine in various settings; such as, ambulatory care practice, house calls, skilled and long term care facilities and hospice care. Working one on one with a lead attending, students will immerse themselves in the continuity of aging adult patient care by determining patient goals of care, and assess patient autonomy and self-care capacity in the end of life. Students will expand their understanding of the aging physiology and how it manifests in patient presentations in the clinic, long term care and community settings. This elective is geared towards students who hope to strengthen their communication skills with interdisciplinary teams, orchestration of transitions of patient care needs with multiple care settings, and gain an enriched sense of the family medicine approach to comprehensive geriatric care.

FAMP 741R Rural Family Medicine Continuity (8 cr.)
This elective is geared toward students who wish to have a robust experience working with family physicians in rural Oregon. The rural clinics arranged for this experience provide an in-depth educational experience and are approved by the department of Family Medicine. The community allow the student to learn common diagnoses in an environment that encourages hands-on problem solving at the site and use of electronic information resources. Students will be expected to attend all clinical events and participate in the community.

FAMP 741TH Tribal Health Immersion Continuity (8 cr.)
This 8 week continuity elective is for students who wish to gain a greater understanding of Native American Health

within a tribally-based, comprehensive primary care clinic with Family Medicine providers. Additionally, students will participate in culturally immersive experiences to help them better understand the unique cultural and socioeconomic elements of tribal health. Students will rotate within the Warm Springs Indian Health Services (IHS) Health and Wellness Center. The mission of the Warm Springs IHS Health and Wellness Center is to provide an innovative, caring, and diverse healthcare system that is trusted and responsive to the needs of the Warm Springs community.

FAMP 741WC White City VA Continuity (8 cr.)
This elective is geared toward students who wish to experience family medicine with robust outpatient clinical care by working with the Family Physicians and care teams at the Southern Oregon Rehabilitation Center and Clinics in White City, Oregon. The White City VA provides comprehensive outpatient primary care to veterans, whether the veteran comes to the clinic, is home bound or is in need of residential care.

Students will have a myriad of outpatient patient care experiences such as: women's health, PACT Care, same day care, residential care, multidisciplinary Home-Based Primary Care and behavioral health (PTSD/ substance abuse.) Housing will be provided. Travel reimbursements may be provided dependent upon availability.

FAMP 741X Family Medicine Special Elective Continuity (8 cr.)
Students may make special arrangements with the Family Medicine department for individual programs of study in any area pertinent to family medicine. If interested, contact, via email, the Course Coordinator, as far in advance as possible to discuss the application process. Experience must allow students to maintain continuity in at least 2 of the following 3 ways: Continuity with the same patient population; Continuity with the same health system; Continuity with the same preceptor(s).

FAMP 741Z Family Med Continuity-Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Family Medicine at an outside institution. Students must make special arrangements with an away institution.

FUND 710 Fundamentals (9 cr.)
The primary goal is to establish a core knowledge base in biomedical and clinical sciences that students will build upon in subsequent blocks. Upon completion of this block, students will understand and apply the basic concepts of anatomy, biochemistry, cell biology, embryology, genetics, histology, pathology, microbiology, and pharmacology in the context of health and disease. In addition, students will learn about professionalism, ethics, communication, epidemiology, biostatistics, principles of evidence-based medicine, informatics, health policy, patient interviewing and physical examination.

GERI 709A Geriatric and Palliative Medicine (4 cr.)
The student will rotate during the month through both outpatient and inpatient geriatric-related settings at OHSU and the Portland VA. This will include experiences working with geriatricians in Geriatric Primary Care and Consultative Clinic at OHSU, Geriatric and Fall Assessment Clinics at VA, Wound Care Clinic at VA, and the Inpatient Geriatric Consult Service at OHSU.

GERI 710A Geriatric Medicine (2 cr.)
This course is designed to improve students' overall comfort with physical examination. Students should become more adept at performing the physical exam, understanding the significance of findings, and reporting this information in a succinct and unified presentation. Logistically, students should expect to examine two patients per day with specific exam findings. The course instructors will select the patients. Students will examine the patients on their own in the morning and then present the findings to the large group later in the day. When the large group is together, there will be time for additional examination and key points will be highlighted. The breadth of findings will range from patients with heart murmurs to those with splenomegaly. However, the heaviest emphasis will be on the cardiac examination.

GMED 701A Internal Medicine Research (4-week) (2-12 cr.)
The research elective is intended for students who think they might be interested in pursuing a career in academic internal medicine or who would like more experience with the scientific process. Students may arrange for laboratory or a clinical research experience in Internal Medicine. Times of year and durations of research electives are flexible and will be determined by the time schedules of students and mentors; however, students should plan on spending a minimum of 4 weeks on a project.

GMED 701VA VA Clinical Research Elective (4 cr.)
To expose medical students to clinical research occurring at the VA Portland Health Care System and allow the student to participate in the process of performing clinical research which will include completing accreditation and training for VA Research and Development, IRB, and any other study specific requirements.

GMED 705AB Developing a Personal and Professional Narrative (1 cr.)
Fall of the fourth year marks a time of transition for medical students as they find themselves at varying stages of the residency interview process. This is an ideal time for students

to reflect on their personal and professional narratives and prepare for the steps ahead. Narrative Medicine provides the essential tools for distillation of personal narrative and formation of professional identity. Students in this course will build upon the skills developed during the Foundations of Medicine Narrative Medicine curriculum—namely of listening, observation, refection, and story-telling—in order to grow and sustain a reflective practice. The course consists of a series of reading and writing assignments focused on recognizing and constructing narrative threads. As many students will be traveling for interviews during this time, the course is designed to accommodate flexibility. Students will attend an in-person orientation and writing session at the start of the rotation, then read and write independently throughout the duration of the month. At the end of this course, students will meet to share their final writing. In addition to brief daily prompt-based writing exercises for personal development, students will complete several lengthier reflective pieces to share with their peers. Students will be expected to read one-another's writing, and meet weekly, either through virtual or in-person meetings, to discuss and give constructive feedback. At least one piece of reflective writing will be submitted for assessment by supporting faculty. Students will have the option of submitting their writing for wider distribution via appropriate medical student publications.

GMED 705AM Introduction to Addiction Medicine (1 cr.)
This course is designed to be an introduction for first year medical students to the many ways that addiction affects patients and healthcare systems, and the innovative treatment approaches that can be used to help care for those with substance use disorders. Dispersed throughout the 12-week course, there will be three group discussions about addiction-related topics.

GMED 705BA Narrative in Times of Transition (1 cr.)
Spring term the third year marks a time of transition for medical students as they begin to think about residency applications. This is an ideal time for students to reflect on their personal and professional narratives and prepare for the steps ahead. Narrative Medicine provides the essential tools for distillation of personal narrative and formation of professional identity. Students in this course will build upon the skills developed during the Foundations of Medicine Narrative Medicine curriculum—namely of listening, observing, reflecting, and story-telling—in order to grow and sustain a reflective practice. The course consists of a series of reading, writing, and peer to peer sharing assignments focused on recognizing and constructing narrative threads.

GMED 705L Living with a Life-Threatening Illness (2 cr.)
This interdisciplinary and interprofessional course introduces fundamental knowledge, attitudes, and skills for working with dying patients and their families. Each student will be assigned to a patient-teacher with a life-threatening illness, and the focus of learning for the course will be each student's ongoing relationship with the patient-teacher and his or her family. Structured learning experiences (large group case discussions, seminars, role plays, and guest lecturers) will address topics such as responses to suffering, symptom control, grief and loss, spiritual concerns, and ethical dilemmas. Mandatory small group discussions will allow students to receive supervision from experienced clinicians and to reflect on personal reactions to the visits with the patient-teacher.

GMED 705MA Introduction to Street Medicine (1 cr.)
This course is designed to be an introduction to street medicine for students in their pre-clinical years. The aim would be to expose medical students to evidence-based medicine in a multidisciplinary setting with a variety of medical professionals to assist patients with an array of primary care-based problems and urgent medical issues and ultimately connect clients with more longitudinal forms of primary-care, mental health or community-based resources. Additionally, this course will give students an opportunity to explore some of the complex system and personal issues faced by those experiencing homelessness. This 12- week course will consist of 4 volunteer shifts with Portland Street Medicine (PSM) and an option to volunteer more hours, as time allows. PSM is a collaborative, non-profit organization made up of a coalition of volunteers which is dedicated to providing high quality and reliable medical care as well as street outreach to some of Portland's most vulnerable citizens who are experiencing unstable housing or sleeping on the streets. During these shifts, students will work with a combination of staff, never alone, such as physicians, advanced practice providers, nurses, scribes, social workers, peer advisors and those with lived experience in homelessness and substance use to evaluate, diagnose and treat numerous health ailments in the context of a limited resource setting. Students will be supervised by internal medicine or family medicine physicians, will be able to attend volunteer sessions independent of other medical students signed up for the course, and have the autonomy to do hands on assessments. Prior to the start of the volunteer experiences, students will have an introduction to the epidemiology, population health and treatment approaches to working with this population.

GMED 705R Introduction to Wilderness Medicine (1 cr.)
Wilderness Medicine is a field that cuts across many disciplines in medicine – Primary Care, Surgery, Emergency Medicine – so this knowledge is important for physicians to know. The goal of this course is to review the key areas of Wilderness Medicine to provide the student background information on the subject. Students will also familiarize

themselves with Practice Guidelines from the Wilderness Medicine Society.

GMED 705W SNaP Year 2 Summer A Elective (0.5 cr.)
The Student Navigator Project (SNaP) is a pre-clinical medical student curriculum in which medical students are integrated into the Internal Medicine Clinic in a longitudinal fashion during the first 18 months of medical school. The clinical and educational goals of this project include teaching 'health systems science' (understanding interaction of parts of the health system, including insurance/payor status, social determinants, community resources, barriers and health inequities, and other factors), in order to build a future clinician who understands and confidently troubleshoots the myriad of factors that impact patient health outcomes. Students will operate as part of a highly functioning interprofessional team to manage medically and socially complex patients through medical assistant, panel coordinator, and patient navigator roles. We hope that the students will elect to continue these roles during the summer session to allow for increased continuity with staff and patients alike. In particular, the summer elective will help them complete quality improvement projects that had already began in April.

GMED 709B Health Equity Elective in Internal Medicine (4 cr.)
Focused on broadening understanding of healthcare disparities, this elective will provide students with experiential learning of the impacts of social determinants of health, healthcare disparities, and structural inequality through clinical care, focused readings, and experiences. Students will engage with community partners that include Salud!, Virginia Garcia Memorial Health Center (VGMHC) and the Western Farmworker's association to better understand how social determinants affect the health of individual patients and communities. Clinical care of patients will occur at Hillsboro Medical Center, VGMHC and at various farms and vineyards through our Salud! mobile medical van program.

GMED 709CB Rural Internal Medicine - South Coast (4 cr.)
The Internal Medicine Rural rotation will allow students an opportunity to explore the career choice of Rural Internal Medicine. Students will work with select IM rural preceptors at the OHSU Rural Campus South Coast. Students will gain an understanding of Internal Medicine in a rural context and will learn concepts in rural medicine. Students in this rotation are expected to participate in a community student project as well as a one hour weekly didactic class.

Options within this rotation include outpatient experience with general internist with some time spent with local cardiologists or an outpatient experience with general internist for some of the rotation and an inpatient experience with general internists functioning as hospitalists for some of the rotation.

GMED 709E Acting Intern - Emanuel CHS (6 cr.)
Legacy Internal Medicine Program runs a Hospitalist Sub-I program rooted in Evidence based Medicine. This is an amazing opportunity to not only rotate in a busy Academic Hospitalist setting at a Level 1 trauma Center (Legacy Emanuel) but it also combines bedside teaching with an intensive Evidence Based Medicine review.

GMED 709F Palliative Care - OHSU (4 cr.)
This elective offers students the opportunity to work within an interdisciplinary team to develop skills and expertise to support patients living with serious illness. Most teaching occurs via supervised patient care with opportunities in both the inpatient and outpatient settings. Examples of typical experiences include: performing bedside palliative care assessments of seriously ill patients, participating in care conferences, and working within a team as a consultant. The palliative care assessment includes serious illness communication strategies, pain/symptom management including opioid utilization, psychosocial assessment, prognostication, provision of goal concordant care, guidance on palliative care versus hospice enrollment, and the use of advanced directives and POLST forms. In addition, there is a focus on self-care and reflective practices.

GMED 709J Acting Intern - OHSU CHS (6 cr.)
The sub-internship rotation with the Clinical Hospitalist Service (CHS) provides a supervised, but highly-independent experience that is designed to prepare students for any categorical or medicine preliminary intern year. The CHS manages a wide variety of patient populations including medicine and perioperative consultation, post-procedural care, solid tumor oncology, and core internal medicine. The group includes hospitalist faculty members who collectively provide direct daytime and nighttime supervision without any concurrent resident presence. During the elective, sub-interns will gain experience admitting ED and outside hospital admissions via a mix of shift types (daytime, swing, nighttime) in addition to rounding on a personal census of ~6 patients during daytime shifts. The rotation is 5-6 days per week, roughly 10-12 hrs. per day, and is flexible with regard to days off. Procedural experience (paracentesis, thoracentesis, lumbar puncture, etc.) is also included on the rotation as much as possible.

GMED 709PT Inpatient Procedure Team (4 cr.)
Procedures are part of the practice of internal medicine, ranging from low risk, such as placement of peripheral IVs to higher risk, such as thoracentesis and paracentesis. The American Board of Internal Medicine (ABIM) has published guidelines for procedural competencies for internal medicine

residents, which include cognitive (e.g. understanding the indications of procedures) and technical (i.e. the act of performing procedures) components. This procedural rotation was designed to offer medical students formal training, resources, and an increased opportunity to acquire skills and observe/perform procedures with formally trained faculty supervisors.

GMED 709RC Rural Outpatient Internal Medicine Elective (4 cr.)
The Rural Outpatient Internal Medicine Elective aims to provide medical students with a comprehensive understanding of unique opportunities in providing adult primary care in rural communities. This elective is designed to expose medical students to various aspects of practicing patient-centered care in a rural private practice environment, including: urgent care, post-hospitalization transitional care management, chronic illness management, and preventative care services (stress tests, ultrasound guided procedures, echocardiograms, minor procedures).

GMED 709RE Advanced Clinical Skills (1 cr.)
In this remote-based, asynchronous course, students will learn history, physical exam findings, and clinical reasoning skills asynchronously. Students will be required to go through learning materials and complete the MCQ exams at the end of the course. Students will review fundamentals of history taking. Learn to gather essential and accurate information about patients, work through clinical reasoning in a systematic manner.

GMED 709SM Sleep Medicine Clinical Elective (4 cr.)
Students will learn the basics of sleep, pathophysiology of sleep disorders, and the clinical evaluation and management of these disorders through varied clinical experiences at the Portland VA and at OHSU. Students will also learn the basics of sleep neurophysiology and neurodiagnostics in a practical sense through learning the basics of polysomnography evaluation. Students will also be encouraged to monitor their sleep habits for the duration of the rotation by keeping sleep diaries and will discuss these findings with the course director at the end of the rotation. This course would also be ideal for a student considering a career in Pulm medicine, General Medicine, Preventative Medicine, or Sleep Medicine.

GMED 709T Advanced Illness Care (4 cr.)
The student will gain proficiency in the practice of primary care internal medicine in a community setting. Students will develop clinical diagnosis, reasoning and communication skills in the care of adults with a wide range of acute and chronic diseases. Students will be active participants in patient care, taking the initial focused history and physical exam, developing a differential diagnosis and management plan prior to discussing with their preceptor(s). This elective offers students the opportunity to work with an interdisciplinary team to develop skills and expertise in the palliative care of patients living with life-threatening illnesses who are receiving either home based palliative care or hospice services. Students will explore clinical practice of Palliative and Hospice Care through home care experiences. Teaching occurs in the course of patient care provided with a supervising hospice physician or interdisciplinary team member. Examples of typical experiences include: performing palliative care assessments of patients in the home and/or long-term care facility setting, participating in family meetings, participating in interdisciplinary team conferences, or seeing patients in the outpatient oncology setting. Focus is on teaching palliative care assessment (including pain/symptom management, psychosocial assessment, prognosis, and goals of care), effective opioid use, effective use of adjuvant pain therapies and modalities, supporting family caregivers, assisting patients/families to achieve developmental goals and milestones at end of life, managing grief and loss, broaching difficult subjects with care, effectively using advance directives and POLST, self-care, and an interdisciplinary approach to care. Students will see patients and experience both bedside teaching and time alone with patients to assess them and discuss living with serious illness. Students will participate in weekly interdisciplinary team care conferences. Students will have the opportunity to participate in clinical quality improvement projects.

GMED 709V Acting Intern - VAMC CHS (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency. The VA provides students with an exposure to a unique patient population and healthcare delivery system. Students will provide clinical care to patients with severe mental health, substance abuse and psychosocial problems and will learn how the VA supports patients in those aspects of their lives. Students will have a unique opportunity to watch faculty interact with each other in a shared team-room and develop models for life-long learning and peer-teaching. Supervising Attendings are all OHSU faculty, many with roles in the School of Medicine and Internal Medicine Residency Program. Depending on availability students may have the opportunity to interact with Foundations years students, practice procedures in the Simulation lab, and develop or practice point-of-care ultrasound skills. There are often opportunities to observe

coronary angiograms, bronchoscopies, and upper endoscopies in this setting.

GMED 709X Internal Medicine Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Internal Medicine. Students must make special arrangements with a faculty member and the department for an individual program of study.

GMED 709Z Internal Medicine - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

GMED 710A Physical Diagnosis (2 cr.)
This course is designed to improve students' overall comfort with physical examination. Students should become more adept at performing the physical exam, understanding the significance of findings, and reporting this information in a succinct and unified presentation. Logistically, students should expect to examine two patients per day with specific exam findings. The course instructors will select the patients. Students will examine the patients on their own in the morning and then present the findings to the large group later in the day. When the large group is together, there will be time for additional examination and key points will be highlighted. The breadth of findings will range from patients with heart murmurs to those with splenomegaly. However, the heaviest emphasis will be on the cardiac examination.

GMED 710AD Inpatient Addiction Medicine Adventist Health Portland (2 cr.)
This course is designed to provide learners with clinical exposure to the inpatient evaluation and management of substance use disorders. Students will have the opportunity to observe the methods used to take a comprehensive and patient-centered substance use history and develop their own history taking skills and clinical knowledge in order to accurately diagnose and manage various substance use disorders. An emphasis will be placed on the impact of psychosocial and socioeconomic factors on patients' overall health and wellbeing, and the effect these determinants of health have on patient engagement in care and the development of addiction. Effective communication and de-escalation skills across a diverse patient population will be modeled to help students develop and refine their interpersonal skills. Learners will work within a multi-disciplinary team that includes a peer, RN, Social Worker, Pharmacist and Attending Physician, and will develop the skills necessary to partner successfully with team members across various disciplines.

GMED 710F Palliative Care - OHSU (2 cr.)
This elective offers students the opportunity to work within an interdisciplinary team to develop skills and expertise to support patients living with serious illness. Most teaching occurs via supervised patient care with opportunities in both the inpatient and outpatient settings. Examples of typical experiences include: performing bedside palliative care assessments of seriously ill patients, participating in care conferences, and working within a team as a consultant. The palliative care assessment includes serious illness communication strategies, pain/symptom management including opioid utilization, psychosocial assessment, prognostication, provision of goal concordant care, guidance on palliative care versus hospice enrollment, and the use of advanced directives and POLST forms.

GMED 710PR Primary Care-based Refugee Health (2 cr.)
This outpatient clinic-based elective is located at Mid County Health Center, a Multnomah County health clinic that serves a high proportion of patients who are refugees in the Portland metro area. This rotation is ideal for students considering careers in primary care, general medicine, psychiatry, and also committed to serving underserved populations. This experience will increase students' understanding of social determinants of health, and specifically, illuminate challenges and resiliencies unique to refugee populations in healthcare. Additionally, students will have an opportunity to learn from an experienced care teams who predominately care for refugees in Portland, Oregon.

GMED 710PT Inpatient Procedure Team (2 cr.)
Procedures are part of the practice of internal medicine, ranging from low risk, such as placement of peripheral IVs to higher risk, such as thoracentesis and paracentesis. The American Board of Internal Medicine (ABIM) has published guidelines for procedural competencies for internal medicine residents, which include cognitive (e.g. understanding the indications of procedures) and technical (i.e. the act of performing procedures) components. This procedural rotation was designed to offer medical students formal training, resources, and an increased opportunity to acquire skills and observe/perform procedures with formally trained faculty supervisors.

GMED 710R Wilderness Medicine Elective (1 cr.)
To introduce students to Wilderness Medicine with the aim of broadening their medical education and providing a practical set of skills applicable in any situation, particularly in settings where modern medical care is limited or cannot be accessed.

GMED 710RC Rural Outpatient Internal Medicine Elective (2 cr.)
The Rural Outpatient Internal Medicine Elective aims to provide medical students with a comprehensive

understanding of unique opportunities in providing adult primary care in rural communities. This elective is designed to expose medical students to various aspects of practicing patient-centered care in a rural private practice environment, including: urgent care, post-hospitalization transitional care management, chronic illness management, and preventative care services (stress tests, ultrasound guided procedures, echocardiograms, minor procedures).

GMED 710SM Sleep Medicine Clinical Elective (2 cr.)
Students will learn the basics of sleep, pathophysiology of sleep disorders, and the clinical evaluation and management of these disorders through varied clinical experiences at the Portland VA and at OHSU. Students will also learn the basics of sleep neurophysiology and neurodiagnostics in a practical sense through learning the basics of polysomnography evaluation. Students will also be encouraged to monitor their sleep habits for the duration of the rotation by keeping sleep diaries and will discuss these findings with the course director at the end of the rotation. This course would also be ideal for a student considering a career in Pulm medicine, General Medicine, Preventative Medicine, or Sleep Medicine.

GMED 710X Internal Medicine Special Elective (2 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Internal Medicine. Students must make special arrangements with a faculty member and the department for an individual program of study.

GMED 710Z General Medicine Away (2 cr.)
General Medicine Away Clinical Rotations

GMED 713X Internal Medicine Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

GMED 741B Primary Care and the Social Determinants of Health (8 cr.)
This outpatient clinic-based experience in the heart of downtown Portland would be ideal for students considering a career in primary care, psychiatry, or addiction medicine, and those with a passion for care of the underserved. The patient population is beset by mental illness, substance use disorders, and homelessness, and covers a broad range of ages and medical comorbidities, and introduces more diversity than is seen in most of our clinical settings. This experience would enhance your creative problem-solving skills and enrich your understanding of the social determinants of health, and the role of the healthcare provider in the larger system of care and social services. This is a truly interdisciplinary experience including delivering primary care in a patient-centered medical home and opportunities to work with mental health care providers, social workers, addiction specialists, pharmacists, and acupuncturists in addition to the Attending Internists.

GMED 741CB Rural Internal Medicine Continuity - South Coast (8 cr.)
The purpose of this eight-week continuity clinical elective is for students to gain experience and proficiency in the comprehensive care of patients in a rural community. Students will participate in the diagnosis and treatment of a wide range of acute and chronic diseases at a regional medical center, while gaining an appreciation of the unique challenges faced by rural practitioners. Students will see patients in both the hospital and clinic, while working under the direct supervision of selected internists.

GMED 741PT Inpatient Procedure Team (8 cr.)
Procedures are part of the practice of internal medicine, ranging from low risk, such as placement of peripheral IVs to higher risk, such as thoracentesis and paracentesis. The American Board of Internal Medicine (ABIM) has published guidelines for procedural competencies for internal medicine residents, which include cognitive (e.g. understanding the indications of procedures) and technical (i.e. the act of performing procedures) components. This procedural rotation was designed to offer medical students formal training, resources, and an increased opportunity to acquire skills and observe/perform procedures with formally trained faculty supervisors.

GMED 741S Internal Medicine Clinic Continuity Elective (8 cr.)
This elective encourages students to delve deeper into the complexities of primary care for complicated patients, giving special attention to shared decision making, motivational interviewing, and team-based care. The student will have continuity of patients and of preceptors throughout this experience, along with ample time for chart review and additional education, training and investigation as needed.

We propose that students will follow 15-20 complex patients from 4-5 providers. Over an 8-week period, students will attend all primary care appointments and also specialist visits as feasible. The student will participate in telephone encounters in conjunction with care managers, be they Nurses, Pharmacists or Social Workers. The student will add value to the care of the patient while simultaneously learning how to promote patient wellness, improve health outcomes, and improve coordination of care across the healthcare continuum.

The student will work closely with all members of our clinic, including providers, medical assistants, panel coordinators,

and care managers. In addition, based on availability of willing participants, the student will work with pre-identified patient-mentors who will help to enrich the experience and teach the students the importance of patient-centered care. The student will be assigned a Core Preceptor who will help guide the student and ensure meaningful encounters and exposure. The student will be evaluated on the competencies listed below, and hopefully gain scholarship experience by writing up a case presentation or a narrative on the focused exposure to complex patients.

GMED 741T Advanced Illness Care Continuity (8 cr.)
This 8 week long continuity elective offers students the opportunity to work with an interdisciplinary team to develop skills and expertise in the palliative care of patients living with life-threatening illnesses who are receiving either home based palliative care or hospice services. Students will explore clinical practice of Palliative and Hospice Care through home care experiences. Teaching occurs in the course of patient care provided with a supervising hospice physician or interdisciplinary team member. Examples of typical experiences include: performing palliative care assessments of patients in the home and/or long-term care facility setting, participating in family meetings, participating in interdisciplinary team conferences, or seeing patients in the outpatient oncology setting. Focus is on teaching palliative care assessment (including pain/symptom management, psychosocial assessment, prognosis, and goals of care), effective opioid use, effective use of adjuvant pain therapies and modalities, supporting family caregivers, assisting patients/families to achieve developmental goals and milestones at end of life, managing grief and loss, broaching difficult subjects with care, effectively using advance directives and POLST, self-care, and an interdisciplinary approach to care. Students will see patients and experience both bedside teaching and time alone with patients to assess them and discuss living with serious illness. Students will participate in weekly interdisciplinary team care conferences. Students will have the opportunity to participate in clinical quality improvement projects. Students will have opportunity to interact with pharmacy interns from Pacific University School of Pharmacy and work with hospice leaders with over 35 years of hospice and palliative care experience.

GMED 741X Internal Medicine Special Elective Continuity (8 cr.)
The purpose of this continuity clinical elective is for students to have more in-depth experience in General Medicine. Students must make special arrangements with a faculty member and the department for an individual program of study. To fulfill Continuity Clinical Experience graduation requirement, the experience must be minimum 8 full-time weeks in duration or equivalent effort over a longer duration if experience is not full-time. Experience must allow students to maintain continuity in at least 2 of the following 3 ways:

o Continuity with the same patient(s)
o Continuity with the same health system
o Continuity with the same preceptor(s)

GMED 741Z Internal Medicine Away Continuity (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Internal Medicine at an outside institution. Students must make special arrangements with an away institution.

GSTR 705Q Introduction to Community Health (1 cr.)
This course will meet weekly during the Spring term in a presentation-discussion style format. It will introduce students to how the community and public health interact with the medical system in addressing disease and promoting health. This will be accomplished by using a medical condition, substance use disorder (SUD, primarily opioid use disorder), as a model to engage the public health infrastructure and the community to effectively promote health.

GSTR 705R Leadership, Education and Structural Competency I (1 cr.)
By participating in this elective course, 2nd year students will have the opportunity to engage with other MS2s, faculty, and community partners to develop this aspect of the curriculum, to receive both leadership and small-group facilitation training, and to expand their own interests in structural competency. By facilitating groups with MS1s, these students will begin to practice leadership, mentorship, group facilitation, and education skills that they attain from workshops and trainings.

GSTR 705RC Leadership, Education and Structural Competency III (1 cr.)
To meaningfully incorporate the structural competency objectives into the case-based YourMD curriculum, a cohort of MS2 students (LESC 2) will plan and develop a foundational structural competency curriculum for MS1 students, centered around actual patient cases from Oregon. The planning of these sessions will involve exploration of articles, community resources, and existing evidence base for structurally contextualized patient care. Session planning allows LESC 2 students a unique opportunity to expand their understanding of education and curriculum development. Students will write learning objectives, develop assessment methods, and create detailed instructional methods for each session.

Instruction will be primarily through near-peer small group learning, (LESC 1 and LESC 2) supplemented by independent learning activities and selected large group didactic sessions. By participating in this elective course, LESC 1 MS2 students

receive both structural competency theory training, and small-group facilitation training and practice, and they will expand their knowledge and skills in application of structural competency. By facilitating groups with MS1s, these students will begin to practice leadership, mentorship, group facilitation, and education skills that they attain from workshops and training.

GSTR 705RR Leadership, Education and Structural Competency Planner and Facilitator (1 cr.)
This course will enable second-year student leaders to deepen their knowledge and exposure to equity and justice via the framework of structural competency. Students in this phase of the course will develop and practice skills in facilitative leadership through the process of curriculum development for the 1st year OHSU SOM Structural Competency course. Students will apply concepts learned in their theory and facilitation trainings from the preceding course to develop lesson plans and participate in a peer review process to strengthen curriculum. Students who complete this elective course are expected to enroll in elective GSTR 705RC in Fall Term.

GSTR 709A Gastroenterology Consult-OHSU (4 cr.)
Students learn an integrated approach to the diagnosis and therapy of gastroenterology diseases with emphasis on pathophysiology and exposure to the utility and application of the various diagnostic therapeutic endoscopic procedures. Problems commonly seen include diagnosis/treatment of GI bleeding, abdominal pain, peptic ulcer disease, gastrointestinal tumors, pancreatitis, chronic liver disease and inflammatory bowel disease. Students see approximately two inpatient consults per day and in addition to other consultations seen as emergencies or in the weekly Tuesday GI clinic.

GSTR 709H Gastroenterology - PeaceHealth Sacred Heart (4 cr.)
Students learn an integrated approach to the diagnosis and therapy of gastroenterology diseases with emphasis on pathophysiology and exposure to the utility and application of the various diagnostic therapeutic endoscopic procedures. Problems commonly seen include diagnosis/treatment of GI bleeding, abdominal pain, peptic ulcer disease, gastrointestinal tumors, pancreatitis, chronic liver disease and inflammatory bowel disease. Students see approximately two inpatient consults per day and in addition to other consultations seen as emergencies. No night call responsibilities. Conferences include Medicine Grand Rounds and GI Pathology Rounds. Evaluation is by observed clinical performance. Students will be based at Sacred Heart Medical Center at RiverBend, a 432 tertiary care hospital. Sacred Heart Medical Center is located in Eugene and Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations at this site do not interact with OHSU Residents or Residency Program Directors.

GSTR 710A Gastroenterology Consult-OHSU (2 cr.)
Students learn an integrated approach to the diagnosis and therapy of gastroenterology diseases with emphasis on pathophysiology and exposure to the utility and application of the various diagnostic therapeutic endoscopic procedures. Problems commonly seen include diagnosis/treatment of GI bleeding, abdominal pain, peptic ulcer disease, gastrointestinal tumors, pancreatitis, chronic liver disease and inflammatory bowel disease. Students see approximately two inpatient consults per day and in addition to other consultations seen as emergencies or in the weekly Tuesday GI clinic. No night call responsibilities. Conferences include Grand Rounds, GI Medical Surgical Conference, GI Pathology Conference, Hematology/Biliary Conference, and GI Research Conference. Students work with a team of medical resident, GI fellow and GI Attending. Evaluation is by observed clinical performance.

HEMA 709A Hematology/Oncology Consult -OHSU/VAMC (4 cr.)
Students learn to manage, diagnose and treat common hematologic/oncologic diseases. Use and interpretation of chest, abdominal, bone x-rays, CT Scans, MRI, and nuclear medicine scans as well as interpretation of blood and bone marrow smears, and the management of oncologic emergencies. Problems commonly seen include anemia, neutropenia, thrombocytopenia, lung cancer, head and neck cancer, colon cancer, prostate cancer, lymphoma, leukemia, and myeloma. Students manage 2-3 patients per week in the inpatient setting. 1-2 patients per week will be seen in the outpatient setting. The outpatient experience will be scheduled once each week. Opportunities to observe and perform procedures include bone marrow aspirations, biopsies, interpretation of blood smears and bone marrow smears. Conferences include Morning Report, Grand Rounds, Pathology Slide Conference, Hematology Journal Club, Lymphoma Conference, Clinical Case Conference, and Case Management Conference where students present particularly difficult cases. Students work with a team of one full time attending physician, a subspecialty Hematology/Oncology fellow, and often an internal medicine resident or intern. Students are provided with a volume of directed clinical reading to cover essential elements in Hematology/Medical Oncology. Evaluation is by clinical performance, weekly informal oral examinations on the assigned reading, quality of case presentations, and humanistic skills. With the intense involvement of students in both the inpatient & outpatient arenas, with such a cohesive course curriculum, unique skills in Hematology/Medical Oncology should be acquired. Should unique patients be cared for by the students, careful

evaluation and documentation may lead to a case report that may be submitted for publication in the medical literature.

HEMA 709B Acting Intern - OHSU BMT (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency.

HEMA 709H Hematology/Oncology - PeaceHealth Sacred Heart (4 cr.)
Students learn to diagnose and treat common hematologic and oncologic diseases in a comprehensive community setting. Common problems typically seen include breast cancer, colon cancer, lung cancer, lymphoma, gynecological, head and neck cancer and both benign and malignant hematologic diseases. Rotation will be predominately outpatient medical oncology but students may have the option of rotating through other specialties such as with radiation and/or gynecological oncologists. Goal of the rotation learn the initial diagnosis and follow up care by direct patient contact and interpretation of imaging, labs tests including bone marrow biopsies, genetic tests, etc. Student is expected to attend tumor board conferences and maybe required to present cases that he/she is involved. Evaluation is done mainly by clinical performance. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community clinics.

HEMA 710A Hematology Consult - OHSU/VAMC (2 cr.)
Students learn to manage, diagnose and treat common hematologic/oncologic diseases. Use and interpretation of chest, abdominal, bone x-rays, CT Scans, MRI, and nuclear medicine scans as well as interpretation of blood and bone marrow smears, and the management of oncologic emergencies. Problems commonly seen include anemia, neutropenia, thrombocytopenia, lung cancer, head and neck cancer, colon cancer, prostate cancer, lymphoma, leukemia, and myeloma. Students manage 2-3 patients per week in the inpatient setting. 1-2 patients per week will be seen in the outpatient setting. The outpatient experience will be scheduled once each week. Opportunities to observe and perform procedures include bone marrow aspirations, biopsies, interpretation of blood smears and bone marrow smears. Conferences include Morning Report, Grand Rounds, Pathology Slide Conference, Hematology Journal Club, Lymphoma Conference, Clinical Case Conference, and Case Management Conference where students present particularly difficult cases. Students work with a team of one full time attending physician, a subspecialty Hematology/Oncology fellow, and often an internal medicine resident or intern. Students are provided with a volume of directed clinical reading to cover essential elements in Hematology/Medical Oncology. Evaluation is by clinical performance, weekly informal oral examinations on the assigned reading, quality of case presentations, and humanistic skills. With the intense involvement of students in both the inpatient & outpatient arenas, with such a cohesive course curriculum, unique skills in Hematology/Medical Oncology should be acquired. Should unique patients be cared for by the students, careful evaluation and documentation may lead to a case report that may be submitted for publication in the medical literature.

HODI 710 Hormones & Digestion (7-11 cr.)
Learners who successfully complete this block will be able to identify the structure and function of the gastrointestinal tract and the endocrine organs, with emphasis on nutrient acquisition, regulation, and interactions with endogenous regulatory molecules and microorganisms. They will be able to explain the clinical presentation of common gastrointestinal and endocrine diseases, and strategies for their management. Learners will also demonstrate the principles of professionalism, ethics, communication, health systems sciences, patient interviewing and physical examination in relation to the gastrointestinal and endocrine systems.

HOSP 709A Inpatient Ward - OHSU (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in “common” medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709E Inpatient Ward - Legacy Emanuel (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

Students at this site often have the opportunity to spend one week in the medical ICU where they will work with resident teams evaluating critically ill patients and have exposure to ventilated patients and those with multi-organ failure. There is also the opportunity to work one-on-one with the Hospitalist service for a week where the student will be able to see patients, present and interact with the teaching faculty directly without a resident team. The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709G Inpatient Ward - Legacy Good Sam (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

Students at this site often have the opportunity to spend one week in the medical ICU where they will work with resident teams evaluating critically ill patients and have exposure to ventilated patients and those with multi-organ failure. There is also the opportunity to work one-on-one with the Hospitalist service for a week where the student will be able to see patients, present and interact with the teaching faculty directly without a resident team. The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709H Inpatient Ward - PeaceHealth Sacred Heart (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope. Students will work directly with supervising faculty with an emphasis on developing clinical autonomy.

PeaceHealth Sacred Heart Medical Center has 2 hospitals; University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community clinics. The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to

build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709P Inpatient Ward - Providence Portland (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709S Inpatient Ward - Providence St Vincent (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

Students will participate as full members of the care team in an "Accountable Care Unit," and lead daily multidisciplinary rounds on their patients. This unique unit provides for an enhanced focus on interdisciplinary team work and patient safety. Patients come from broad demographic ranges of ethnicity, socioeconomic status, medical complexity and acuity. The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

HOSP 709V Inpatient Ward - VAMC (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or complex conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

The HOSP courses are not designed with specialty destination in mind; all are welcome. They can be taken prior to the Core Experience in order to build a solid foundation for success, or after, to consolidate and further enrich skills.

IMED 705C Foundations for Point-of-care Ultrasound and Near-peer Teaching (1 cr.)
The course is designed to teach basic POCUS exams and skills to MS1 and MS2 students, focusing on the fundamentals of ultrasound operation as well as anatomy identification. Special emphasis will be placed on how these skills can be incorporated into the physician's physical exam and the bedside application. Throughout the curriculum, three specific instructional strategies will be introduced and implemented in the form of learning experiences the students prepare and participate in. The basic principles for each strategy will be explained, followed by discussion on why the strategy is beneficial in POCUS education. The purpose of incorporating the instructional strategies into the students own POCUS education is to give them real-time examples of how to educate their peers in these ultrasound techniques.

IMED 705TI Internal Medicine - Transition to Internship Elective (1 cr.)

The purpose of this course is to provide a structured, Internal Medicine specific, clinical knowledge refresher focused on identification and management of common clinical conditions and medical emergencies. This will assist incoming interns in developing their knowledge and skills, aiding their ability to recognize sick and unstable patients and identify when to ask for help, while improving their wellness and professional identify, as self-confidence increases. This course will be taught largely by Internal Medicine resident physicians, with some contributions from faculty. Students will learn to workup common clinical presentations seen in the inpatient setting, from patient presentation in the Emergency Department, to identification of the correct diagnosis and appropriate management. Students will spend two half-days in the simulation center practicing the appropriate management of common scenarios encountered during a medical emergency. Students will spend two half-days practicing point-of-care ultrasound. Students will spend one half-day practicing common procedures, including: paracentesis, thoracentesis and central-line placement.

IMED 709A Acting Intern - OHSU (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency. Students will be rotating on a one intern, one resident team in a university hospital setting on mainly medicine and oncology dedicated floors. We emphasize multidisciplinary patient focused rounding practice where students will present patient care plans at the bedside. Students also participate In multidisciplinary care management rounds. Students are encouraged to attend noon reports and resident conferences along with weekly didactics sessions.

IMED 709E Acting Intern - Emanuel (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency.

IMED 709G Acting Intern - Good Sam (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency.

IMED 709HM Acting Intern- Hillsboro Medical Center (6 cr.)
The purpose of this course is to further develop diagnostic reasoning, management, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system diseases. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Students also participate in multidisciplinary care management rounds. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency. Students will be rotating on an internal medicine teaching team with resident and interns. Hillsboro Medical Center (HMC) provides students with exposure to a unique population featuring underserved patients and migrant and seasonal farmworkers. The rotation will help students further their skills in assessing the impact of social determinants of health and applying health equity lens in caring for the community. Students will experience the unique challenges and opportunities practicing in the community setting, and closely collaborate with the interprofessional team in caring for a wide range of patients, including critically ill patients in the progressive care unit. Problems commonly seen on the wards include respiratory failure, cardiovascular disease including acute stroke, sepsis, cirrhosis complications, diabetes complications, and other acute illnesses. Students will participate in biweekly antibiotic stewardship rounds pertaining to their patients. Additional experiences such as procedures, point-of-care ultrasound, mock code and rapid responses are also included in the rotation as much as possible, and will be tailored to the student's interest and educational needs. Students are also expected to attend resident conferences.

IMED 709MT Acting Intern-Legacy Mt. Hood (6 cr.)
Students will learn the inpatient management of acute medical illnesses on the medical ward, as well as in the MICU. Problems commonly seen on the wards rotation include community acquired pneumonia, CHF, exacerbation of chronic lung diseases, acute and chronic renal failure, bacterial endocarditis, pyelonephritis, and other acute illnesses. Problems commonly seen on the MICU rotation

include myocardial infarction, septic shock, acute respiratory failure, diabetic ketoacidosis, and acute gastrointestinal hemorrhage. Students are assigned to work directly with Attending physicians and will advance their knowledge, skills and clinical judgment of the management of acutely ill medical patients.

IMED 709P Acting Intern - Providence Portland (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency.

IMED 709S Acting Intern - Providence St. Vincent (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency.

IMED 709V Acting Intern - VAMC (6 cr.)
The purpose of this course is to further develop clinical diagnosis, reasoning, and communication skills in the care of complex patients with a wide range of acute and chronic, multi-organ system disease. Students will develop targeted history and physical examination skills, refine clinical reasoning skills, and devise comprehensive differential diagnoses and advanced treatment plans. Emphasis will be placed on increased number of patients and patient care responsibilities and autonomy, in order to develop intern-level skills in preparation for residency. Students will be rotating on a two intern, one resident team in the Veterans hospital setting, practicing mainly on medicine dedicated floors. We emphasize multidisciplinary patient focused rounding practice where students will present patient care plans at the bedside. Students also participate in multidisciplinary care management rounds. Students are encouraged to attend noon reports and resident conferences along with weekly didactics sessions.

IMED 710CM Hospital Based Case Management (2 cr.)
In the spirit of residency readiness, medical students increasingly need to learn skills of case management, insurance implications to care, care facility requirements, and patient advocacy in holistic are of their hospitalize patients. This course will provide students with the following objectives. This would be a great elective for a student who has interest in patient related hospital medicine, advocacy, social sciences and services, and policy.

IMED 710K Clinical Ultrasound (2 cr.)
This clinical course provides foundational skills in the use of ultrasonography to augment the physical examination. Basic ultrasonography skills for the assessment of normal anatomy and physiology will be learned and applied to the differentiation of normal from basic pathologic states commonly encountered in clinical care. Students will learn the limitations of ultrasonography and when further imaging is appropriate for the care of the patient. The goal of the course is to provide foundational skills in limited ultrasonography that can be further developed during residency training. The course will include didactic sessions, asynchronous modules, deliberate practice in the simulated and supervised clinical settings, and small group discussions. Feedback will be provided by ultrasonographers, peers, residents, and faculty.

IMED 710KC Cognitive Ultrasound (2 cr.)
The purpose of this elective is to introduce concepts of Point-of-Care Ultrasound and how it can be incorporated into clinical decision making. Students will engage in self-learning through ACP and Sonosite Institute learning modules, webinars and courses. Self-learning will be supplemented with image review sessions, pathology identification and online demonstrations with faculty through the Zoom meeting system. Students will engage in near-peer teaching through a presentation.

IMED 710X Special Elective (2 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Internal Medicine. Students must make special arrangements with a faculty member and the department for an individual program of study.

IMED 730 Internal Medicine Core Clinical Experience (6 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or dangerous conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the

complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope.

IMED 730R Internal Medicine Core Clinical Experience-Remediation (6 cr.)
Remediation version of IMED 730.

IMED 731A Internal Medicine Core Hospital Based (12 cr.)
In this Experience, students will develop critical knowledge and skills pertinent to inpatient care of the adult patient. They will learn to navigate complex EMRs to obtain accurate and focused data, obtain hypothesis-driven histories, and perform problem-focused exams. They will formulate an overall assessment, prioritized problem list, and triaged differential diagnosis with a focus on common and/or dangerous conditions. They will communicate their findings, assessment, plan and reasoning both orally and in writing. Students will follow the patients through until discharge (or rotation off service) and will gain an appreciation for the complexity and risks of transitions of care. They will do this in a clinical environment that is diverse but also rich in "common" medical conditions such as pneumonia, COPD, heart failure, decompensated liver failure, pancreatitis, sepsis, and malignancies and their complications. They will develop structured approaches to common inpatient complaints such as abdominal pain, chest pain, acute and progressive dyspnea, fever, failure to thrive and syncope. Students will develop a longitudinal relationship with key faculty, and focus on interdisciplinary care, evidence-based medicine, quality improvement and patient safety in the hospital setting. Safe transitions of care from the unit to home/ICU/skilled nursing will be an emphasis.

IMED 731B Internal Medicine Continuity Core Inpatient/Ambulatory (12 cr.)
The purpose of the Internal Medicine continuity core clinical experience is for students to develop clinical diagnosis, reasoning and communication skills in the care of adult patients with a wide range of acute and chronic, multi-organ system disease in both the ambulatory and hospital settings, with a focus on transitions of care. Students will have the opportunity to see post-hospitalization patients in clinic and to see hospitalized patients during their clinic weeks in order to better understand the patient context of complex transitions of care. They will work in an interdisciplinary team to better understand everyone's role in both settings. Students will be able to use their knowledge and clinical reasoning skills to perform basic history and physical examinations, develop differential diagnoses, order and interpret diagnostic studies, and devise basic treatment plans.

As part of this clinical experience students will work one on one with outpatient attendings in a fast-paced outpatient practice where they will further enhance their time management and agenda setting skills. In addition, students will experience full breadth and depth of the practice of general internal medicine.

IMED 731RA Internal Medicine Continuity Core - Hospital-based- Remediation (12 cr.)
Remediation version of IMED 731A.

IMED 731RB Internal Medicine Continuity Core - Inpatient/Ambulatory - Remediation (12 cr.)
Remediation version of FAMP 731B.

IMED 741K Point of Care Ultrasound Continuity (8 cr.)
This course is designed as a continuation of existing Point-of-Care Ultrasound electives. Students are required to complete one of the following electives to be eligible to participate: IMED 710K or IMED 705C. Completion of one of these electives will ensure that students are ready for independent scanning and participation in teaching sessions. All students should be comfortable with ultrasound fundamentals of equipment operation, limited cardiac scanning, lung scanning, FAST exam, renal ultrasound and basic MSK to participate. Students will be given faculty contacts and will be responsible to schedule scanning sessions. Students will participate as student teachers in all POCUS group hands-on scanning educational sessions scheduled during the elective. Students will produce a scholarly project approved by elective course directors that is relevant to POCUS education.
This elective is for clinical phase students hoping to advance their skills in POCUS. All activities will take place within the OHSU educational & health system, and additional continuity will be provided by interactions with at least 2 of the 3 course directors per week. Students will receive opportunities to scan with POCUS experts, attend and teach hands-on at didactic POCUS sessions, and complete independent scanning sessions to achieve competence in limited cardiac, lung, FAST, renal scanning techniques and basic MSK. Students will receive feedback on ultrasound exams through direct faculty observation, image review and OSCE assessment of exams.

INFD 709A Infectious Disease Consult (4 cr.)
Students learn clinical and laboratory approaches to the diagnosis and therapy of infectious diseases. Students participate in both the OHSU and VAMC infectious diseases rounds. They will work up and present new consultation patients, follow up with patients on the consult service, and

participate in Division Conferences. Placement is within a combined OHSU/VAMC rotation.

INFD 709H Infectious Disease - PeaceHealth Sacred Heart (4 cr.)
Students obtain a working knowledge of the management of common infectious diseases. Management will include diagnostic procedures and appropriate use of antimicrobial agents. Students will participate in the ID consultative service which involves both outpatient and inpatient consultation. They will perform 2-3 complete consultations per week. In each instance, they evaluate patients independently and then present their findings to the infectious diseases faculty. They are then obligated to follow the course of the patient's illness for the duration of hospitalization and outpatient follow-up where appropriate. There are home reading assignments with learning objectives. Students also are required to complete a medical knowledge self-assessment test in the area of infectious diseases. Students will also get to work with the Hyperbaric/Infectious Disease program. It is certified by the Undersea and Hyperbaric Medical Society and it is operated solely by board-certified ID physicians. This is ideal for coordinating treatment with our wound care program and with providers in the region. Treatment is available 24/7 for emergency care. PeaceHealth Sacred Heart Medical Center has 2 hospitals: University District in Eugene and RiverBend in Springfield, OR, approximately 100 miles south of the main OHSU campus. Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community.

INFD 709P Infectious Disease - Providence Portland (4 cr.)
Students obtain a working knowledge of the management of common infectious diseases. Management to include diagnostic procedures and appropriate use of antimicrobial agents. Students will participate in the ID consultative service which involves both outpatient and inpatient consultation. They will perform 2-3 complete consultations per week. In each instance, they evaluate patients independently and then present their findings to one of the four infectious diseases faculty. They are then obligated to follow the course of the patient's illness for the duration of hospitalization (and outpatient follow-up where appropriate). There are home reading assignments with learning objectives. Students also are required to complete a medical knowledge self-assessment test in the area of infectious diseases. Students will participate in the weekly city-wide infectious diseases conference.

INFD 710A Infectious Disease - OHSU/VAMC (2 cr.)
Students learn clinical and laboratory approaches to the diagnosis and therapy of infectious diseases. Students participate in both the OHSU and VAMC infectious diseases rounds. They will work up and present new consultation patients, follow up with patients on the consult service, and participate in Division Conferences. Placement is within a combined OHSU/VAMC rotation.

INTS 770A Family Medicine Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770B Internal Medicine Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770C Neurology Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770D OBGYN Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770E Pediatrics Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770F Psychiatry Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770G Surgery Testing Intersession (1 cr.)
Students will demonstrate their knowledge and understanding of established biomedical, scientific, and clinical science principles, fundamental to the healthcare of patients and populations.

INTS 770RA Remediation Family Medicine Testing Intersession (1 cr.)
Remediation of the Family NBME Shelf Exam

INTS 770RB Remediation Internal Medicine Testing Intersession (1 cr.)
Remediation of the Internal Medicine NBME Shelf Exam

INTS 770RC Remediation Neurology Testing Intersession (1 cr.)
Remediation of the Neurology NBME Shelf Exam

INTS 770RD Remediation OBGYN Testing Intersession (1 cr.)
Remediation of the Obst/Gyn NBME Shelf Exam

INTS 770RE Remediation Pediatrics Testing Intersession (1 cr.)
Remediation of the Pediatrics NBME Shelf Exam

INTS 770RF Remediation Psychiatry Testing Intersession (1 cr.)
Remediation of the Psychiatry NBME Shelf Exam

INTS 770RG Remediation Surgery Testing Intersession (1 cr.)
Remediation of the surgery NBME shelf exam

INTS 771 Intersession: Cancer (2 cr.)
Students who complete this intersession will be able to integrate basic and clinical science knowledge and principles of health care delivery related to cancer and oncology. Students will begin by reviewing cases presented during the Foundation blocks, and any relevant cases encountered during their clinical experiences. In didactic sessions and small groups, they will examine recent literature to understand the mechanisms underlying development of cancer and its progression, including those mechanisms associated with cancer treatment and prevention. Several types of cancer will be explored, discussed and compared. Students will participate in a variety of activities in the OHSU clinical and scientific enterprise to support the application of knowledge to the delivery of health care for patients. This intersession will emphasize key basic science concepts of cancer and may build on some or all of the following threads: anatomy, embryology, histology, cell biology, genetics, biochemistry, nutrition, physiology, pathology, pharmacology, microbiology and immunology threads as well as communication, ethics, professionalism, epidemiology, bio statistics, informatics, evidence-based medicine, and health policy, quality and safety that were introduced during the Foundation of Medicine blocks.

INTS 771CR Dissection of the Coronavirus - Remediation (2 cr.)
Remediation version of INTS 771CV.

INTS 771CV Intersession: Covid (2 cr.)
Students who complete this intersession will be able to integrate basic and clinical science knowledge and principles of health care delivery related to healthcare associated to the Coronavirus Pandemic. This intersession will emphasize key basic science concepts of the coronavirus infections and may build on some or all of the following threads: anatomy, embryology, histology, cell biology, genetics, biochemistry, nutrition, physiology, pathology, pharmacology, microbiology and immunology threads as well as communication, ethics, professionalism, epidemiology, bio statistics, informatics, evidence-based medicine, and health policy, quality and safety that were introduced during the Foundation of Medicine blocks.

INTS 771DA Intersession: (Dis)ability (2 cr.)
Nearly every single patient presents to our clinics and hospitals with an acute or chronic experience of disability. While most often, clinical management of disease is focused on the explicit aim of reduction or elimination of disability, limited time is spent exploring the assumptions and consequences of this aim. In this course, students will explore our cultural understanding of disability within medicine, map out the outcomes of disease (biological or functional difference) in the context of the societies in which we live, and learn how to engage with disability justice as healthcare professionals. This course will equip students with the knowledge and practical skills to meet the needs of all our patients, inclusive of patients with intersectional identities who experience disability, chronic illness, and neurodivergence. Course goals have been adapted from the Alliance for Disability in Health Care Education's Disability Core Competencies. This course has been co-created by current and past students and faculty with disabilities at OHSU. It is grounded in the principles of disability justice established by Sins Invalid.

INTS 771DR (Dis)ability Intersession -Remediation (2 cr.)
Remediation version of INTS 771DA.

INTS 771R Intersession: Cancer- Remediation (2 cr.)
Remediation version of INTS 771.

INTS 772 Intersession: Cognitive Impairment (2 cr.)
Students who complete this intersession will be able to integrate basic and clinical science knowledge and principles of health care delivery related to cognitive impairment. Students will begin by reviewing cases presented during the Foundation blocks, and any relevant cases encountered during their clinical experiences. In didactic sessions and small groups, they will examine recent literature to understand the neuropathological mechanisms underlying development of cognitive impairment across the lifespan. Methods and tools to assess the degree of impairment and prognosis for recovery will be discussed. Impairments associated with different cognitive functions (e.g., memory, attention), will be explored, discussed and compared. Students will participate in a variety of activities in the OHSU clinical and scientific enterprise to support the application of knowledge to the delivery of health care for patients. This

intersession will emphasize key basic science concepts of neural functioning and may build on some or all of the following threads: anatomy, embryology, histology, cell biology, genetics, biochemistry, nutrition, physiology, pathology, pharmacology, microbiology and immunology threads as well as communication, ethics, professionalism, epidemiology, bio statistics, informatics, evidence-based medicine, and health policy, quality and safety that were introduced during the Foundation of Medicine blocks.

INTS 772R Intersession: Cognitive-Remediation (2 cr.)
Remediation version of INTS 772.

INTS 773 Intersession: Infection (2 cr.)
Students who complete this intersession will be able to integrate basic and clinical science knowledge and principles of health care delivery related to the transmission and development of infectious diseases. Students will begin by reviewing cases presented during the Foundation blocks, and any relevant cases encountered during their clinical experiences. In didactic sessions and small groups, they will examine recent literature to understand the mechanisms underlying development of infection and its progression, including those mechanisms associated with treatment. Several types of infection, including bacterial, viral and fungal will be explored, discussed and compared. Students will participate in a variety of activities in the OHSU clinical and scientific enterprise to support the application of knowledge to the delivery of health care for patients. This intersession will emphasize key basic science concepts of infection and may build on some or all of the following threads: anatomy, embryology, histology, cell biology, genetics, biochemistry, nutrition, physiology, pathology, pharmacology, microbiology and immunology threads as well as communication, ethics, professionalism, epidemiology, bio statistics, informatics, evidence-based medicine, and health policy, quality and safety that were introduced during the Foundation of Medicine blocks.

INTS 773R Intersession: Infection-Remediation (2 cr.)
Remediation version of INTS 773.

INTS 774 Intersession: Pain (2 cr.)
Students who complete this intersession will be able to integrate basic and clinical science knowledge and principles of health care delivery related to pain. Students will begin by reviewing cases presented during the Foundation blocks, and any relevant cases encountered during their clinical experiences. In didactic sessions and small groups, they will examine recent literature to understand the mechanisms underlying pain including those mechanisms associated with treatment. Several types of pain scenarios will be explored, discussed and compared. Students will participate in a variety of activities in the OHSU clinical and scientific enterprise to support the application of knowledge to the delivery of health care for patients. This intersession will emphasize key basic science concepts of pain and may build on some or all of the following threads: anatomy, embryology, histology, cell biology, genetics, biochemistry, nutrition, physiology, pathology, pharmacology, microbiology and immunology threads as well as communication, ethics, professionalism, epidemiology, bio statistics, informatics, evidence-based medicine, and health policy, quality and safety that were introduced during the Foundation of Medicine blocks.

INTS 774R Intersession: Pain Management-Remediation (2 cr.)
Remediation version of INTS 774.

IRAD 701A Interventional Radiology Research (2-12 cr.)
This course is designed to familiarize medical students with foundations of clinical and translational research in the field of Interventional Radiology. Students will learn to formulate clinical questions, conduct lit review, develop appropriate methodology and study design. Students will also learn basics of biostatistics and identify appropriate statistical tests for a clinical or translational research study. In addition, students will learn basic rules of scientific collaboration and publication, including ethics in scientific conduct and publishing.

IRAD 709B Dotter Interventional Institute - Interventional Radiology (4 cr.)
This is a 4-week introductory elective to provide students with the basic understanding of the minimally invasive, image-guided diagnostic and therapeutic techniques that the specialty of interventional radiology offer patients both in the inpatient and ambulatory setting. Rotation highlights include time in the interventional angiography suites with procedural experience in interventional oncology, peripheral vascular and aortic interventions, hepatobiliary interventions, women's health and interventions, emergent embolization, central venous catheter placement, drainage and feeding tube management, as well as venous/lymphatic interventions. Beyond the procedural experience, this elective emphasizes on the direct longitudinal patient care that IR offers with clinical experience in the interventional radiology clinic and in attending multidisciplinary conferences. At the conclusion of the elective, the student will prepare one didactic lecture on a topic of their choosing at the IR didactic conference.

IRAD 709E Dotter Interventional Institute - Advanced Interventional Radiology (4 cr.)
This is an advanced four-week elective for students who have already completed the basic interventional radiology elective and are looking to delve deeper into the patient care and research aspects of the field. Rotation highlights will include

time in the Interventional Radiology clinics, attending multidisciplinary case conferences, serving on the inpatient IR consult service, with possible additional time in the translational research lab. This is not a primary procedural based rotation, but rather, focuses on the evaluation of patients before and after their procedures, and on the critical role of clinical decision making. Students are also encouraged to double scrub on patients they have worked up in between consults, as well as at the end of the day for late cases.

IRAD 710X Interventional Radiology Special Elective (2 cr.)
This elective is for students to have more in-depth experience in a subspecialty of Interventional Radiology. Students must make special arrangements with a faculty member and the department for an individual program of study.

IRAD 711A Interventional Radiology Research (2 weeks) (2 cr.)
Students to work with faculty mentor to identify research topic, methodologies and final product.

IS 701 International Research Away (8 cr.)
International research away elective.

IS 705TF OHSU Global - Tsuha Fellowship Field Experience (4-8 cr.)
The OHSU Global Tsuha Fellowship Field Experience provides a mentored global health experience which introduces medical students to the factors contributing to health and disease globally through the lens of experiential learning in conjunction with local professionals. Opportunities for medical student experiences are made available by way of the OHSU administered Tsuha Fellowship in partnership with The University of Western Australia. Currently, eight Tsuha Fellows live and work in low or middle income countries, i.e., current Tsuha Fellows are in Bhutan, Ghana, Nigeria, Bangladesh, the Seychelles and South Africa and Fellows could come from additional countries. This elective allows students to learn more about health care, public health and/or planetary health from local professionals living and working in countries which face remarkably different health challenges than one sees in the US. More broadly, the elective aims to deepen student understanding of the UN Sustainable Development goals so that they might be more culturally aware and effective practitioners after returning to the United States when they have opportunity to apply these life changing skills and better understand the global context of their chosen field. OHSU students will be closely supervised by the field experience course director, the Tsuha Mentor from UWA and from the in country Tsuha Fellow.

IS 709A OHSU Global SE Asia Chang Rai (4 cr.)
The OHSU Global Southeast Asia Clinical Field Experience provides a mentored global health immersion experience which introduces medical students to the factors contributing to health and disease globally through the lens of experiential learning in SE Asia. Opportunities for medical student experiences are now available by way of OHSU partner institutions at Mae Fah Luang University in Chiang Rai, Thailand. This elective allows students to either expand their skills in diverse clinical settings or to learn more about cross border and public health priorities in countries which face remarkably different health challenges than one sees in the US. More broadly, the elective aims to deepen student understanding of and appreciation for international medical and public health systems so that they might be more culturally aware and effective practitioners after returning to the United States when they have opportunity to apply these life changing skills.

IS 709B OHSU Global SE Asia Bangkok Clinical Rotation (4 cr.)
The OHSU Global Southeast Asia Clinical Field Experience provides a mentored global health immersion experience which introduces medical students to the factors contributing to health and disease globally through the lens of experiential learning in SE Asia. Opportunities for medical student experiences are now available by way of OHSU partner institutions at Siriraj Hospital, Mahidol University in Bangkok, Thailand. This elective allows students to expand their clinical skills in a diverse clinical setting in a country which faces remarkably different health challenges than one sees in the US. More broadly, the elective aims to deepen student understanding of and appreciation for international medical systems so that they might be more culturally aware and effective practitioners after returning to the United States when they have opportunity to apply these life changing skills.

JCON 602A Basic Science Review (4 cr.)
This course is considered independent study. The course director will meet with the student twice a quarter to assess the student's academic process and to assign a grade. The student can be required to participate in specific courses at Oregon Health Sciences University or attend courses/conferences through other universities. Since this course is Pass/Fail and is independent study, a student can register for it several times, but does not count toward graduation elective credits.

JCON 602B Basic Science Review B (5 cr.)
The purpose of the Basic Science Review B course is for students to further their understanding of the principles and fundamental knowledge from the Foundations of Medicine (FoM) curriculum phase. This course is specifically for students who determine AFTER the start of Winter term, but BEFORE the Transition to Clinical Experience (TTCE) course begins, that they will defer the USMLE Step 1 exam to spend

additional time preparing for USMLE Step 1 exam. Students in this circumstance will withdraw (WP) from the Preparation for Step 1 (PREP 700) course and enroll in this course. This course can be only utilized in Winter term immediately following the FoM curriculum phase. This course will be counted to meet the graduation credit requirement in lieu of PREP 700.

JCON 602C Basic Science Review C (11 cr.)
The purpose of the Basic Science Review C course is for students to further their understanding of the principles and fundamental knowledge from the Foundations of Medicine (FoM) curriculum phase. This course is specifically for students who determine BEFORE the Winter term begins that they will defer the USMLE Step 1 exam to spend additional time preparing for USMLE Step 1 exam. Students in this circumstance will not be enrolled in the Preparation for Step 1 (JCON 700A) course and instead will be enrolled in this course the entire Winter term. This course can be only utilized in Winter term immediately following the FoM curriculum phase. This course will NOT fulfill any of the elective credits required for graduation.

JCON 602D Basic Science Review (4-12 cr.)
The purpose of the Basic Science Review D course is for students to further their understanding of the principles and fundamental knowledge from the Foundations of Medicine (FoM) curriculum phase. This course has restricted enrollment and is specifically for students who have been approved to delay step 1 and/or took USMLE Step 1 but then have received notification that they have failed the USMLE Step 1 exam during Winter or spring term year 2, and after having taken Transition to Clinical Experiences (TTCE). Students who have taken step 1 prior to spring term start will not be eligible for this course unless they have posted a fail of step 1. This course will NOT fulfill any of the elective credits required for graduation.

JCON 700C Preparation for USMLE Step 2CK (1 cr.)
This course provides learners with dedicated time to prepare for USMLE Step 2 CK. Students allowed to register for this course only once, and in a term during their clinical experience curriculum phase. This course will NOT fulfill any of the elective credits required for graduation.

JCON 700D Career Exploration (Career Planning) (0.25 cr.)
In this course, students will reflect on their career path which includes application process for various residency programs. Upon completion of this course, students are expected to complete the online appraisal of each interview. Students are recommended to meet with residency program advisors and/or coach to debrief and strategize their application process. This course will NOT fulfill any of the elective credits required for graduation. Completion of online appraisal form by the last day of the term that students are registered.

JCON 701Z Medical Research-International Away (4 cr.)
Medical students are responsible for making their own arrangements for an international away rotation, including receiving the department's review and approval prior to leaving for the rotation.

JCON 705CA Career Exposure to Unique Specialties (1 cr.)
Students are less likely to pursue specialties (Ophthalmology, Urology, and Radiation Oncology) that they haven't had significant exposure to prior to medical school or on core clinical rotations; often, the more elusive specialties pique interest later than is ideal to seriously pursue. Many of these specialties are competitive, and early exposure can be beneficial. This elective seeks to provide opportunities for early exposure to clinical specialties in a low-stakes environment that 1st and 2nd year students may not have easy access to. The goal of this elective is exposure to help inform decision making for additional shadowing, precepting, research projects, or elective rotations as students progress through medical school.

JCON 705DA Disability Awareness and Skills Development for Medical Students (1 cr.)
People with disabilities comprise nearly a quarter of the U.S. population and are considered to be the largest minority group. However, education regarding the care of this population in medical school curricula across the United States is notably sparse. The lack of physician comfort and proficiency managing the care of patients with disabilities perpetuates poor health outcomes, barriers to care, and a general loss of trust of providers. The goals of this elective are to 1) increase medical students' understanding of social and medical conceptual models of disability, 2) recognize the unique barriers faced by people with disabilities in the healthcare setting, 3) unearth and examine personal bias, and 4) develop technical physical exam and interviewing skills specific to this population. These goals will be accomplished by centering the voices and lived experiences of people with disabilities as co-instructors in this course. Additional instruction will be done by OHSU's University Center for Excellence in Developmental Disabilities (UCEDD) staff, the Leadership Education in Neurodevelopmental and Related Disabilities (LEND) Program, OHSU faculty, and community organizations.

JCON 705LC Health Law (0.5 cr.)
The purpose of the course is to allow medical students an exploration of public health law and other aspects of the interactions between health and law at play in the COVID pandemic. In particular, the course will examine the interplay

between law and health care and the resulting impact on social determinants of health during COVID. Many of the issues we will discuss are also applicable to our health care system in non-pandemic times, and will allow medical students to gain a deeper understanding of the legal and regulatory aspects of health care in the US.

JCON 705PS Peer Support Mentor Training (0.5 cr.)
Our intimate involvement in patient care brings to the foreground the human experience in its many forms and extremes. As medical students and future providers, we bear witness to both incredible joy and devastating pain. Healthcare workers at all levels of training encounter patient deaths and poor outcomes, and must learn to cope with these events. These first experiences and building our own repertoire of wellness strategies are critical parts of the clinical phase. While personal wellness strategies are important, they are rarely enough to support an individual. The support of our peers and broader medical system is imperative to sustaining the important work we do. This course is based on the idea that we can build a stronger and more resilient community of healthcare workers when we bolster those around us. This four-week course acts as an introductory training program designed to educate a new generation of peer support leaders. Upon completion of the course, students will be prepared to join a pool of peer support students at OHSU. These leaders will be the pillars of the Peer Support Program, which provides space for other students who desire assistance in processing and debriefing after facing a poor patient outcome or death. Students will learn the fundamentals of discussing difficult situations with peers and the resources available to all students seeking support. Students will also learn the basics of psychiatric first aid and how to direct peers in crisis to higher levels of care as necessary.

JCON 705R Transition to Clinical Experience Teaching Elective (1.5 cr.)
The purpose of this elective is to provide graduating medical students the opportunity to develop their teaching skills through teaching preclinical medical students during TTCE. Specifically, graduating students will teach the following skills: giving oral presentations, scrubbing/gowning/gloving for the OR, self gloving and gowning, providing advice for surviving and thriving in clinical rotations. Students who take this elective will be provided training in teaching techniques by the course director prior to the start of TTCE.

JCON 705RA Structural Competency Foundations Leadership-1 (1 cr.)
The course will enable first-year student leaders to deepen their knowledge and exposure to equity and justice via the framework of structural competency. In this phase of the course, and throughout, students will attend regularly scheduled meetings focusing on the development of structural competency theory lenses, cultivation of facilitative leadership and participatory decision-making models of leadership and group self-organization, and community building as a means of training, all in service of expanding capacity and skills for leadership and teaching of equity an justice domains throughout medical education and healthcare. Students will be required to attend trainings, complete readings, and participate in, and lead, group discussions. Students who complete this elective course are expected to enroll in subsequent electives JCON 705RR (Year 2, summer term) and JCON 705RC (year 2, fall term).

JCON 705RC Structural Competency Foundations Leadership-2 (1 cr.)
This course will enable second-year student leaders to deepen their knowledge and exposure to equity and justice via the framework of structural competency. Students in this phase of the course will practice skills in facilitative leadership through near-peer discussion session facilitation with first year medical student learners.

JCON 705RR Structural Competency Foundations Leadership-3 (1 cr.)
This course will enable second-year student leaders to deepen their knowledge and exposure to equity and justice via the framework of structural competency. Students in this phase of the course will develop and practice skills in facilitative leadership through the process of discussion session development for the 1st year OHSU SOM Structural Competency Foundations Curriculum. Students will apply concepts learned in their theory and facilitation trainings from the preceding course to develop facilitative discussion strategies to be implemented in discussion groups as part of the standardized Structural Competency Foundations curriculum. Students who complete this elective course are expected to enroll in elective JCON 705R in Spring Term.

JCON 705SP Latino Medical Student Association-Introduction to Medical Spanish (1 cr.)
Latinos are the largest minority population in the U.S, and comprise the majority of the 25 million people in the country with limited English Proficiency (LEP). Despite the growing number of LEP patients and research on the importance of overcoming language barriers provide quality healthcare, meeting the language needs of LEP patients remains a challenge. The Latino Medical Student Association (LMSA) Introduction to Medical Spanish Elective aims to help overcome that challenge by introducing students to essential Medical Spanish terminology and phrases, as well as increasing their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their Medical Spanish in class, after viewing sample video cases

depicting common medical complains like headache, abdominal pain, and cough. These videos will be accompanied by a vocabulary list and bilingual script to allow students the chance to further practice key terms and phrases between sessions. Students will also be required to participate in LMSA culturally themed "Cafecito" where they can learn about different customs, and practice their newly acquired skills in a clinical setting. This course is geared towards students with a working level of conversational Spanish, although those with a more basic knowledge are welcome to join.

JCON 705ST Latino Medical Student Association- Spanish Elective Teaching Assistant (1 cr.)
This course is for students who facilitate the Latino Medical Student Association (LMSA) Introduction to Medical Spanish Elective, which aims to help future providers overcome the challenges of language and cultural barriers in order to provide quality health care to Spanish speakers. This is accomplished by introducing students to essential Medical Spanish terminology and phrases, as well as increasing their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their Medical Spanish in class, after viewing sample video cases depicting common medical complaints like headache, abdominal pain, and cough. These videos will be accompanied by a vocabulary list and Spanish script to allow students the chance to further practice key terms and phrases between sessions. Teaching assistants must be proficient in Spanish as they will assist the class attendees in their learning process by leading small groups, teaching grammar lessons, creating Cafecito experiences, and adding context when needed.

JCON 705WE Medical Education with the Wy'East Post-Bac Program (4-week) (4 cr.)
This course is designed for 3rd or 4th year medical students that are interested in becoming medical educators. Medical students taking this elective will be working with students in the Wy'East post baccalaureate program, a Northwest Native American Center of Excellence grant funded program. Wy'East is a structured program designed to assist students from Native American backgrounds who have been unsuccessful in gaining admission to any US medical school. The goal of the program is to better prepare the Wy'East participants for the challenges of medical school. Through this elective, medical students will be mentored on what it takes to become medical educators, as well as complete new faculty modules created by the Teaching and Learning Center at OHSU. Medical students will be expected to design and lead didactic small group sessions on foundation science and community health curriculum for the Wy'East students. These sessions will be evaluated and the medical students will receive timely feedback in order to reflect and make necessary changes for the following week. Medical students will receive mentorship and leadership from faculty from the following areas; foundational sciences, family medicine, community health, and teaching and learning.

JCON 705Z International Away Non-Clinical (8 cr.)
Medical students are responsible for making their own arrangements for an international away rotation, including receiving the department's review and approval prior to leaving for the rotation.

JCON 706P Shadowing Experience (1 cr.)
This Audit Only course is designed to allow students to create their own shadowing experience with a clinical faculty member.

JCON 707X Special Non-Clinical Elective (1-9 cr.)
This course number is reserved for Non-clinical special electives that are created between a student and faculty member and can only be scheduled with the permission of the hosting department and the Office of Education and Student Affairs.

JCON 709EO Exposure and Outbreak Management (4 cr.)
The purpose of this rotation is to introduce the student to the process and workings of an occupational health office. This will include: COVID exposure and outbreak management. Students will be trained and will participate in management of COVID cases, cluster investigation and outbreak containment in the setting of the COVID pandemic. COVID is a highly transmissible disease, and persons identified as having COVID need to be quickly identified and isolated, and their contacts must be notified and evaluated. Clusters must be investigated to determine whether ongoing workplace transmission is occurring. This is being done on a daily basis at OHSU through Occupational Health, an inter-professional group made up of RNs/FNPs and MDs, and there is an opportunity to incorporate learners in this inter-professional process. Students will work with unit leaders, department heads, nurse managers, attend huddles, etc. to gather line lists for contact tracing purposes. Students will learn to interview cases and contacts, gather the required information to infer transmission events, and gain experience with return calls with occupational health requirements and recommendations. Selected students with interest may be able to participate in specialized analyses of viral genetic sequences to reconstruct transmission networks. Blood and Bodily Fluid Exposure Management. BBFE are common occurrences across many fields in both clinical medicine and biomedical research, and often present challenging diagnostic and therapeutic dilemmas. OHSU students currently have the highest rate of BBFEs at the university, averaging 30/month. In this elective, OHSU students will be trained in the evaluation and management process for Blood & Bodily Fluid

Exposures (BBFE) within the occupational health department. Students will be expected to acquire the appropriate knowledge base for BBFE encounters, assist in evaluations and in the development of a management plan. Half of the course will be devoted to contact tracing and half to BBFE exposure management.

JCON 709Z International Medicine Extern (4 cr.)
Medical students are responsible for making their own arrangements for an international away rotation, including receiving the department's review and approval prior to leaving for the rotation.

JCON 715 M.D./Ph.D. Longitudinal Clerkship (1 cr.)
MD/PhD Students will participate in a longitudinal experience for at least two years during their PhD coursework.

JCON 715WE Medical Education with the Wy'East Post-Bac Program (3-week) (3 cr.)
This course is designed for 3rd or 4th year medical students that are interested in becoming medical educators. Medical students taking this elective will be working with students in the Wy'East post baccalaureate program, a Northwest Native American Center of Excellence grant funded program. Wy'East is a structured program designed to assist students from Native American backgrounds who have been unsuccessful in gaining admission to any US medical school. The goal of the program is to better prepare the Wy'East participants for the challenges of medical school. Through this elective, medical students will be mentored on what it takes to become medical educators, as well as complete new faculty modules created by the Teaching and Learning Center at OHSU. Medical students will be expected to design and lead didactic small group sessions on foundation science and community health curriculum for the Wy'East students. These sessions will be evaluated and the medical students will receive timely feedback in order to reflect and make necessary changes for the following week. Medical students will receive mentorship and leadership from faculty from the following areas; foundational sciences, family medicine, community health, and teaching and learning.

JCON 725 MD/PhD Clinical & Translational Research Clerkship (8 cr.)
The purpose of the Clinical and Translational Research Experience is to provide a mentored continuity experience with clinical research. It will include direct patient contact with study participants, as well as clinical study staff. They will consent patients, develop a deeper understanding of clinical trials, limitations, regulatory agencies and more. Students will develop an understanding of the institutional review board process, and clinical research design and implementation.

JCON 741HP Health Policy and Legislation (8 cr.)
The purpose of the Health Policy and Legislation continuity elective is for students to gain experience and proficiency in policy making at the state legislative level. The focus of the healthcare policies include: social determinants of health, healthcare for the incarcerated and other vulnerable populations, equitable access, and maintaining a sustainable healthcare workforce. Students will work in partnership with advocacy organizations and legislative offices. Students will draft policy and present to legislative committees. Students will experience the legislative process firsthand, working directly in legislator offices and with community-based advocacy groups to pass specific policies related to the healthcare system and social justice. Students will be an important part of the team. They will attend strategy planning and lobby meetings, town halls, committee hearings, and floor sessions in the House and the Senate. They will work directly on critical legislation that impacts healthcare and social justice — doing research, writing testimony, prepping legislators, and offering their perspectives to the political process. Students will learn how they can leverage their medical and public health expertise to influence the political process by helping to make better laws that more effectively address the needs of Oregonians. Students will learn how to research the specific issues and to communicate them effectively via written briefs and white papers, oral testimony, and discussions with the legislative teams and advocates.

JCON 741Z International Continuity Elective (8 cr.)
Medical students are responsible for making their own arrangements for an international away rotation, including receiving the department's review and approval prior to leaving for the rotation.

JCON 745HP Health Policy and Legislation (8 cr.)
The purpose of the Health Policy and Legislation continuity elective is for students to gain experience and proficiency in policy making at the state legislative level. The focus of the healthcare policies include: social determinants of health, healthcare for the incarcerated and other vulnerable populations, equitable access, and maintaining a sustainable healthcare workforce. Students will work in partnership with advocacy organizations and legislative offices. Students will draft policy and present to legislative committees. Students will experience the legislative process firsthand, working directly in legislator offices and with community-based advocacy groups to pass specific policies related to the healthcare system and social justice. Students will be an important part of the team. They will attend strategy planning and lobby meetings, town halls, committee hearings, and floor sessions in the House and the Senate. They will work directly on critical legislation that impacts healthcare and social justice — doing research, writing

testimony, prepping legislators, and offering their perspectives to the political process. Students will learn how they can leverage their medical and public health expertise to influence the political process by helping to make better laws that more effectively address the needs of Oregonians. Students will learn how to research the specific issues and to communicate them effectively via written briefs and white papers, oral testimony, and discussions with the legislative teams and advocates.

JCON 799 Self-Directed Learning (0.25 cr.)
Students interested in credit for self-directed learning experiences should register for this course.

JCON 799A Self-Directed Learning (1 cr.)
Students interested in credit for self-directed learning experiences should register for this course.

MGEN 709A Medical Genetics (1-4 cr.)
Students will participate in outpatient services for evaluation of patients with birth differences, syndrome identification, hereditary cancer syndromes and other suspected genetic disorders. They will also participate in a variety of genetics clinics including Pediatric Genetics, Metabolic Genetics, Perinatal Genetics, Cancer Genetics, other sub specialty genetics clinics as available. They will be expected to attend the regularly scheduled Departmental Clinical conference. In addition, students will accompany the on-call geneticists for inpatient consults from the University. They will also attend Doernbecher and MMG Grand Rounds presentations. Additional educational and didactic opportunities may be available as time allows.

MINF 701A Research in Biomedical Informatics and Clinical Epidemiology (4-8 cr.)
Students will participate in a research project in the areas of biomedical informatics and clinical epidemiology, and related areas of data science and artificial intelligence. The project will be overseen and mentored by a DMICE faculty member. The project can be a faculty member's existing research project or, if a faculty is willing, a new project mentored by the faculty. Before the course, the student and faculty will devise a work plan, project deliverables, and timeline. The student will devote 36 hours per week and meet with the faculty mentor as needed.

MINF 701B Research in Biomedical Informatics and Clinical Epidemiology (2-12 cr.)
Students will participate in a research project in the areas of biomedical informatics and clinical epidemiology, and related areas of data science and artificial intelligence. The project will be overseen and mentored by a DMICE faculty member. The project can be a faculty member's existing research project or, if a faculty is willing, a new project mentored by the faculty. Before the course, the student and faculty will devise a work plan, project deliverables, and timeline. The student will devote 36 hours per week and meet with the faculty mentor as needed.

MINF 705B Clinical Informatics (2 cr.)
This elective provides a brief introduction to clinical informatics, combining a structured didactic curriculum, observational of clinical informatics in real-world practice with faculty and fellows, and self-directed learning. In 2013, ACGME introduced this new subspecialty, defined as "the subspecialty of all medical specialties that transforms health care by analyzing, designing, implementing, and evaluating information and communication systems to improve patient care, enhance access to care, advance individual and population health outcomes, and strengthen the clinician-patient relationship.

MINF 705MD Medical Decision Making (4 cr.)
This course introduces the student to decision modeling techniques such as decision analysis, Bayesian analysis, cost effectiveness analysis, and Markov Models, which are used to inform clinical decisions at the patient, population, and policy levels. Given uncertain information and limited resources, students will learn to build models that examine all possible health outcomes of various medical decisions. The course will cover quantitative, qualitative and shared decision-making approaches, quality-of-life decision aids (for patients), decision support (for providers) and costs related to health outcomes. Students will apply decision analysis techniques in addressing real world problems.

MINF 709A Clinical Informatics (2 cr.)
This elective provides a brief introduction to clinical informatics, combining a structured didactic curriculum, observational of clinical informatics in real-world practice with faculty and fellows, and self-directed learning. In 2013 ACGME introduced this new subspecialty, defined as "the subspecialty of all medical specialties that transforms health care by analyzing, designing, implementing, and evaluating information and communication systems to improve patient care, enhance access to care, advance individual and population health outcomes, and strengthen the clinician-patient relationship.

MSCI 621 Neuroscience & Behavior (8 cr.)
Integrates: Neuroanatomy, central nervous systems and psychiatry.

MULT 705A Quality Improvement in Rural Healthcare - Campus for Rural Health - South Coast (4 cr.)
The purpose of the South Coast Quality Improvement in Rural Healthcare elective is for students to gain experience and proficiency in the science of quality improvement in a rural

healthcare system. Students will participate in performance improvement initiatives and will work with an interprofessional team of clinicians and administrators to improve patient care and prevent medical errors. Students will learn and apply system solutions to improve rural healthcare delivery.

MULT 705C Quality Improvement in Rural Healthcare - Campus for Rural Health - Klamath Falls (4 cr.)
The purpose of the Quality Improvement in Rural Healthcare elective is for students to gain experience and proficiency in the science of quality improvement in a rural healthcare system. Students will participate in performance improvement initiatives. Students will work with an interprofessional team of clinicians and administrators to improve patient care and prevent medical errors. Students will learn and apply system solutions to improve rural healthcare delivery.

MULT 705CV COVID-19 Vaccine Administration - Non-clinical (1 cr.)
Students in this elective will first take virtual session to learn in-depth all aspects of COVID-19 vaccine. Students will receive an in-person training and learn intramuscular injection technique. Students are assessed on skill competencies before they are allowed to start administration of COVID-19 vaccines. Students are expected to participate in 4 hours per week in Multnomah Pavilion lobby COVID-19 vaccine clinic except during the assessment week. Clinic is open Monday through Friday.

MULT 705D Biotechnology Innovation and Entrepreneurship (4 cr.)
The purpose of the Biotechnology Innovation elective is for students to gain experience and proficiency in the commercialization of ideas to help patients. Students will participate on a defined research/ product development project with a biotechnology startup company at the OTRADI (Oregon Translational Research and Development Institute) Bioscience Incubator (OBI). Students will learn the basics of biotechnology innovation through experiential learning and a comprehensive curriculum delivered in both lecture and small group formats. Students will understand the challenges unique to life science entrepreneurship and successful implementation. Students will interact with the Portland area bioscience community and attend meetings and events at the OBI.

MULT 709A Multidisciplinary Care of the Underserved - Bend Volunteers in Medicine Clinic (4 cr.)
The purpose of the Multidisciplinary Care of the Underserved elective is for students to gain experience and proficiency in the comprehensive care of at-risk patients in a volunteer clinic for the uninsured. Students will participate in the diagnosis and treatment of a wide range of acute and chronic diseases, including health maintenance, while gaining an appreciation of the unique challenges of the underserved. Students will create and implement care management plan under the supervision attending physicians across multiple specialties, including family medicine, internal medicine, and gynecology. Students will work seamlessly with an interprofessional team of nurses, pharmacists, counselors, social workers, and interpreters.

MULT 709B Rural Multidisciplinary Hospital Medicine - Campus for Rural Health - South Coast (4 cr.)
The purpose of the Rural Multidisciplinary Hospital Medicine elective is for students to gain experience and proficiency in the multidisciplinary care of patients in a rural critical access hospital. Students will participate in the diagnosis and treatment of a wide range of acute and chronic diseases. Students will see patients across all arenas of a critical access hospital, including ED, OR, ICU and Wards. Students will learn about the unique challenges faced by a limited resource hospital, when to transfer patients to a higher level of care and telemedicine.

MULT 709C Multidisciplinary Care of the Underserved - Bridges Collaborative Care Clinic (0.25 cr.)
Care Clinic is a longitudinal integrated clinical experience for students to gain experience and proficiency in the comprehensive care of at-risk patients in a clinic for the uninsured. Students will participate in the diagnosis and treatment of a wide range of acute and chronic diseases, including health maintenance, while gaining an appreciation of the unique challenges of the underserved. Students will create and implement care management plans under the supervision of attending physicians across multiple specialties. Students will work seamlessly with an interprofessional team of nurses, pharmacists, counselors, and social workers.

MULT 709CV COVID-19 Vaccine Administration - Clinical (2 cr.)
Students in this elective will first take virtual session to learn in-depth all aspects of COVID-19 vaccine. Students will receive an in-person training and learn intramuscular injection technique. Students are assessed on skill competencies before they are allowed to start administration of COVID-19 vaccines.

MULT 709D Multidisciplinary Pain (4 cr.)
The purpose of the Multidisciplinary Pain Medicine elective is for students to gain experience and proficiency in the multidisciplinary care of patients with acute and chronic pain syndromes. Students will participate in the diagnosis and treatment of nociceptive, neuropathic, and cancer pain. Students will see patients primarily in the OHSU

Comprehensive Pain Center, where they will work with anesthesiologists, neurologists, psychiatrists, acupuncturists, physical therapists, and addictionologists. Students will learn the pathophysiology of pain, multimodal treatment approaches, and addiction risk / mitigation strategies.

MULT 709F Interprofessional Rapid Response Team (4 cr.)
The purpose of the Interprofessional Rapid Response Team elective is for students to gain experience and proficiency in the urgent and emergent care of hospitalized patients. Students will participate in the diagnosis and treatment of unstable patients, including the resuscitation of cardiac and respiratory arrest. Students will respond to patients in acute distress as a member of an interprofessional rapid response team. Students will learn airway and ventilator management, vascular access, cardiac rhythm interpretation, and pharmacotherapy.

MULT 710F Interprofessional Rapid Response Team (2 cr.)
The purpose of the Interprofessional Rapid Response Team elective is for students to gain experience and proficiency in the urgent and emergent care of hospitalized patients. Students will participate in the diagnosis and treatment of unstable patients, including the resuscitation of cardiac and respiratory arrest. Students will respond to patients in acute distress as a member of an interprofessional rapid response team. Students will learn airway and ventilator management, vascular access, cardiac rhythm interpretation, and pharmacotherapy.

MULT 741A Perioperative Valvular Heart Disease Continuity Experience (8 cr.)
The purpose of the Perioperative Valvular Heart Disease Continuity elective is for students to gain experience and proficiency in the multidisciplinary care of patients with valvular heart disease in the perioperative period. Students will participate in the diagnosis and surgical treatment of valvular lesions, as well as, hypertrophic obstructive cardiomyopathy. Students will see patients across the continuum (clinic, OR, CVICU, and ward) and work with cardiologists, cardiac surgeons, anesthesiologists, and intensivists. Students will learn the pathophysiology of structural heart disease, basic preoperative echocardiographic evaluation, surgical and trans-catheter treatment modalities, and postoperative care.

MULT 741B Multidisciplinary Oncology Continuity Experience (8 cr.)
The purpose of the Multidisciplinary Oncology Continuity elective is for students to gain experience and proficiency in the multidisciplinary care of patients with cancer. Students will participate in the diagnosis and treatment of solid tumors. Students will see patients in the Knight Cancer Institute and work with surgical, medical, and radiation oncologists. Students will learn cancer pathophysiology, multimodal treatment options, and palliative care.

NEPH 709A Nephrology/Hypertension - OHSU/VAMC (4 cr.)
Students are expected to learn the clinical approach and therapy of common renal diseases and hypertension. Students are active participants on the nephrology inpatient consultation services at the VA Medical Center and University Hospitals. Problems commonly seen include acute renal failure, glomerulonephritis, nephrotic syndrome, electrolyte and acid-base abnormalities, diabetic nephropathy and hypertension. Students also participate in renal and hypertension clinics. Students average one new patient per day on the inpatient consultative service and generally follow between 3-5 patients. Students may attend clinic one half day per week and see between 2-4 patients. Students may observe placement of central catheters for hemodialysis and renal biopsies. Conferences include Clinical Case Conference, weekly Nephrology Didactic Sessions, Nephrology Journal Club and Medicine Grand Rounds. Students work with a team of two residents, one or two nephrology fellows and an attending nephrology staff. Written evaluation and oral feedback are provided based on observed case presentations and knowledge acquired. Students will acquire a good understanding of the management and diagnosis of renal disease and hypertension.

NEPH 709D Comprehensive Nephrology Elective (4 cr.)
This elective will provide students with a multi-faceted view of nephrology. Learners will gain exposure to various aspects of the field including inpatient consult nephrology (e.g. acute renal failure, glomerulonephritis, acid-base and electrolyte abnormalities); critical care nephrology; outpatient transplant medicine; outpatient management of chronic kidney disease and hypertension; inpatient and outpatient dialysis treatment; and renal pathology.

NEPH 710A Nephrology/Hypertension - OHSU/VAMC (2 cr.)
Students are expected to learn the clinical approach and therapy of common renal diseases and hypertension. Students are active participants on the nephrology inpatient consultation services at the VA Medical Center and University Hospitals. Problems commonly seen include acute renal failure, glomerulonephritis, nephrotic syndrome, electrolyte and acid-base abnormalities, diabetic nephropathy and hypertension. Students also participate in renal and hypertension clinics. Students average one new patient per day on the inpatient consultative service and generally follow between 3-5 patients. Students may attend clinic one half day per week and see between 2-4 patients. Students may observe placement of central catheters for hemodialysis and renal biopsies.

NEPH 741D Comprehensive Nephrology Elective Continuity (8 cr.)
This elective will provide students with a multi-faceted view of nephrology. Learners will gain exposure to various aspects of the field including inpatient consult nephrology (e.g. acute renal failure, glomerulonephritis, acid-base and electrolyte abnormalities); critical care nephrology; outpatient transplant medicine; outpatient management of chronic kidney disease and hypertension; inpatient and outpatient dialysis treatment; and renal pathology.

NEUR 701A Neurology Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of neurology. Projects are planned, reviewed and approved prior to the beginning of the elective.

NEUR 701Z Neurology Research - Away (2-12 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

NEUR 709A Advanced Clinical Neurology (6 cr.)
The purpose of this elective is for students to participate in depth in the care of patients with neurological disease. The student will be assigned to two consecutive two-week block rotations consisting of either inpatient or ambulatory neurology services. Students may have the potential of working on the general neurology inpatient ward at a sub-intern level if there is availability. Students will also be able to work in depth with neurology subspecialty services. Availability of this experience will depend on enrollment numbers for NEUR 730 for the block requested.

NEUR 709X Neurology Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Neurology. Students must make special arrangements with a faculty member and the department for an individual program of study.

NEUR 709Z Neurology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

NEUR 710X Neurology Research (3-week) (2 cr.)
2 week version of NEUR 709X

NEUR 713X Neurology Special Elective (3-week) (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

NEUR 730 Neurology Core Clinical Experience (6 cr.)
The purpose of the Neurology core clinical experience is for students to learn the principles and skills underlying the recognition and management of the neurologic diseases that a general medical practitioner is most likely to encounter in practice. These include acute and chronic diseases of the brain, spinal cord, peripheral nervous system, and muscles. Students will be able to perform a neurological history and examination across the developmental spectrum to create an ordered differential diagnosis and initial treatment plan. This includes the ability to interpret common neurological diagnostic testing, and apply basic neuroscience principles as they care for patients. Students will understand the role of a consultant in the care of patients with neurological disease in both inpatient and outpatient settings.

NEUR 730R Neurology Core Clinical Experience - Remediation (6 cr.)
Remediation version of NEUR 730.

NSF 710 Nervous System & Function (9-13 cr.)
Students who complete this block will have a basic understanding of neuroanatomy, neurophysiology, neuro-psychopathology, and neuropharmacology, including the structural and biochemical foundations of neural functioning. They will identify the genetic, congenital, developmental, endogenous, and exogenous factors that influence nervous system function. They will learn clinical presentation, diagnostic strategy, and management of common disorders of the nervous system, common to both clinical neurology and psychiatry. Students will also apply principles of professionalism, ethics, communication, epidemiology, biostatistics, informatics, health policy, patient interviewing and physical examination in relation to neurologic and psychiatric conditions.

NSUR 701A Neurosurgery Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of neurosurgery. Projects are planned, reviewed and approved prior to the beginning of the elective.

NSUR 709A Neurosurgery (4 cr.)
This intensive exposure to clinical neurosurgery is intended for students with a serious interest in the clinical neurosciences. Students work closely with the resident team in day-to-day patient care taking call, working up new patients in both the outpatient clinic and inpatient setting, scrubbing with the residents and faculty in the operating room, and following patients though their postoperative

courses. Head and spine trauma, brain tumors, stroke, aneurysmal subarachnoid hemorrhage, chronic pain syndromes, degenerative spine disease, hydrocephalus, spina bifida, movement disorders, and medically intractable epilepsy are the more common clinical problems encountered. The ICU management of critically ill neurosurgical patients is an integral part of the rotation. Placement is at OHSU.

NSUR 709C Pediatric Neurosurgery (4 cr.)
This course is a primarily a preceptorship with a pediatric neurosurgeon. The student will participate in all activities of the Division of Pediatric Neurosurgery, including rounds, scrubbing on operative procedures, evaluating patients in the clinic and emergency room, etc. Patients include children with hydrocephalus, spinal dysraphism, brain and spinal cord tumors, head and spinal cord trauma, non-accidental trauma, craniofacial deformities, cerebral palsy, etc. The division is committed to student education and decision making regarding careers in surgery, academic pursuits, etc. Opportunity to write a case report can be included.

NSUR 709X Neurosurgery Special Elective (4-week) (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

NSUR 709Z Neurosurgery - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

NSUR 713X Neurosurgery Special Elective (3-week) (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

NSUR 741X Neurosurgery Special Elective (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

OBGY 701A Obstetrics/Gynecology Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of OBGyn. Projects are pre-established, planned, reviewed and approved PRIOR TO the beginning of the elective.

OBGY 705IT Resilience on Interview Trail (0.5 cr.)
Interviewing for residency is a particularly stressful and isolating time for 4th year medical students. This course is designed to be a flexible, on-the-go digital curriculum for students embarking on the interview trail. Students in this course will utilize skills from the Narrative Medicine curriculum, foster lifelong learning and build professional relationships with peers as they begin to transition from medical student to resident physician. Through reflective practice, small group discussions and peer mentorship, students will engage in the three pillars of the course: resilience, professional development and engagement in topics of women's health. Resilience sessions will focus on building personal narratives through reflective practice as well as peer-to-peer connections and resident mentorship. Students will have several topics, mediums and creative forms to cultivate and then share their reflections during online meeting sessions.

OBGY 705IU Resilience on Interview Trail Pt. 2 (0.5 cr.)
Interviewing for residency is a particularly stressful and isolating time for 4th year medical students. This course is designed to be a flexible, on-the-go digital curriculum for students embarking on the interview trail. Students in this course will utilize skills from the Narrative Medicine curriculum, foster lifelong learning and build professional relationships with peers as they begin to transition from medical student to resident physician. Through reflective practice, small group discussions and peer mentorship, students will engage in the three pillars of the course: resilience, professional development and engagement in topics of women's health. Resilience sessions will focus on building personal narratives through reflective practice as well as peer-to-peer connections and resident mentorship. Students will have several topics, mediums and creative forms to cultivate and then share their reflections during online meeting sessions.

OBGY 705SE Taking a Better Sexual History (1 cr.)
This 1-credit elective course for didactics-phase medical students aims to improve students' comfort taking a sexual history and their knowledge about sexual health via lecture, pair and small-group practice scenarios, personal reflection, and supplementary reading and media assignments. This elective covers topics beyond those currently taught in OHSU's didactic education with an eye to helping students gain comfort discussing sensitive topics, uncover and learn to counteract their biases, and improve their knowledge of clinically relevant sexual health topics.

OBGY 709A Sub-I Maternal-Fetal Medicine (6 cr.)
This elective focuses on the clinical care of high-risk obstetric patients, both inpatient and outpatient. Students participate in antenatal testing, ultrasound, and see patients in clinic

with fellows, residents, and faculty maternal fetal medicine specialists. Students will participate in prenatal diagnostic care and attend weekly multi-specialty Fetal Care conferences.

OBGY 709B Reproductive Endocrine/Infertility (4 cr.)
Students will gain clinical experience in reproductive endocrinology and infertility with residents and faculty. They will attend clinics and have opportunities to observe and interpret ultrasounds and hydosalpingograms. They may also participate in in-vitro fertilization cases and may arrange to visit the andrology lab. In the latter half of the rotation, the student will give a presentation to the faculty on an REI topic of their choice.

OBGY 709F Sub-I OBGYN/Oncology (6 cr.)
Students will be responsible for the preoperative, operative, and post-operative care of gynecologic oncology patients, including inpatient and outpatient elements. They will scrub in for surgery 1-4 days per week. The focus will be on the surgical care of patients with gynecologic masses / malignancies, and the surgical implications of the clinical issues for these patients. Additionally, students will be involved with the work up and management of patients, including understanding the differential diagnoses of presenting clinical signs and symptoms common to a Gynecologic Oncology practice. In the outpatient setting, students may also be involved in ongoing cancer surveillance, application of chemotherapy and radiation therapy of gyn/onc patients. Students will attend gynecologic oncology tumor conferences and may be on call during the week and weekends to attend emergency surgeries and consults.

OBGY 709H Advanced Reproductive Health Elective (4 cr.)
This medical student 4-week rotation is focused on exposure to family planning clinical experiences. This rotation is organized through the Dept. of Ob/Gyn at OHSU and takes place at multiple sites at OHSU and off-campus. The rotation is led by OHSU Family Planning Faculty, but experiences occur with other providers as well, such as with Planned Parenthood staff. During this rotation, students can expect to participate in clinical visits for contraceptive counseling; both routine and complex, to observe procedures, including IUD and contraceptive implant placement and removal and permanent contraception procedures, and to participate in the care of women undergoing abortion in the first and second trimester.

OBGY 709I Female Pelvic Reconstructive Surgery/ Urogynecology Sub-Internship (6 cr.)
The course is designed to introduce advanced students to the medical and surgical management of women with pelvic floor disorders, including urinary incontinence, pelvic organ prolapse, neurogenic bladder, defecatory dysfunction, fecal incontinence, vesicovaginal and rectovaginal fistulas and congenital anomalies.

OBGY 709K Sub-I Maternal Fetal Medicine - PeaceHealth Sacred Heart (6 cr.)
Students will focus on the clinical care of high-risk obstetric patients, both outpatient and inpatient care. Students participate in antenatal testing and ultrasound and see patients in clinic with faculty perinatologists. They will take call one night per week. Students are each expected to present a case conference during the final week of their clerkship. Students will be based at Sacred Heart Medical Center, a 432 bed tertiary care hospital.

OBGY 709L Labor and Delivery Management - SacredHeart Med Ctr Riverbend (4 cr.)
This 4-week hospital-based elective would be an opportunity for students to get in-depth experience with deliveries and labor management experience beyond the scope of the OB/GYN Core rotation.

OBGY 709M Advanced GYN/ONC Surgery - PeaceHealth Sacred Heart (6 cr.)
Students will be responsible for the post-operative care of gynecologic oncology patients and will be involved in the pre-operative work up of their Surgery patients. They will scrub in for surgery 2-4 days per week for 5-12 major surgeries. The focus will be on the surgical care of patients with a pelvic mass and the differential diagnosis and surgical implications of the differential for these patients as well as the work up and management of patients with post- menopausal bleeding, especially patients with endometrial cancer. While they are in clinic, they will also be involved in the ongoing cancer surveillance of these patients and all patients with gynecologic oncologic issues. As such, they will attend gynecologic oncology tumor conferences, and the breast tumor conference.

OBGY 709T Advanced Gynecologic Surgery (6 cr.)
This will be a 4-week elective for senior medical students to learn about benign gynecologic surgery. The focus will be on common gynecologic complaints such as abnormal bleeding, pelvic pain, adnexal masses, abnormal pap smears and to multiple disciplines of gynecologic surgery. The student will renew their understanding and appreciation of pelvic anatomy (retroperitoneal and pelvic support anatomy) from the laparoscopic perspective. One senior student per period will rotate on the service at any given time. The student is required to give an in-depth presentation on a selected topic in benign gynecology.

OBGY 709X Obstetrics and Gynecology Special Elective (4 cr.)

The purpose of this elective is for students to have more in-depth experience in a subspecialty of Obstetrics and Gynecology-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

OBGY 709Z Obstetrics/Gynecology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

OBGY 710H Family Planning (2 cr.)
This elective will focus on contraception and abortion care in the outpatient setting. Students will see patients at OHSU in the Ryan Family Planning Clinic and at Planned Parenthood. There are assigned reading and weekly didactic sessions.

OBGY 710L Labor and Delivery Management (3 cr.)
This 2-week hospital-based elective would be an opportunity for students to get in depth experience with deliveries and labor management experience beyond the scope of the OB/GYN Core rotation.

OBGY 710X Obstetrics and Gynecology Special Elective (2 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Obstetrics and Gynecology-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

OBGY 713H Advanced Reproductive Health Elective (3-Week) (3 cr.)
This medical student 3-week rotation is focused on exposure to family planning clinical experiences. This rotation is organized through the Dept. of Ob/Gyn at OHSU and takes place at multiple sites at OHSU and off-campus. The rotation is led by OHSU Family Planning Faculty, but experiences occur with other providers as well, such as with Planned Parenthood staff. During this rotation, students can expect to participate in clinical visits for contraceptive counseling; both routine and complex, to observe procedures, including IUD and contraceptive implant placement and removal and permanent contraception procedures, and to participate in the care of women undergoing abortion in the first and second trimester.

OBGY 730 OBGYN Core Clinical Experience (6 cr.)
The purpose of the Obstetrics and Gynecology core clinical experience is for students to 1) develop a basic understanding of the care of pregnant women including prenatal care, labor and delivery and postpartum care and 2) to acquire a basic knowledge of gynecology including fertility and family planning. Students will learn to evaluate and manage obstetric and gynecologic conditions using medical and surgical treatments in both inpatient and outpatient settings.

OBGY 730R Obstetrics and Gynecology Core Clinical Experience Remediation (6 cr.)
Remediation version of OBGY 730.

OBGY 741X Obstetrics and Gynecology Special Elective Continuity (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Obstetrics and Gynecology-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

OFKF 741F Oregon First Klamath Falls 2 (15 cr.)
This is the second course in a series of four longitudinal continuity courses. The Oregon FIRST program is designed to intensify the final clinical education of undergraduate medical school by maximizing clinical and educational time. As student skills progress, a high level of autonomy is allowed in order to care for the full spectrum of patients and to participate in the multitude of procedures available to the field of Family Medicine. Students still receive close supervision and academic support from both the medical school and the residency program. This is meant to bridge educational efforts and skill development to an intern year in the Family Medicine residency. The Oregon FIRST longitudinal curriculum is tailored to the medical student to develop relevant skills in rural patient care; such as: inpatient medicine, pediatrics, emergency medicine, orthopedics, sports medicine, surgery, maternal and child health, oncology, dermatology and wound care. Dedicated time is incorporated for students to be engaged with 5 interprofessional community projects and expanding medical knowledge through educational workshops and individual study time. Students participate in a rural continuity clinic across all terms in order to establish patient and community continuity. Learners in this environment are trained in a setting of team-based care and are able to follow patients across all healthcare settings and specialties. This is the optimal experience for participation in the wide scope and responsibility of a rural primary care physician who is not confined to one clinic or area of practice. Students who

complete the Oregon FIRST Rural Continuity Course 2 work to develop the comprehensive skillset required to be a physician in rural or underserved Oregon.

OFKF 741S Oregon First Klamath Falls 4 (6-10 cr.)
This is the fourth and final course in a series of four longitudinal continuity courses. The Oregon FIRST program is designed to intensify the final clinical education of undergraduate medical school by maximizing clinical and educational time. As student skills progress, a high level of autonomy is allowed in order to care for the full spectrum of patients and to participate in the 6 multitude of procedures available to the field of Family Medicine. Students still receive close supervision and academic support from both the medical school and the residency program. This is meant to bridge educational efforts and skill development to an intern year in the Family Medicine residency. The Oregon FIRST longitudinal curriculum is tailored to the medical student to develop relevant skills in rural patient care; such as: inpatient medicine, pediatrics, emergency medicine, orthopedics, sports medicine, surgery, maternal and child health, oncology, dermatology and wound care. Dedicated time is incorporated for students to be engaged with interprofessional community projects and expanding medical knowledge through educational workshops and individual study time. Students participate in a rural continuity clinic across all terms in order to establish patient and community continuity. Learners in this environment are trained in a setting of team-based care and are able to follow patients across all healthcare settings and specialties. This is the optimal experience for participation in the wide scope and responsibility of a rural primary care physician who is not confined to one clinic or area of practice. Students who complete the Oregon FIRST Rural Continuity Course 4 work to hone the comprehensive skillset required to be a physician in rural or underserved Oregon.

OFKF 741U Oregon First Klamath Falls 1 (5 cr.)
This is the first course in a series of four longitudinal continuity courses. The Oregon FIRST program is designed to intensify the final clinical education of undergraduate medical school by maximizing clinical and educational time. As student skills progress, a high level of autonomy is allowed in order to care for the full spectrum of patients and to participate in the multitude of procedures available to the field of Family Medicine. Students still receive close supervision and academic support from both the medical school and the residency program. This is meant to bridge educational efforts and skill development to an intern year in the Family Medicine residency. The Oregon FIRST longitudinal curriculum is tailored to the medical student to develop relevant skills in rural patient care; such as: inpatient medicine, pediatrics, emergency medicine, orthopedics, sports medicine, surgery, maternal and child health, oncology, dermatology and wound care. Dedicated time is incorporated for students to be engaged with interprofessional community projects and expanding medical knowledge through educational workshops and individual study time. Students participate in a rural continuity clinic across all terms in order to establish patient and community continuity. Learners in this environment are trained in a setting of team-based care and are able to follow patients across all healthcare settings and specialties. This is the optimal experience for participation in the wide scope and responsibility of a rural primary care physician who is not confined to one clinic or area of practice. Students who complete the Oregon FIRST Rural Continuity Course 1 work to identify the comprehensive skillset required to be a physician in rural or underserved Oregon.

OFKF 741W Oregon First Klamath Falls 3 (12 cr.)
This is the third course in a series of four longitudinal continuity courses. The Oregon FIRST program is designed to intensify the final clinical education of undergraduate medical school by maximizing clinical and educational time. As student skills progress, a high level of autonomy is allowed in order to care for the full spectrum of patients and to participate in the multitude of procedures available to the field of Family Medicine. Students still receive close supervision and academic support from both the medical school and the residency program. This is meant to bridge educational efforts and skill development to an intern year in the Family Medicine residency. The Oregon FIRST longitudinal curriculum is tailored to the medical student to develop relevant skills in rural patient care; such as: inpatient medicine, pediatrics, emergency medicine, orthopedics, sports medicine, surgery, maternal and child health, oncology, dermatology and wound care. Dedicated time is incorporated for students to be engaged with interprofessional community projects and expanding medical knowledge through educational workshops and individual study time. Students participate in a rural continuity clinic across all terms in order to establish patient and community continuity. Learners in this environment are trained in a setting of team-based care and are able to follow patients across all healthcare settings and specialties. This is the optimal experience for participation in the wide scope and responsibility of a rural primary care physician who is not confined to one clinic or area of practice. Students who complete the Oregon FIRST Rural Continuity Course 3 work to expand the comprehensive skillset required to be a physician in rural or underserved Oregon.

OMAS 741A OMS Continuity Sub-Internship (12 cr.)
The purpose of the proposed elective is for OMS residents in medical school to participate in the care and operative management of patients on the OMS inpatient and outpatient service by assuming an active role as a subintern.

ONCL 710A Oncology Consult (2 cr.)
Students will learn how to appropriately diagnose, stage and treat common solid malignancies. Students manage 2-3 patients per week in the inpatient setting. 1-2 patients per week will be seen in the outpatient setting in clinics with attendings. The outpatient experience will be scheduled once each week.

Skills learned on the oncology consult service will include:
• The appropriate selection of tumor biopsy location and technique
• Use and interpretation of imaging studies including chest x-rays, CT scans, MRI, PET and bone imaging
• Interpretation of common oncologic tumor markers and tumor mutational analysis
• Management of treatment-related complications such as pain and nausea
• Workup and management of oncologic emergencies such as tumor lysis syndrome, spinal cord compression, and febrile neutropenia.

Problems commonly seen on the oncology service include:
• Newly discovered solid tumors via imaging, with oncology consultants (you) assisting with appropriate tissue diagnosis and staging.
• Metastatic cancer (most often consisting of lung, colorectal, breast and prostate cancer), with symptoms or complications related to disease itself or the treatment of the disease.
• Palliative care considerations including physical and emotional suffering and end-of-life care including hospice services.

OPHT 701A Ophthalmology Research (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of ophthalmology. Projects are planned, reviewed and approved prior to the beginning of the elective.

OPHT 709A Advanced Ophthalmology (4 cr.)
Students actively participate in patient care in an ophthalmology subspecialty service by pre-arrangement. Attend classes and conferences in ophthalmology. Presentations at clinical case conferences are encouraged. Participation in a departmental research activity as part of the elective is encouraged.

OPHT 709H Ophthalmology-PeaceHealth/Sacred Health Medical Center (4 cr.)
The purpose of the Eugene Ophthalmology elective is for students to gain experience and proficiency in the diagnosis and treatment of common eye problems. Students will learn clinical ophthalmology with an emphasis on obtaining a comprehensive ocular history and performing a basis ophthalmological exam. Students will master basic ocular anatomy and pathophysiology. Students will see patients in both the office and the Oregon Eye Surgery Center, while working under the supervision of an attending ophthalmologist.

OPHT 709X Ophthalmology Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of ophthalmology. Students must make special arrangements with a faculty member and the department for an individual program of study.

OPHT 709Z Ophthalmology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

OPHT 710X Ophthalmology Special Elective (2 week) (2 cr.)
2 week version of OPHT 709X

OPHT 713X Ophthalmology Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

OPHT 741A Advanced Ophthalmology Continuity (8 cr.)
This elective is for ophthalmology-bound students to have in-depth experience in ophthalmology. All students will be scheduled in comprehensive ophthalmology clinic and ORs and the ophthalmology inpatient consult service. The schedule will also include short term (for exposure) and longitudinal (for continuity) experiences in ophthalmology subspecialities. With guidance from the course director, students must make special arrangements with the longitudinal faculty member(s) and the department for an individual program of study. Perspective students must write up a proposal and turn it into the course director and coordinator for approval.

OPHT 741H Ophthalmology - PeaceHealth/Sacred Heart (8 cr.)
The purpose of the Eugene Ophthalmology elective is for students to gain experience and proficiency in the diagnosis and treatment of common eye problems. Students will learn clinical ophthalmology with an emphasis on obtaining a comprehensive ocular history and performing a basis ophthalmological exam. Students will master basic ocular anatomy and pathophysiology. Students will see patients in both the office and the Oregon Eye Surgery Center, while

working under the supervision of an attending ophthalmologist.

ORTH 701A Orthopaedics Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of Orthopaedics. Projects are planned, reviewed and approved prior to the beginning of the elective.

ORTH 705A Musculoskeletal: Skeletal Anatomy (1 cr.)
This elective is designed for students interested in gaining exposure to Orthopaedic Surgery and musculoskeletal medicine, but not necessarily planning a career.

ORTH 705B Mastering Musculoskeletal Exam (1 cr.)
This course will provide the fundamentals to learn and master an accurate musculoskeletal examination that can be used to assess multiple different conditions. It will integrate your knowledge of neurological, muscular and skeletal anatomy. By the end of the course participants will be able to perform and understand the components of the musculoskeletal exam.

ORTH 705C Developing Clinical Clerkship Skills (1 cr.)
This course is designed to cover elements pertinent to the musculoskeletal system relevant to clinical care that are not routinely addressed. These include: practical pain management, imaging interpretation, hands on skills including casting, splinting and injections, etc.

•Acute Management of Musculoskeletal Injuries
•Appropriate Prescribing of Pain Medications
•Systematic Interpretation of X-Rays with Musculoskeletal Injuries
•Systematic Interpretation of MRIs with Musculoskeletal Injuries
•Evaluation of Soft Tissues Masses
•Splinting Skills Workshop
•Joint Injections: Rationale and Technique
•Osteoporosis from Orthopaedists' perspective
•Surface

ORTH 709A Sub-I Orthopaedic Ward (6 cr.)
This is as sub-internship level elective is designed for students interested in careers in orthopaedics. Placement is at OHSU and is designed to rotate students through orthopaedic subspecialty services in order to introduce students to a wide variety of orthopaedic surgery. Students participate as member of teams providing patient care. Four Weeks at OHSU inpatient and outpatient orthopaedic services. Students will spend one week on the inpatient trauma or spine service and 3 additional weeks on other services such as spine, tumor, sports, pediatrics, joints, upper extremity, and foot and ankle.

ORTH 709C Introduction to Orthopaedics (4 cr.)
This elective is designed for students interested in gaining exposure to orthopaedic surgery and musculoskeletal medicine, but not necessarily planning a career. Placement is at OHSU on a single orthopaedic subspecialty service such as spine, tumor, upper extremity, foot and ankle, and trauma. Students participate as members of teams providing patient care.

ORTH 709CB Rural Orthopaedics - South Coast (4 cr.)
The purpose of the Rural Orthopedic Surgery elective is for students to gain experience and proficiency in the care of patients with musculoskeletal trauma and disease. Students will participate in the preoperative evaluation, operative management, and postoperative care of these patients. Students will provide consultation in the emergency department, hospital wards, and outpatient clinics. Students will learn basic operative and non-operative management of a wide variety of musculoskeletal conditions, while gaining an appreciation of the unique challenges faced by rural practitioners. This elective is for students who are interested in Orthopaedics.

ORTH 709CV Introduction to Orthopaedics-VAMC (4 cr.)
This elective is designed for students interested in gaining exposure to Orthopaedic surgery and musculoskeletal medicine, whether or not planning a career in the field. Placement is at the Portland VA Medical Center orthopaedics team, which includes faculty with interests in arthroplasty, sports medicine, fracture care, and oncology. Students participate as members of teams providing patient care, and will gain exposure to a broad range of musculoskeletal conditions and treatments.

ORTH 709D Pediatric Orthopaedics (4 cr.)
This experience provides students with an introduction to common and uncommon diseases of the musculoskeletal systems seen in childhood. They participate in patient-care activities with OHSU's Pediatric Orthopaedists.

ORTH 709E Rehabilitation Medicine (4 cr.)
The Physical Medicine and Rehabilitation elective provides medical students an exposure to both inpatient and outpatient physical medicine and rehabilitation at OHSU and community hospitals. Outpatient opportunities include musculoskeletal rehabilitation, sports medicine, and neuromuscular and electrodiagnostic medicine. Inpatient exposure depending on career goals is with the local pediatric rehabilitation specialists or adult rehabilitation specialists and provides an overview of rehabilitation. Patients with injuries including spinal cord injury, stroke rehabilitation, and

traumatic brain injury. This course is offered for students considering a career in physical medicine and rehabilitation.

ORTH 709H Orthopedic Surgery - Eugene (4 cr.)
Students will actively participate in patient care in the Slocum Center for Orthopaedics and Sports Medicine. This elective is clinically oriented with emphasis placed on examination techniques and the diagnosis and treatment of common Orthopaedic and sports injuries. Students will participate in both surgical and non-surgical approaches to injuries. Opportunities may exist for students to participate with their attending physician at local school athletic events. PeaceHealth Sacred Heart Medical Center has two hospitals: University District in Eugene and RiverBend in Springfield, Oregon (locations are approximately 100 miles south of the main OHSU campus). Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community clinics, so students may have greater opportunity for hands on care and one to one mentoring with physicians.

Location: Slocum Center for Orthopaedics & Sports Medicine, PeaceHealth Sacred Heart

ORTH 709HM Intro to Orthopaedics at Tuality Hillsboro (4 cr.)
This elective is designed for students interested in gaining exposure to Orthopaedic surgery and musculoskeletal medicine, whether or not planning a career in the field. Placement is with the orthopedics partners at OHSU Hillsboro (formerly known as Tuality Healthcare). These faculty have interests that include arthroplasty, sports medicine, foot and ankle, hand surgery, shoulder and elbow as well as community fracture care. Students will assist in providing patient care, and will gain exposure to a broad range of musculoskeletal conditions and treatments.

ORTH 709LG Rural Multidisciplinary Orthopedics and Sports Medicine - La Grande (4 cr.)
The Rural Orthopedics and Sports Medicine elective provides students with introductory clinical experience in general Orthopedics as it is practiced in rural and smaller community settings. Students work with a multidisciplinary team providing inpatient, outpatient, and occasional emergency care across the breadth of general Orthopedics, including “diagnosis, treatment, prevention and rehabilitation of injuries, disorders and diseases of the musculoskeletal system.” This four-week rural rotation may also include community-based activities working with high school and college athletic programs as well as consultative visits to outlying area(s) without orthopedic coverage.

ORTH 709SC Orthopedics Surgery - PeaceHealth Sacred Heart Continuity (4 cr.)
Students will actively participate in patient care at The Center: Orthopaedics and Neurosurgical Care and Research. This elective is clinically oriented with an emphasis on examination techniques and the diagnosis and treatment of common sports injuries. Students will be expected to attend weekly Grand Rounds, clinical conferences, and other continuing medical education activities as assigned by their attending. St. Charles Bend is located in Bend, OR, approximately 160 miles southeast of the main OHSU campus. St. Charles (Bend) is designated as a Level II Trauma Center by the Oregon Public Health Division. Bend is the only Level II Trauma Center east of the Cascades. St. Charles (Redmond) is a certified Level III Trauma Center.

ORTH 709X Orthopedic Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of orthopaedics. Students must make special arrangements with a faculty member and the department for an individual program of study.

ORTH 709Z Orthopedics - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

ORTH 710C Introduction to Orthopaedics (2 cr.)
2 week version of ORTH 709C

ORTH 710CV Introduction to Orthopaedics-VAMC (2 cr.)
Two Week Version - This elective is designed for students interested in gaining exposure to Orthopaedic surgery and musculoskeletal medicine, whether or not planning a career in the field. Placement is at the Portland VA Medical Center orthopaedics team, which includes faculty with interests in arthroplasty, sports medicine, fracture care, and oncology. Students participate as members of teams providing patient care, and will gain exposure to a broad range of musculoskeletal conditions and treatments.

ORTH 713E Rehabilitation Medicine (3 cr.)
The Physical Medicine and Rehabilitation elective provides medical students an exposure to both inpatient and outpatient physical medicine and rehabilitation at OHSU and community hospitals. Outpatient opportunities include musculoskeletal rehabilitation, sports medicine, and neuromuscular and electrodiagnostic medicine. Inpatient exposure depending on career goals is with the local pediatric rehabilitation specialists or adult rehabilitation specialists and provides an overview of rehabilitation. Patients with injuries including spinal cord injury, stroke rehabilitation, and

traumatic brain injury. This course is offered for students considering a career in physical medicine and rehabilitation.

ORTH 713X Orthopaedics Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

ORTH 741E PM&R Continuity Elective (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

ORTH 741H Orthopedics Surgery - PeaceHealth Sacred Heart Continuity (8 cr.)
Students will actively participate in patient care in the Slocum Center for Orthopedics and Sports Medicine. This continuity elective is clinically oriented with emphasis placed on examination techniques and the diagnosis and treatment of common Orthopedic and sports injuries. Students will participate in both surgical and non-surgical approaches to injuries. Opportunities may exist for students to participate with their attending physician at local school athletic events. Students participating in rotations in this community will work one on one with their attending with increased autonomy. There are no Residents practicing at these hospitals or community clinics, so students may have greater opportunity for hands on care and one to one mentoring with physicians. PeaceHealth Sacred Heart Medical Center has two hospitals; University District in Eugene and RiverBend in Springfield, Oregon (locations are approximately 100 miles south of the main OHSU campus).

ORTH 741LG Rural Continuity Orthopedics-Sports Medicine (8 cr.)
The Rural Continuity Orthopedics and Sports Medicine elective provides students with introductory clinical experience in general Orthopedics as it is practiced in rural and smaller community settings. Students work with a multidisciplinary team providing inpatient, outpatient, and occasional emergency care across the breadth of general Orthopedics, including “diagnosis, treatment, prevention and rehabilitation of injuries, disorders and diseases of the musculoskeletal system.” This four-week rural rotation may also include community-based activities working with high school and college athletic programs as well as consultative visits to outlying area(s) without orthopedic coverage.

ORTH 741Z Orthopedics Continuity - Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Orthopedics at an outside institution. Students must make special arrangements with an away institution.

OTOL 701A Otolaryngology Research (4-week) (2-12 cr.)
This research offering is intended to acquaint students with the basic pretexts of research project design and execution. Research can be undertaken at any time; rotation can be 4-8 weeks in length. Many opportunities are available; please contact the department to obtain a current list of projects and mentors accepting students.

OTOL 709A Sub-I Medical/Surgical Otolaryngology (6 cr.)
This rotation is an intense clerkship experience, intended for those who are seriously considering a residency in Otolaryngology. Students will rotate on 2 services (head and neck/microvascular, pediatrics, laryngology, facial plastic surgery, VA, sinus, otology) for 2 weeks each.

OTOL 709B Sub-I Microvascular Reconstruction and Rehabilitation (6 cr.)
The purpose of the Microvascular Reconstruction and Rehabilitation clinical experience is for students to participate in the care and operative management of patients on the Microvascular Reconstruction service by assuming an active role as a subintern. Students will see patients in the clinic, follow them to the operating room, and care for them during their inpatient hospital stay. Surgical exposure will be intense with an opportunity to first assist. Students will participate in a publishable clinical project. Students will attend weekly didactic teaching sessions and will be required to complete an oral case presentation at Grand Rounds, including a literature review to answer a specific clinical question illustrated by a chosen case.

OTOL 709E Facial Plastic Reconstructive Surgery (4 cr.)
This elective offers experience in both the ambulatory care setting as well as facial plastic and reconstructive surgical techniques in the operating room.

OTOL 709J Sub-I Pediatric Otolaryngology (6 cr.)
This elective has been designed to give students an in-depth experience in ambulatory and operative pediatric Otolaryngology. The student will serve as a sub-intern, and assist the resident with the management of hospitalized patients including morning, afternoon and weekend rounds. They will also attend a variety of clinics, including exposure to several multidisciplinary clinics (aerodigestive, craniofacial, hereditary hearing loss, and vascular anomalies).

OTOL 709OC Community ENT - The Oregon Clinic (4 cr.)
In this elective, students will learn all aspects of community ENT care including allergy testing, audiology services (including diagnostic hearing examinations, maintenance, and fitting of digital hearing aids, and the latest technology in

hearing aids), endocrine surgery, and some limited cosmetic and surgical procedures.

OTOL 709WV Rural ENT- Willamette Valley Medical Center (4 cr.)
The purpose of this course is to offer students the opportunity to learn a comprehensive head and neck examination and to understand basic anatomy and embryology of the head and neck in a rural setting practice. Students will learn the basic workup and treatment of common otolaryngologic diseases.

OTOL 709Z Otolaryngology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

OTOL 710C Ambulatory Care in Otolaryngology (2 cr.)
This elective offers an ambulatory care experience, designed for students planning to enter a primary care field. The goals of the rotation are to learn a comprehensive head and neck examination; to understand basic anatomy and embryology of the head and neck; understand the basic work up and treatment of common otolaryngologic diseases and emergencies; and to gain exposure to the spectrum of otolaryngologic practice. Students will be assigned to outpatient otolaryngologic clinics where they will encounter a variety of non-surgical, pre- and post-operative patients.

OTOL 710E Facial Plastic Reconstructive Surgery (2 cr.)
The purpose of the Facial Plastics and Reconstruction clinical experience is for students to participate in the ambulatory care and operative management of facial plastic surgery patients. Students will gain experience in reconstructive surgical techniques.

OTOL 713A Otolaryngology Research (3 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Dermatology. Projects are planned, reviewed and approved prior to the beginning of the elective. The Research Elective Request form must be signed off by the supervising faculty member, department course director, and the Curriculum & Student Affairs office prior to starting. Students must obtain departmental approval to enroll on this course.

OTOL 741Z Otolaryngology/maxillofacial away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Otolaryngology at an outside institution. Students must make special arrangements with an away institution.

PATH 701A Pathology Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Pathology. Projects are planned, reviewed and approved prior to the beginning of the elective.

PATH 709A Introduction to Pathology (4 cr.)
This is a 4-week elective course designed to introduce students to the field of pathology as practiced in the clinical setting. Students will attend relevant lectures and clinical conferences, including the anatomic pathology and laboratory medicine resident lectures, Department Grand Rounds and the Autopsy Case review.

PATH 709H Pathology Elective, PeaceHealth Eugene/Springfield (4 cr.)
Introduce medical students to the field of pathology as practiced in a community practice setting. Students will be exposed to general surgical pathology, cytopathology, hematopathology, dermatopathology, and clinical pathology labs. Emphasis will be placed on giving the rotating student a working concept of the role of pathology in the overall health care system and in individual patient care.

PATH 709X Pathology Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Pathology and/or a Pathology-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

PATH 709Z Pathology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

PATH 710A Introduction to Pathology (2 cr.)
This is a 2-week elective course designed to introduce students to the field of pathology as practiced in the clinical setting. Students will be primarily in the OHSU surgical pathology and autopsy services. Students will attend relevant lectures and clinical conferences, including the anatomic pathology and laboratory medicine resident lectures, Department Grand Rounds and the Autopsy Case review.

PATH 713X Pathology Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make

special arrangements with a faculty member and the department for an individual program of study.

PATH 741X Pathology Special Elective Continuity (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Pathology and/or a Pathology-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting. Students must obtain departmental approval to enroll on this course.

PATH 741Z Pathology Continuity-Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Pathology at an outside institution. Students must make special arrangements with an away institution.

Experience must allow students to maintain continuity in at least 2 of the following 3 ways:
o Continuity with the same patient population (e.g., similar patients with a specific condition at a different time point in treatment, such as a patient with a newly diagnosed malignancy, another patient who has undergone surgery for the same kind of malignancy, and yet another patient who is undergoing chemotherapy for the same malignancy.)
o Continuity with the same health system
o Continuity with the same preceptor(s)

PEDI 701A Pediatric Research (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Pediatrics. Projects are planned, reviewed and approved prior to the beginning of the elective.

PEDI 705AD Fundamentals of Physical Advocacy (1 cr.)
The purpose of this course is to develop effective community-based and legislative advocacy skills, such as testifying, lobbying, op-ed writing, and participating in the creation of laws, guidelines, and public discourse to improve clinical practice and healthcare delivery. Our course also aims to understand how current policy influences our healthcare systems and our patients' health.

PEDI 705F OHSU EMBRACE (1 cr.)
The OHSU EMBRACE (Educating Medical students on Babies Receiving Adequate Care after Exposure) program aims to help neonates with neonatal opioid withdrawal syndrome (NOWS) and their families with non-pharmacological support. Some research suggests that swaddling and skin-to-skin contact can lower maternal and infant stress, particularly for families and newborns diagnosed with opioid withdrawal secondary to in-utero exposure. This 1-credit elective is offered to the first year medical students. They will be trained to provide compassionate and knowledgeable volunteer support for families during this transition. Students will gain formative experiences at Doernbecher Children's Hospital inpatient settings in approaching the care of this vulnerable population and will learn about addiction medicine, newborn care, postpartum care, family dynamics, trauma informed care and biopsychosocial issues unique to mother-baby dyads managing NOWS

PEDI 705FD EMBRASE Didactics (0.5 cr.)
Course purpose statement: The EMBRACE (Educating Medical students on Babies Receiving Adequate Care after Exposure) curriculum teaches students about caring for neonates undergoing opioid withdrawal syndrome (NOWS) as well as providing support for their families. This is the didactics only elective for pre-clinical students who wish to learn about addiction medicine, newborn care, postpartum care, family dynamics, trauma-informed care and biopsychosocial issues unique to mother-baby dyads managing NOWS. There is an option to volunteer at the Doernbecher Children's Hospital in providing non-pharmacologic care for babies undergoing opioid withdrawal which will involve additional volunteer training and time.

PEDI 705NS NICU MedNav: Medical Student Patient Navigator Program in the NICU (1 cr.)
1. Continue to follow the journeys of NICU patients and their families to gain further continuity after the winter term 2. Follow childhood development and understand how emotional and social stressors change as children grow and develop. 3. Learn how the healthcare systems change as infants leave the NICU and move to outpatient follow up and what challenges come with this transition.

PEDI 705NW NICU MedNav: Medical Student Patient Navigator Program in the NICU (1 cr.)
1. Follow the journeys of NICU patients and their families for the first 6 months to gain appreciation of patient and family centered, multi-disciplinary care in both inpatient and outpatient settings. 2. Develop empathy and improve understanding of emotional and social stressors in caring for an infant with or without chronic illness. 3. Learn how to navigate the healthcare system as a patient and gain experience in recognizing barriers to obtaining healthcare.

PEDI 705UR Virtual Underrepresented Minority Pediatric Elective (4 cr.)
Course Goals: Understand some of the unique medical care issues affecting OHSU pediatric patients including vaccine hesitancy, rural medicine, and AIAN healthcare disparities; learn about some of the advocacy efforts happening at OHSU;

develop a better understanding of own interest in pediatric specialties; develop mentorship relationships at OHSU.

PEDI 705VC Vaccines for Parents (1 cr.)
This course will provide students with science and process of vaccination. Students will learn how to consent and administer flu vaccines to parents.

PEDI 709A Sub-I Pediatric Inpatient (6 cr.)
Doernbecher Children's Hospital offers a one-month clinical elective sub-internship in inpatient pediatrics. This experience gives students a concentrated view of general and subspecialty inpatient pediatrics, allowing for more in-depth exposure to multiple members of the inpatient team. The Sub-I facilitates a more substantive evaluation of students in an active and challenging hospital environment. This rotation is intended to prepare students for an internship. Students will develop skills in a variety of areas important in the care of hospitalized children, including: history taking, physical exam skills, patient presentations, clinical reasoning and assessment, problem solving, and discharge planning. At least four call experiences are required, including one weekend experience; please refer to the DCH call schedule tailored to your rotation. Call experiences enable students to achieve continuity of care with their patients, and expose them to "middle of the night" decision-making experience. Students should confirm their call schedule with the senior resident on the first day of the rotation. Students will pre-round on their patients daily, give bedside presentations on rounds, attend morning report and noon conferences, and, if possible, present one patient for morning report. Students should receive feedback from the ward attending or senior resident at the end of each week. When you enroll in this Sub-I course, you will be placed with one of the two ward teams.

PEDI 709AB Outpatient General Pediatrics (4 cr.)
The Outpatient General Pediatrics elective is designed to expose students to the world of general pediatrics practiced in a community setting. Utilizing a variety of local private outpatient practices, students will see a wide variety of acute as well as well-child care. Students will work directly with pediatrician preceptors, as well as other members of an interprofessional team including but not limited to RNs, MAs, social workers and lactation consultants. Students will participate in the well child visits for newborns through adolescents, and gain exposure to a variety of core pediatric topics including normal development, growth, developmental screening, vaccine schedules and routine screening for depression and substance use in adolescent patients. While variety and volume of urgent/acute visits in pediatric clinics vary over the course of the year, students will have the opportunity to improve their history taking/data gathering and assessment/plan skills for the following acute illnesses: neonatal jaundice, upper respiratory illness, lower respiratory illness, gastrointestinal complaint, skin complaint and fever. Students will be assessed by preceptors using the pediatric medical student clinical assessment form, with a final grade assigned by the pediatric electives director.

PEDI 709AI Allergy and Immunology (4 cr.)
Students will participate in pediatric and adult clinical experiences predominately through outpatient clinic visits. Students will learn and actively participate in all aspects of the care of allergy and immunology patients in a clinic setting including: history-taking, testing, evaluation, data interpretation, and management. Examples of diagnostic testing include skin and blood allergy tests, pulmonary functions, and other assessments. In addition, students will participate in the inpatient consult service. Reference materials for reading will be provided to the learner for their own self-directed learning.

PEDI 709AP Sub-I Pediatric Ward Night Team (6 cr.)
This sub-internship is designed to expose students to the unique features of overnight care of the hospitalized pediatric patient. Students will have the opportunity to partner with the night resident team and participate in the IPASS handover process, an evidence-based structured handover program that has been demonstrated to reduce medical errors and preventable adverse events. Students will have the opportunity to strengthen skills in contingency planning, situational awareness, communication and medical decision making in a busy clinical environment. Students will have ample opportunity to participate in the admission process, including: performing initial history and physical exams, placing orders, oral presentations and note writing. This sub-internship is designed to expose students to the unique features of overnight care of the hospitalized pediatric patient. Students will have the opportunity to partner with the night resident team and participate in the IPASS handover process, an evidence-based structured handover program that has been demonstrated to reduce medical errors and preventable adverse events. Students will have the opportunity to strengthen skills in contingency planning, situational awareness, communication and medical decision making in a busy clinical environment.

PEDI 709B Sub-I Neonatal Medicine (6 cr.)
This elective allows the student to work at the subintern level with exposure to both common and unusual neonatal problems in a NICU with admissions from a high-risk delivery service and regional referrals. Students are expected to attend high-risk deliveries and to manage patients with guidance from residents and staff.

PEDI 709CB Rural Pediatrics - South Coast (4 cr.)
The purpose of the Rural Pediatrics elective is to learn the basics of history taking, perform age appropriate physical

exams, and develop assessments and plans for infants, children and adolescents. Students will develop an understanding of the unique healthcare needs of rural pediatric patients and their families. Students will identify age specific milestones in children and learn basic management of children with special healthcare needs. Students in this rotation are expected to participate in a community student project as well as a one hour weekly didactic class.

PEDI 709CC Pediatrics - Clackamas County (4 cr.)
This rotation will expose the students to general pediatrics in a County Health Center environment. They will see infants, children, adolescents and young adults in a medical home model. The students will also be exposed to county health policy issues.

PEDI 709CD Pediatric Hospital Medicine - Asante Rogue Regional Medical Center (4 cr.)
This elective experience gives students a concentrated view of general inpatient pediatrics in a hospitalist model at Asante Rogue Regional Medical Center (RVMC). It allows for more in-depth exposure to multiple members of the inpatient team, facilitating a more substantive evaluation of students in an active and challenging hospital environment. RVMC is a large general hospital with a dedicated pediatric unit, and students will have exposure to newborns, pediatric patients, and pediatric intermediate care patients throughout the course. The student will be an integral part of the team and experience pediatrics away from a tertiary care hospital (i.e., DCH).

PEDI 709CI Community Inpatient Care of Well Newborns, NICU infants, & Pediatric Patients at Hillsboro Med Cntr (4 cr.)
The goal of this elective is to expose students to the care of the pediatric population in a community hospital setting, from well to sick newborns to pediatric patients requiring inpatient admissions. Students will be able to participate in the care of infants at delivery and to learn to differentiate between a well baby from one in need of resuscitative efforts. They will also participate in the care of admitted NICU and pediatric patients. They will obtain histories, perform exams, help develop treatment plans, and practice presenting on rounds. Students will learn about common newborn and pediatric conditions such as jaundice, hypoglycemia, respiratory distress, infections, feeding difficulty, asthma, bronchiolitis, and gastroenteritis. They will also learn to identify sick patients who require transport for higher level of care. About Hillsboro Medical Center Women and Children's Center: Hillsboro Medical Center is a community hospital with level 1 and 2 nursery and basic inpatient pediatric capabilities. The bedside care teams at Hillsboro Medical Center include pediatric/neonatal hospitalists, family medicine residents, RN's, CNAs, techs, RT's, lactation consultants, social workers, car seat safety technicians, and pharmacists. Telemedicine is available to provide consultation for high-risk deliveries or ill neonatal or pediatric patients.

PEDI 709CO COVID19 & Community Outreach (3 cr.)
The COVID-19 pandemic and subsequent interventions abruptly changed the interactions between patients and both the healthcare system and healthcare payers. In this rotation, students will learn and teach about the myriad aspects of COVID-19 under a popular education framework and engage with low-income patients.

Students will refine their critical thinking skills through a structured review and student-led discussion the emerging COVID-19 literature. By the end of the rotation, students will be able to lead and participate in discussion on the medical and social aspects of the pandemic. Concurrently, students will polish their virtual patient care skills and provide service through outreach to high-risk Oregon Health Plan members to identify unmet medical and social needs. Finally, students will be paired with case managers to learn how the high-risk patient needs they identify are addressed.

PEDI 709D Sub-I Pediatric Critical Care (6 cr.)
This elective will expose the student to the critical care of infants, children, and adolescents in a children's hospital. The student will serve in a sub-intern role, and will assist the attending physicians with admissions as well as the ongoing care of patients. The goal of the course is to teach students how to recognize and stabilize critically ill children and to provide thoughtful, ongoing care.

PEDI 709F Pediatric Cardiology (4 cr.)
Students participate in congenital heart clinics, cardiac consultations, journal club, and patient care. Reading ECGs, observing echocardiograms, and cardiac catheterizations are also part of this experience.

PEDI 709G Pediatric Pulmonology (4 cr.)
In this four-week elective, students will acquire important clinical exposure to a number of pediatric lung diseases, including cystic fibrosis, asthma, pneumonia, and acute respiratory failure in the ICU. This rotation includes rounds and consults on pediatric wards and the PICU, two clinics per week, and conferences.

PEDI 709H Pediatric Endocrinology (4 cr.)
This elective emphasizes the pathophysiology, clinical manifestations, and treatment of endocrine disorders. Three days a week will be spent in outpatient clinics. Assignments include in-hospital consultations, reading and review sessions, and interpretation of laboratory results.

PEDI 709I Pediatrics Infectious Disease (4 cr.)
The primary objective of this elective is to provide students with experience in several aspects of pediatric infectious diseases. Students will review basic microbiology, learn to perform a complete evaluation of a patient with a possible or proven infectious disease, and gain knowledge in the management of infectious disease patients. Patients will be seen in an outpatient subspecialty clinic and in inpatient consultations. Didactic teaching sessions, an open-book examination, and a suggested reading list are provided to the student.

PEDI 709J Sub-I Pediatric Hematology/Oncology (6 cr.)
The objective of this course is to provide the student with fundamental understanding of the pathophysiology, clinical characteristics and treatment of hematologic and oncologic conditions occurring in childhood. While there is an emphasis on the most common childhood cancers such as leukemias and brain tumors, the student also has the opportunity to learn the full spectrum of malignant solid tumors in children and common hematologic conditions such as aplastic anemia, coagulation disorders and the hemoglobinopathies. In addition, the student is involved in the stem cell transplant program and its role in the treatment of hematologic, oncologic, immunologic and genetic disorders, and will learn the treatment of infection in the immunocompromised patient. Students receive a written evaluation based on observation of performance and attendance at and contributions to the Division's rounds and conferences. Students will spend time in the clinic or on the ward depending on their learning objectives and the census of the clinic or ward.

PEDI 709K Developmental/Behavioral Pediatrics (4 cr.)
This elective exposes the student to a broad range of patients with developmental disabilities including those with physical, behavioral, cognitive, language, and emotional disorders from infancy to 18 years of age. The elective is open to second, third, and fourth year students at OHSU, visiting fourth year students, and students interested in our Neurodevelopmental Disabilities Residency training program. The student will participate in a number of clinics including Neurodevelopmental, Spina Bifida, Neonatal Follow Up, Autism, Child Development, Feeding, and Down Syndrome as well as others. Clinics are composed of interdisciplinary teams including developmental pediatrics, physical therapy, occupation therapy, speech language pathology, audiology, social work, and others. This provides the student with a great opportunity to appreciate and learn from other disciplines essential to the care of children with developmental disabilities. Clinic assignments may be adjusted to the student's interests to some degree. This is exclusively an outpatient rotation and there is no night call or weekend duty. A similar clinical experience is available at the CDRC facility in Eugene.

PEDI 709KE Developmental-Behavioral Pediatrics at CDRC Eugene (4 cr.)
To introduce medical students to: developmental-behavioral pediatrics; to common DBP diagnostic questions, such as Autism and Global Developmental Delay/Intellectual Disability, as well as other neurodevelopmental disabilities and syndromes; the optimal practice of interdisciplinary care; community-based care; with a specific focus on therapeutic patient-doctor communication skills.

PEDI 709KF Rural Pediatrics - Campus for Rural Health Klamath Falls (4 cr.)
The purpose of the Rural Pediatrics elective is to allow students to develop skills that allow for independent evaluation and management of pediatric patients. Students will concentrate on well child checks, growth and development, and common outpatient pediatric problems. Students will develop an understanding of unique healthcare needs of rural pediatric patients and their families. Students will round on inpatient pediatric patients, present patients and offer plan suggestions, and provide at least one brief teaching conference to the team.

PEDI 709L Pediatric Neurology (4 cr.)
This course exposes the student to a wide spectrum of neurologic problems affecting children from the neonate to 18 years of age. The student will see and examine patients with epilepsy, cerebral palsy, chronic headaches, tic disorders, neurometabolic diseases, and developmental disorders. Patients are in encountered in both inpatient and outpatient settings, including the neurology consultation service and specialty clinics in the CDRC and Shriners Hospital for Children. Weekly neuroradiology and EEG sessions will be held in addition to didactic teaching sessions and suggested readings. Time may be spent on additional EEG or imaging as the student desires.

PEDI 709LG Rural Pediatrics - Eastern OR (4 cr.)
The purpose of the elective is to allow students to develop skills that allow for independent evaluation and management of pediatric patients. Students will concentrate on well child checks, growth and development, and common outpatient pediatric problems. Students will develop an understanding of the unique healthcare needs of rural pediatric patients and their families. Students will have the opportunity to round on inpatients and newborns.

PEDI 709LR Sub-I Pediatric Inpatient (Randall Children's Hospital) (5 cr.)
Randall Children's Hospital offers a one-month clinical sub-internship in inpatient pediatrics. This experience gives

students a concentrated view of general and subspecialty inpatient pediatrics, allowing for more in-depth exposure to multiple members of the inpatient interprofessional team. The Sub-I facilitates a more substantive evaluation of students in an active and challenging hospital environment. This rotation is intended to prepare students for internship. Students will develop skills in a variety of areas important in the care of hospitalized children, including: history taking, physical exam skills, patient presentations, clinical reasoning and assessment, problem solving, communicating with members of the interprofessional team and discharge planning. Students will pre-round on their patients daily, give bedside presentations on rounds, attend morning report and noon conferences, and, if possible, present one patient case or one learning topic to their team while on the rotation. Students should receive feedback from the ward attending or senior resident at the end of each week.

PEDI 709N Diagnosis & Management of Child Abuse (4 cr.)
Educational goals in the Diagnosis & Management of Child Abuse elective will be achieved through a variety of educational experiences. 1. Participation in abuse and neglect consults at DCH and Randall Children's Hospital. 2. Participation in meetings with CPS and police investigators regarding ongoing abuse evaluation. 3. Attendance at peer review conferences, include state and national teleconferences, and county multidisciplinary team meetings. 4. Participation in outpatient physical and sexual abuse evaluations at CNW, including observation of forensic interviews of children. 5. Shadowing a CPS worker for a day. 6. Attendance at court proceedings in which a medical provider is testifying. 7. Review of journal articles and video presentations on common child abuse topics to ensure a foundation of knowledge independent of the types of consults seen during the month. 8. Completion of a series of child abuse case scenarios with an attending physician at the end of the rotation. 9. Brief presentation on a topic of interest in child abuse.

Approximately 50% of the student's time will be spent on the inpatient consultation service at DCH and RCH. In between consults, the student will complete the required reading and video list and prepare a presentation. Approximately 30% of the student's time will be spent participating in outpatient consultations at CNW. Approximately 20% of the student's time will be spent on field trips to court and meetings and attending peer review conferences.

PEDI 709P Pediatric Gastroenterology (4 cr.)
This elective offers the student clinical experience in combined inpatient and outpatient settings seeing children with various gastrointestinal disorders. Students will round on the inpatient service and be asked to follow one or two consult patients. Students will see patients on a daily basis and report and present patients' vital signs, lab test results, clinical courses, and plans from the previous 24 hours. When on the outpatient service, the students will see, interview and examine patients and their families and report back to the attending gastroenterologist with their findings. Students should make an attempt at an assessment and plan. Students will also have the opportunity to observe various GI procedures and attend some teaching conferences like path and radiology rounds with the GI team. The rotation will introduce the student to acute and chronic conditions affecting the entire gastrointestinal (GI) tract including nutritional disorders and hepatobiliary-pancreatic systems. Specifically, patients may have a wide array of disorders ranging from acute (e.g., GI bleeding) or chronic disorders (e.g., Crohn's disease) and low (e.g., irritable bowel syndrome) to high (e.g., s/p liver transplant) acuity. The student may observe endoscopic and other diagnostic (e.g., motility) and therapeutic (e.g., foreign body removal) procedures. Some patients have liver failure requiring artificial liver support or hepatic transplants, while others have short bowel syndrome and intestinal failure requiring chronic intravenous nutrition, enteral tube feeding or a small intestinal transplant. The student will work collaboratively with dieticians, speech therapists, psychologists, pulmonologists, otolaryngologists, surgeons, other subspecialists and primary care doctors.

PEDI 709PR Pediatric Physical Medicine and Rehabilitation (4 cr.)
The rotation is based at Legacy Randall Children's Hospital and is available to students who have completed their Pediatrics, Family Medicine or Internal Medicine Core rotation. The student will be mentored by all of the rehabilitation attending physicians and will participate in the management of the inpatient and outpatient rehabilitation service.

PEDI 709S Pediatric Nephrology (4 cr.)
This elective provides students with an opportunity to evaluate and manage pediatric patients with renal pathology and hypertension in both inpatient and outpatient settings.

PEDI 709SD Social Determinates & Health Disparities (4 cr.)
Individual and population health status is strongly related to social and environmental factors. The so-called 'social determinants of health' include access to resources, economic opportunity, education, job safety, zip code, transportation as well as structural racism, language and many others. Environmental factors can be closely linked and include housing, green space, toxin exposure and physical barriers. Students will benefit by understanding these linkages; though outreach to Oregon Medicaid members they will identify needs linked to social determinants; by shadowing OHSU Health Services team members they will

learn about how social needs can be met and harms mitigated.

PEDI 709T Multidisciplinary Transgender Health (4 cr.)
The transgender population has been an historically marginalized community in the United States. They have undergone significant mistreatment including within the medical field, causing distrust in healthcare settings and decreased access to care. Our goal is to improve students' knowledge of transgender care through an interdisciplinary lens going above and beyond traditional biomedicine. This course will include time spent with our social work team, local community organizations, clinicians and surgeons to better understand the needs of Oregon's diverse transgender population.

PEDI 709X Pediatrics Special Elective (4 cr.)
The purpose of this elective is for students to gain in-depth experience in a pediatric subspecialty of their choosing. Virtually any pediatric subspecialty here at OHSU has the potential to be turned into a special elective, whether it be pediatric psychology, craniofacial surgery, dermatology, neurosurgery, otolaryngology (ENT), ophthalmology, pain/sedation, radiology, sleep medicine, or urology. Community/away sites can also be considered, including orthopedics at Shriners Hospital and the many general outpatient pediatric clinics located in the greater Portland area. If you know and would like to work with a local pediatrician, contact the course coordinator as soon as possible to make the necessary arrangements. The special elective can be two or four weeks in duration, depending on the availability of your chosen preceptor.

PEDI 709Y Interprofessional Developmental and Communication Disabilities (4 cr.)
This rotation provides the medical student with an opportunity to learn the role of individual disciplines in the care of children with developmental disabilities as well as how these disciplines work together to determine appropriate diagnoses and intervention. This elective exposes the student to multiple disciplines (e.g., physical therapy, occupational therapy, audiology, speech language pathology, nutrition, social work, developmental pediatrics, etc.) involved in the interprofessional care of pediatric patients with developmental disabilities including those with physical, behavioral, cognitive, language, and emotional disorders from infancy to 18 years of age. The elective is open to medical students in clinical curriculum phase at OHSU and visiting fourth year students. The student will first observe assessment and treatment with each discipline, then follow patients through various interdisciplinary clinics including Neurodevelopmental, Craniofacial Disorders, Neonatal Follow Up, Autism, Child Development, Feeding, and Down Syndrome as well as others. The student will learn the importance of interprofessional care for children with developmental disabilities. This rotation also includes at least one community event to expose the student to the family and patient perspective. This rotation will prepare the student to provide interprofessional care and make appropriate referrals and diagnoses of future patients. Clinic assignments may be adjusted to the student's interests to some degree. This is exclusively an outpatient rotation and there is no night call or weekend duty.

PEDI 709Z Pediatrics - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

PEDI 710B Breastfeeding (2 cr.)
Students will work closely with health professionals who have specialized training in breastfeeding and learn how to troubleshoot basic breastfeeding challenges for mother and infant. The student will gain familiarity with community resources to support breastfeeding and will research and present a breastfeeding topic in PICO format.

PEDI 710C Community Newborn Adventist (2 cr.)
The goal of this elective is to expose students to the care of newborns from birth to discharge in a community hospital nursery. They will have the opportunity to participate in the care of infants at delivery and to learn to differentiate a well baby from one in need of resuscitative efforts. They will obtain maternal histories, perform newborn exams and help develop treatment plans for well and mildly ill newborns. Students will learn about common newborn conditions such as jaundice, hypoglycemia, respiratory distress, neonatal infections as well as common normal findings in newborns. They will also learn to identify and stabilize newborns that require transport by PANDA to OHSU NICU for higher level of care. About Adventist Health Center Family Birth Place: Adventist is a community hospital with a level 1/2 nursery. Thankfully, most infants are healthy after delivery but some will require short term treatments such as high-flow nasal cannula, IV fluids, gavage feeds or phototherapy. TeleNICU is available to provide consultation for high-risk deliveries or ill infants. The care teams at Adventist include OHSU pediatricians, RN's, RT's and lactation consultants.

PEDI 710MP MICU Medical Student - Nurse Experience (2 cr.)
Collaboration between physicians and bedside nurses is a cornerstone of quality patient care. Despite improved attention to interprofessional education as a means of enhancing understanding and teamwork, there remain few authentic, clinically based interprofessional experiences for students in the inpatient setting. Please note: This course is

identical in structure to PEDI 710PP, except that it takes place in the adult medical intensive care unit. On this rotation, you will spend three 12-hour shifts per week (1-3 should be night shifts, 7pm-7am) working with the MICU nurses, learning nursing interventions, interacting with patients and families, and generally becoming acclimated to the interdisciplinary environment of the MICU. You will be assigned a nursing preceptor by the MICU charge nurse during the shifts worked.

PEDI 710PC Pediatric Palliative Care (1 cr.)
Palliative care is a crucial component of the overall care of patients with life-limiting illness. Because so many more adults require palliative care than children, the unique aspects of pediatric palliative care are often overlooked. While many people associate pediatric palliative care with oncology patients, genetic/congenital and neuromuscular conditions are the most common reasons for palliative care involvement. For clinicians who care for seriously ill children, knowledge and skills in palliative care are essential.

PEDI 710PN NeuroICU Med Student-Nurse (2 cr.)
Medical students will work with nurses in Neuro ICU at OHSU with adult case management/DC planning. Students will learn to collaborate with bedside nurses in an authentic inpatient clinical environment. Understand team-based care, ultimately improving patient care and patient experience. Student will critically evaluate H&P findings, lab data, imaging, and other diagnostic tests. Demonstrate communication skills with patients, families, and other healthcare professionals. Work with NP and other healthcare professionals to provide patient management that is coordinated, safe and timely.

PEDI 710PP PICU Medical Student - Nurse Experience (2 cr.)
Collaboration between physicians and bedside nurses is a cornerstone of quality patient care. Despite improved attention to interprofessional education as a means of enhancing understanding and teamwork, there remain few authentic, clinically based interprofessional experiences for students in the inpatient setting.

PEDI 710W Well Newborn Nursery (2 cr.)
The goal of this rotation is to expose the student to the care of the well newborn. Students can also expect to learn about a variety of common conditions in the newborn period, including neonatal jaundice, neonatal infections, evaluation and management of newborn feeding problems, and the management of infants born to mothers with diabetes, infections, substance use, and other medical conditions. Learning will be accomplished through didactic instruction, reading, and hands-on experience caring for infants in the OHSU Mother Baby Unit.

PEDI 710X Pediatrics Special Elective (2 cr.)
The purpose of this elective is for students to gain in-depth experience in a pediatric subspecialty of their choosing. Virtually any pediatric subspecialty here at OHSU has the potential to be turned into a special elective, whether it be pediatric psychology, craniofacial surgery, dermatology, neurosurgery, otolaryngology (ENT), ophthalmology, pain/sedation, radiology, sleep medicine, or urology. Community/away sites can also be considered, including orthopedics at Shriners Hospital and the many general outpatient pediatric clinics located in the greater Portland area. If you know and would like to work with a local pediatrician, contact the course coordinator as soon as possible to make the necessary arrangements. The special elective can be two or four weeks in duration, depending on the availability of your chosen preceptor.

PEDI 710Y Interprofessional Developmental and Communication Disabilities (2 cr.)
This rotation provides the medical student with an opportunity to learn the role of individual disciplines in the care of children with developmental disabilities as well as how these disciplines work together to determine appropriate diagnoses and intervention. This elective exposes the student to multiple disciplines (e.g., physical therapy, occupational therapy, audiology, speech language pathology, nutrition, social work, developmental pediatrics, etc.) involved in the interprofessional care of pediatric patients with developmental disabilities including those with physical, behavioral, cognitive, language, and emotional disorders from infancy to 18 years of age. The elective is open to medical students in clinical curriculum phase at OHSU and visiting fourth year students. The student will first observe assessment and treatment with each discipline, then follow patients through various interdisciplinary clinics including Neurodevelopmental, Craniofacial Disorders, Neonatal Follow Up, Autism, Child Development, Feeding, and Down Syndrome as well as others. The student will learn the importance of interprofessional care for children with developmental disabilities. This rotation also includes at least one community event to expose the student to the family and patient perspective. This rotation will prepare the student to provide interprofessional care and make appropriate referrals and diagnoses of future patients. Clinic assignments may be adjusted to the student's interests to some degree. This is exclusively an outpatient rotation and there is no night call or weekend duty.

PEDI 710Z Pediatrics Away (2 cr.)
This course is used for students who are doing an away rotation for Pediatrics.

PEDI 713X Pediatrics Special Elective (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make

special arrangements with a faculty member and the department for an individual program of study.

PEDI 730 Pediatrics Core Clinical Experience (6 cr.)
The purpose of the Pediatric Core clinical experience is for students to learn the basics of history-taking, perform age-appropriate physical exams, and develop assessments and plans for infants, children and adolescents. Students will develop an understanding of the unique healthcare needs of pediatric patients, work to identify age-specific milestones, and gain exposure to the basic management of children with special healthcare needs. Students will be exposed to both general and specialty pediatric patients in inpatient and outpatient settings. The course coordinator will distribute a site preference survey to enrolled students approximately 12 weeks prior to the start of the rotation.

PEDI 730R Core Pediatrics Remediation (6 cr.)
Remediation version of PEDI 730.

PEDI 741A Pediatric Critical Care Continuity Experience (10 cr.)
The student will be part of the Critical Care team for a full 8 weeks as part of a continuity experience, including continuity of faculty and continuity of place. Students will follow patients who are in the ICU for several days to several weeks in order to provide the student with a patient care continuity experience.

PEDI 741B Congenital Heart Disease Continuity Experience (8 cr.)
This course will expose the student to the depth and breadth of care of the patient with congenital heart disease (CHD). The student will follow patients through pre-natal diagnosis, to the NICU, PICU, surgery, imaging, and follow up. They will also be exposed to adults with congenital heart disease. The student will gain experience with multiple aspects of CHD care, including imaging, surgery, ICU care, clinic, and follow up.

PEDI 741CO COVID19 & Community Outreach (6 cr.)
The COVID-19 pandemic and subsequent interventions abruptly changed the interactions between patients and both the healthcare system and healthcare payers. In this rotation, students will learn and teach about the myriad aspects of COVID-19 under a popular education framework and engage with low-income patients.

Students will refine their critical thinking skills through a structured review and student-led discussion the emerging COVID-19 literature. By the end of the rotation, students will be able to lead and participate in discussion on the medical and social aspects of the pandemic. Concurrently, students will polish their virtual patient care skills and provide service through outreach to high-risk Oregon Health Plan members to identify unmet medical and social needs. Finally, students will be paired with case managers to learn how the high-risk patient needs they identify are addressed.

PEDI 741J Pediatric Oncology Continuity Outpatient Experience (8 cr.)
The emergency psychiatry elective provides students with the opportunity to learn to evaluate, assess and develop treatment plans for patients presenting to the Unity Behavioral Health Psychiatric Emergency Service. The student will become familiar with the roles of all of the members of the treatment team in the Psychiatric Emergency Service. In addition, students will develop an understanding of the role of the Unity Psychiatric Emergency Service as part of the mental health care system in Oregon. The student will work directly with attending staff to gain additional experience and expertise in interviewing, diagnosing and managing acute psychiatric patients. The purpose of the elective is for students to learn management of patients with acute behavioral health emergencies, to learn how to assess for risk of suicide and risk of violence, and how to triage and differentiate patients presenting with medical and psychiatric complaints.

PEDI 741S Pediatric Nephrology Continuity (8 cr.)
This continuity elective would provide more exposure to a variety of outpatient pediatric nephrology specialty clinics such as dialysis and transplantation as well as the opportunity to follow patients from the inpatient to outpatient setting when possible.

PEDI 741SD Social Determinates & Health Disparities Continuity (8 cr.)
Individual and population health status is strongly related to social and environmental factors. The so-called ‘social determinants of health’ include access to resources, economic opportunity, education, job safety, zip code, transportation as well as structural racism, language and many others. Environmental factors can be closely linked and include housing, green space, toxin exposure and physical barriers. Students will benefit by understanding these linkages; though outreach to Oregon Medicaid members they will identify needs linked to social determinants; by shadowing OHSU Health Services team members they will learn about how social needs can be met and harms mitigated.

PEDI 741U NICH: Novel Interventions in Children's HealthCare Continuity Experience (8 cr.)
NICH is a program for children and adolescents with complex medical conditions who struggle to properly manage their health and are repeatedly hospitalized. In collaboration with CareOregon and other insurance providers, we have

developed NICH, or Novel Interventions in Children's Healthcare, to provide intensive behavioral health care for young people living with diabetes, cancer, cystic fibrosis, kidney disease and chronic pain. Students will be paired with a Master's prepared Interventionist and will participate in all clinical activities related to that worker's caseload (typically 5-10 patients). The student will also attend clinical reviews of cases and supervision with PhD psychologists. The interventionists go to patient homes, attend patients' medical appointments, provide care coordination, work with state agencies, etc. Depending on interest, students can also be involved in research performed by the program and participate in systems-level program development. The student should have access to a car.

PEDI 741W Neonatal Continuity Elective (10 cr.)
This course will expose the student to continuity care of the neonatal and infant patient. Students will attend prenatal visits and conferences, follow patients in the NICU, and visit the NICU follow up clinic. Students will be assigned patients and follow those patients through the entire duration of the rotation. Students will also participate in discharge planning and clinical consensus conferences.

PEDI 741X Pediatrics Special Elective Continuity (8 cr.)
The purpose of this elective is for students to create a continuity elective of their choosing. Students must make special arrangements with a faculty member and the department to create an individual program of study. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be approved by the sponsoring faculty member, the department coordinator and/or electives director, and the Curriculum & Student Affairs office prior to the first day of the rotation.

This course fulfills the continuity graduation requirement. Per the student handbook, the course allows students to maintain continuity in at least 2 of the following 3 ways:
o Continuity with the same patient population
o Continuity with the same health system
o Continuity with the same preceptor(s)

PLAS 709A Plastic & Reconstructive Surgery - OHSU (6 cr.)
Students are exposed to an extraordinary variety of congenital and acquired defects in both children & adults. Cranio-facial anomalies, maxillofacial trauma, microsurgery, and unusual surgical problems are seen daily. Cosmetic surgery and reconstructive surgery of the hand, head, neck, torso, and lower extremities are common procedures. Students will have the opportunity to evaluate patients and actively participate in the operating room, clinics, and wards. They will interact directly with the attending, residents, and patients.

PLAS 709B Plastic Surgery - Community (6 cr.)
Students will learn to recognize wound healing and infections. They will diagnose and treat problems and other aspects of plastic surgery (cleft lip, palate, etc.). They will also learn how to suture.

PLAS 709C Plastic & Reconstructive Surgery Sub-Internship - OHSU (6 cr.)
Students act as sub-intern level in caring for patients with congenital and acquired defects in both children & adults. Cranio-facial anomalies, maxillofacial trauma, microsurgery, and unusual surgical problems are seen daily. Cosmetic surgery and reconstructive surgery of the hand, head, neck, torso, and lower extremities are common procedures. Students will have the opportunity to evaluate patients and actively participate in the operating room, clinics, and wards. They will interact directly with the attending, residents, and patients

PLAS 709S Comprehensive Breast Surgery - St. Vincent (4 cr.)
To provide a broad exposure to the various aspects of breast oncology and surgical oncology, with a specific emphasis on breast reconstruction. The student will gain exposure to all aspects of breast reconstruction, autologous and implant based, including immediate, delayed, and revision reconstruction. The student will participate in all clinical and educational activities of the Providence Cancer Center in the clinics, wards and the operating room. Instructional methods will include one-on-one teaching with clinical faculty. In the clinic, students will be given the opportunity to participate in patient evaluation, surgical planning and rationale for each procedure. They will also be given the opportunity to examine selected patients and write H+P's. In the operating room students will participate in surgical procedures and will be given the opportunity to practice and master suturing techniques with patients and specimens. During surgical procedures students will be educated on local anatomy and physiology, rationale for procedures, possible outcomes, and follow up management.

PLAS 709Z Plastic Surgery - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

PLAS 710A Plastic Surgery Introduction - OHSU (3 cr.)
Students are exposed to an extraordinary variety of congenital and acquired defects in both children & adults. Cranio-facial anomalies, maxillofacial trauma, microsurgery, and unusual surgical problems are seen daily. Cosmetic surgery and reconstructive surgery of the hand, head, neck, torso, and lower extremities are common procedures.

Students will have the opportunity to evaluate patients and actively participate in the operating room, clinics, and wards. They will interact directly with the attending, residents, and patients.

PMR 709E Rehabilitation Medicine (4 cr.)
The Physical Medicine and Rehabilitation elective provides medical students an exposure to both inpatient and outpatient physical medicine and rehabilitation at OHSU and community hospitals. Outpatient opportunities include musculoskeletal rehabilitation, sports medicine, and neuromuscular and electrodiagnostic medicine. Inpatient exposure depending on career goals is with the local pediatric rehabilitation specialists or adult rehabilitation specialists and provides an overview of rehabilitation. Patients with injuries including spinal cord injury, stroke rehabilitation, and traumatic brain injury. This course is offered for students considering a career in physical medicine and rehabilitation.

PMR 709GB Rural Physical Medicine and Rehabilitation - Gold Beach/Brookings (4 cr.)
The Rural Physical Medicine and Rehabilitation elective provides students with introductory clinical experience in Physical Medicine and Rehabilitation as it is practiced in remote rural communities – Gold Beach, Oregon. It is a clinically oriented elective with an emphasis on MSK Conservative and Interventional Management + occasional Neurorehabilitation Practice. Students may have an opportunity to directly evaluate patients, plan / order / observe treatments including medication, procedures, therapy orders, and referrals to outside specialties. Exact methods will depend on student interest and schedule. Students on this rotation will, for example, gain experience in the conservative and interventional care of patients with acute and chronic pain syndromes, and will participate in diagnosis and treatment of nociceptive, neuropathic, and possibly also if available cancer pain.

PMR 709SC Physical Medicine & Rehabilitation - St. Charles Bend (4 cr.)
Students will actively participate in patient care at The Center: Orthopaedics and Neurosurgical Care and Research. This elective is clinically oriented with an emphasis on examination techniques and the diagnosis and treatment of common sports injuries. Students will be expected to attend weekly Grand Rounds, clinical conferences, and other continuing medical education activities as assigned by their attending. St. Charles Bend is located in Bend, OR, approximately 160 miles southeast of the main OHSU campus. St. Charles (Bend) is designated as a Level II Trauma Center by the Oregon Public Health Division. Bend is the only Level II Trauma Center east of the Cascades. St. Charles (Redmond) is a certified Level III Trauma Center.

PMR 713E Rehabilitation Medicine (3 cr.)
The Physical Medicine and Rehabilitation elective provides medical students an exposure to both inpatient and outpatient physical medicine and rehabilitation at OHSU and community hospitals. Outpatient opportunities include musculoskeletal rehabilitation, sports medicine, and neuromuscular and electrodiagnostic medicine. Inpatient exposure depending on career goals is with the local pediatric rehabilitation specialists or adult rehabilitation specialists and provides an overview of rehabilitation. Patients with injuries including spinal cord injury, stroke rehabilitation, and traumatic brain injury. This course is offered for students considering a career in physical medicine and rehabilitation.

PREC 721 Preceptorship (1 cr.)
The Preceptorship is the first authentic clinical experience of the MD program where students learn how to learn in clinical settings.

PREC 722 Preceptorship (1 cr.)
The Preceptorship is the first authentic clinical experience of the MD program where students learn how to learn in clinical settings.

PREC 723 Preceptorship (1 cr.)
The Preceptorship is the first authentic clinical experience of the MD program where students learn how to learn in clinical settings.

PREC 724 Preceptorship (0.5 cr.)
The Preceptorship is the first authentic clinical experience of the MD program where students learn how to learn in clinical settings.

PREC 724R Preceptorship 4: Remediation (1 cr.)
Remediation version of PREC 724.

PREP 700 Preparation for Step 1 Independent Study (6 cr.)
This 5-week long course provides learners dedicated time to prepare and take the USMLE Step 1 exam. Learning resources are available through SAKAI, Office of UME, Student Information, NBME/USMLE Exam Info, Step 1 section.

PSUR 709A Pediatric Surgery - OHSU (6 cr.)
Students will participate with faculty and residents in the care and evaluation of pediatric patients with general surgical diseases in the preoperative, operative, and postoperative period.

PSUR 709B Pediatric Surgery Sub-Internship - DCH (6 cr.)
Students will participate with faculty and residents in the care and evaluation of pediatric patients with general surgical diseases in the preoperative, operative, and postoperative period.

PSUR 709E Pediatric Surgery - Emanual (6 cr.)
Students will participate with faculty resident staff at a level comparable to that of an intern in the preoperative, operative, and postoperative care of pediatric patients with general surgical disease. Students may have the opportunity to rotate at either Legacy Emanuel.

PSUR 710A Pediatric Surgery Introduction - DCH (3 cr.)
Students will participate with faculty and residents in the care and evaluation of pediatric patients with general surgical diseases in the preoperative, operative, and postoperative period.

PSYC 701A Psychiatry Research (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Psychiatry. Projects are planned, reviewed and approved prior to the beginning of the elective.

PSYC 709A Emergency Psychiatry (4 cr.)
The emergency psychiatry elective provides students with the opportunity to learn to evaluate, assess and develop treatment plans for patients presenting to the Unity Behavioral Health Psychiatric Emergency Service. The student will become familiar with the roles of all of the members of the treatment team in the Psychiatric Emergency Service. In addition, students will develop an understanding of the role of the Unity Psychiatric Emergency Service as part of the mental health care system in Oregon. The student will work directly with attending staff to gain additional experience and expertise in interviewing, diagnosing and managing acute psychiatric patients. The purpose of the elective is for students to learn management of patients with acute behavioral health emergencies, to learn how to assess for risk of suicide and risk of violence, and how to triage and differentiate patients presenting with medical and psychiatric complaints.

PSYC 709B Geriatric Psychiatry (4 cr.)
A three-week elective rotation in Geriatric Neuropsychiatry. Students must have completed either their Core Clerkship in either Psychiatry OR Neurology. The rotation focuses upon evaluation and treatment of geriatric neuropsychiatric illnesses, including major and mild Neurocognitive Disorders, mood disorders in the elderly, psychotic disorders in the elderly, and the complex medical patient. A weekly journal club with the Geropsychiatry and Geroneurology Fellows is part of the didactic portion of the rotation.

PSYC 709C Sub-I Psychiatry (6 cr.)
This elective is designed for those students who, having already completed their core psychiatric clinical experience, wish to gain further inpatient psychiatry experience. This experience includes a program of guided reading, patient interviewing, and patient follow-up for the assessment and treatment of acute psychopathology presentations. Students are assigned to an OHSU faculty member at any of several inpatient treatment sites. The student is the primary contact with the patients on their team, with either the second-year resident and/or the attending providing supervision on a wide range of patients encountered in acute inpatient psychiatry.

PSYC 709CA Child and Adolescent Inpatient Psychiatry (4 cr.)
The child & adolescent psychiatry elective provides students with the opportunity to learn to evaluate assess and develop treatment plans for patients presenting to the Unity Center for Behavioral Health Child & Adolescent Psychiatric Treatment Unit. The student will become familiar with the roles of all the of the members of the treatment team in the Child & Adolescent Psychiatric Treatment Unit. In addition, students will develop an understanding of the role of the Child & Adolescent Psychiatric Treatment Unit as part of the mental health care system in Oregon. The student will work directly with attending staff and child psychiatry fellows to gain additional expertise in interviewing, diagnosing, and managing acute psychiatric patients. The purpose of the elective is for students to learn management of patients with acute behavioral health concerns, to learn how to assess for risk of suicide and risk of violence, and how to formulate both psychopharmacologic and therapeutic treatment plans.

PSYC 709D Consult Liaison Psychiatry - OHSU (4 cr.)
The purpose of the Consultation Liaison Psychiatry elective is for students to learn to manage psychopathology in an inpatient consultation setting. Students will evaluation and follow patients on the medical and surgical services. Students will assist in the assessment and ongoing management of patients with complicated presentations. Students will apply and synthesize their knowledge in the areas of medicine, surgery and psychiatry. This elective is at OHSU.

PSYC 709DB Psychiatry Cascadia DBT Services (4 cr.)
The purpose of this elective is to provide students in-depth experience in an active DBT program in a community mental health setting. Students will work with the Medical Director of DBT Services and with other Cascadia LMP's. They will attend DBT skills groups as well as the DBT team's weekly consult meeting; will have an opportunity to hone skills in assessing and treating BPD and PTSD, including prescribing medications where appropriate; and may work on an independent research project.

PSYC 709F Child & Adolescent C/L Psychiatry (4 cr.)
The purpose of the Child and Adolescent Psychiatry elective is for students to learn to assess children and adolescents with

urgent psychiatric needs. Students will participate on daily rounds with the attending and fellow in Child Psychiatry on the Doernbecher Consultation Liaison Psychiatry Service. Sites of care include the emergency department, pediatric inpatient unit, and the PICU. Students will also participate in outpatient consult cases.

PSYC 709L Community Psychiatry (4 cr.)
The purpose of the Community Psychiatry elective is to familiarize the student with the community mental health system in Oregon and allow the student to participate in various aspects of consultation and patient care in a community mental health center. Students will learn about patterns of mental illness, the nature of mental health care delivery, drug and alcohol treatment programs and the interface of law and psychiatry. Students will participate in both seminars and community training experiences.

PSYC 709PP Pediatric/Peds Psych Integrative Care (4 cr.)
The goal of this elective is to improve the understanding of assessing and delivering care to pediatric patients who have both psychiatric and medical comorbidities. The student will learn how to communicate with pediatric patients and their families. They will practice the art of discussing diagnoses and treatment plans to both medical and psychiatric care teams. This elective will aim to improve the learner's understanding of the care and treatment of complex pediatric patients with the goal of improving patient outcomes and preventing future health crises in these patients.

PSYC 709X Psychiatry Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Psychiatry. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

PSYC 709Z Psychiatry - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

PSYC 710A Emergency Psychiatry (2 cr.)
The emergency psychiatry elective provides students with the opportunity to learn to evaluate, assess and develop treatment plans for patients presenting to the Unity Behavioral Health Psychiatric Emergency Service. The student will become familiar with the roles of all of the members of the treatment team in the Psychiatric Emergency Service. In addition, students will develop an understanding of the role of the Unity Psychiatric Emergency Service as part of the mental health care system in Oregon. The student will work directly with attending staff to gain additional experience and expertise in interviewing, diagnosing and managing acute psychiatric patients. The purpose of the elective is for students to learn management of patients with acute behavioral health emergencies, to learn how to assess for risk of suicide and risk of violence, and how to triage and differentiate patients presenting with medical and psychiatric complaints.

PSYC 710K Intercultural Psychiatric Program (2 cr.)
The purpose of the Intercultural Psychiatric Program (IPP) elective is for students to learn about the practice of psychiatry in a unique outpatient setting. IPP provides culturally sensitive mental health services for immigrant, refugee and ethnic communities with an emphasis on individuals and families whose first language is not English.

PSYC 710RC Psychiatry Cascadia DBT Services - 2 week (2 cr.)
The purpose of this elective is to provide students in-depth experience in an active DBT program in a community mental health setting. Students will work with the Medical Director of DBT Services and with other Cascadia LMP's. They will attend DBT skills groups as well as the DBT team's weekly consult meeting; will have an opportunity to hone skills in assessing and treating BPD and PTSD, including prescribing medications where appropriate; and may work on an independent research project.

PSYC 710X Psychiatry Special Elective (2-week) (2 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Psychiatry. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

PSYC 713X Psychiatry Special Elective (3-week) (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

PSYC 730 Psychiatry Core Clinical Experience (6 cr.)
The purpose of the Psychiatry Core clinical experience is for students entering any field of medicine to perform a thorough mental status evaluation, learn the basics of psychiatric disease and psychopathology, utilize appropriate psychopharmacology and perform a psychiatric risk assessment. Students will participate in the management of complex psychiatric patients. Students will work effectively within a multidisciplinary team, demonstrate appropriate management of boundaries with psychiatric patients and

demonstrate professionalism in their interactions with patients, colleagues and staff. Students may see patients in both inpatient and outpatient settings.

PSYC 730R Psychiatry Core Clinical Experience Remediation (6 cr.)
Remediation version of PSYC 730.

PSYC 741X Psychiatry Special Elective Continuity (8-week) (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Psychiatry-related research project. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

PULM 709A Pulmonary MICU - OHSU (6 cr.)
The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 709B Pulmonary ICU - St. Charles Health System (6 cr.)
The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 709C Pulmonary Consult - OHSU (4 cr.)
Pulmonary Consult – OHSU: Students may participate full-time in the consultation service of the Pulmonary and Critical Care Division. This experience includes workup of patients for whom pulmonary consultations have been requested, consultation rounds, bronchoscopy sessions, Pulmonary clinic, attendance at three weekly pulmonary conferences, and reading in pulmonary and critical care medicine. The service (staff Pulmonologist, PCCM fellow and an IM resident most months) sees outpatients in the morning in our subspecialty urgent care clinic. Inpatient consultations are staffed in the afternoons. We perform bronchoscopies and thoracenteses most days as well. The service interprets all pulmonary function tests and supervises review of a high volume of abnormal thoracic imaging studies. Depending on the student's interest, there may be opportunities to observe care in our multidisciplinary lung cancer and multidisciplinary ALS clinics. There are three Pulmonary conferences weekly, along with opportunities for directed reading in Pulmonary medicine.

PULM 709CV Pulmonary Consult - VAMC (4 cr.)
The purpose of this rotation is to introduce students to the evaluation, diagnosis, and treatment of patients with respiratory disease, building on the basic science and pathophysiologic aspects of respiratory disease taught in years 1-2. Students will participate as full-time members of the Pulmonary Consult Service at the Portland VA Medical Center. The team includes a fellow, one or two medical residents, nurses, and an attending. Working closely with the fellow/attending, students will evaluate patients in the hospital and in the outpatient clinic, observe procedures such as bronchoscopy and thoracentesis, attend clinical conferences, and read about topics specific to their patients.

Specific goals for students during this rotation include:
1) To describe pathophysiology in patients with respiratory disease by interpreting symptoms and physical findings, chest imaging, lung pathology, and pulmonary function tests;
2) To learn the basic approach to evaluation and management of patients with respiratory diseases such as chronic obstructive pulmonary disease, asthma, lung cancer, interstitial lung disease, occupational and environmental lung disease, and pulmonary infections.

PULM 709E Critical Care/ICU - Emanuel (6 cr.)
The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 709G Critical Care/ICU - Good Sam (6 cr.)

The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 709P Pulmonary ICU - Prov Portland (6 cr.)
The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 709S Medical/Surgical ICU - Providence St Vincent (6 cr.)
The purpose of the pulmonary/medical ICU elective is to develop clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter professional ICU team in the care of complex critically ill patients, and participate in family meetings which may include discussion of end of life issues and withdrawal of life support.

PULM 709V Pulmonary CCU/ICU - VAMC (6 cr.)
The purpose of the medical and cardiac ICU elective is to develop skills in the recognition, resuscitation and longer-term management of the critically ill patient. Specifically, the student will enhance their skills in clinical diagnosis, reasoning and communication skills in the care of the critically ill patient. Students will gain direct experience with key topics in critical care medicine including respiratory failure and ventilator management, acid-base disturbances, overdose assessment and treatment, and the diagnosis and treatment of sepsis and various shock states. Students will work with other healthcare professionals as a member of an inter-professional ICU team in the care of complex critically ill patients, and participate in family meetings with may include discussion of end of life issues and withdrawal of life support.

PULM 710C Pulmonary Consult - OHSU (2 cr.)
Pulmonary Consult – OHSU: Students may participate full-time in the consultation service of the Pulmonary and Critical Care Division. This experience includes workup of patients for whom pulmonary consultations have been requested, consultation rounds, bronchoscopy sessions, Pulmonary clinic, attendance at three weekly pulmonary conferences, and reading in pulmonary and critical care medicine. The service (staff Pulmonologist, PCCM fellow and an IM resident most months) sees outpatients in the morning in our subspecialty urgent care clinic. Inpatient consultations are staffed in the afternoons. We perform bronchoscopies and thoracenteses most days as well. The service interprets all pulmonary function tests and supervises review of a high volume of abnormal thoracic imaging studies. Depending on the student's interest, there may be opportunities to observe care in our multidisciplinary lung cancer and multidisciplinary ALS clinics. There are three Pulmonary conferences weekly, along with opportunities for directed reading in Pulmonary medicine.

PULM 710CV Pulmonary Consult - VAMC (2 cr.)
The purpose of this rotation is to introduce students to the evaluation, diagnosis, and treatment of patients with respiratory disease, building on the basic science and pathophysiologic aspects of respiratory disease taught in years 1-2. Students will participate as full-time members of the Pulmonary Consult Service at the Portland VA Medical Center. The team includes a fellow, one or two medical residents, nurses, and an attending. Working closely with the fellow/attending, students will evaluate patients in the hospital and in the outpatient clinic, observe procedures such as bronchoscopy and thoracentesis, attend clinical conferences, and read about topics specific to their patients.

Specific goals for students during this rotation include:
1) To describe pathophysiology in patients with respiratory disease by interpreting symptoms and physical findings, chest imaging, lung pathology, and pulmonary function tests;
2) To learn the basic approach to evaluation and management of patients with respiratory diseases such as chronic obstructive pulmonary disease, asthma, lung cancer, interstitial lung disease, occupational and environmental lung disease, and pulmonary infections.

RADD 701A Diagnostic Radiology Research (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any area of Diagnostic Radiology.

Projects are planned, reviewed and approved prior to the beginning of the elective.

RADD 709A Diagnostic Radiology-General (4 cr.)
This elective includes 10 hours per week didactic instruction in film reading and appropriate radiologic procedures in patient work-up. Students are expected to attend daily conferences and spend time on rotations in Chest, Bone, Body, and Neuroradiology. Students will also choose an interesting case they learned from on their rotation, which they will prepare a presentation that will be presented at the end of the elective.

RADD 709F Multidisciplinary Approach to Pulmonary Disease (4 cr.)
This organ-based four-week elective is targeted to advanced level medical students interested in a comprehensive multidisciplinary learning experience focusing on pulmonary diseases. Trainees will spend time in multiple clinical specialties including pulmonary medicine, pulmonary (non-cardiac) surgery, pulmonary medical and radiation oncology, pulmonary pathology and chest radiology and actively participate in the weekly OHSU Multidisciplinary Lung Cancer Clinic. This course will combine a traditional clinical experience at multiple sites including OHSU, VAH, and Adventist Medical Center with exposure to a rich array of electronic resources. This format will provide a more flexible approach to learning.

RADD 709X Diagnostic Radiology Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of radiology. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

RADD 709Z Radiological Diagnosis - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

RADD 710X Diagnostic Radiology Special Elective (2 cr.)
2 week version of RADD 709X

RADD 710Z Diagnostic Radiology - Away (2 cr.)
2 week version of RADD 709Z

RADD 741G Multidisciplinary Approach to Pulmonary Disease Continuity Elective (8 cr.)
This organ-based eight-week elective is targeted to advanced level medical students interested in a comprehensive multidisciplinary learning experience focusing on pulmonary diseases. Trainees will spend time in multiple clinical specialties including pulmonary medicine, pulmonary (non-cardiac) surgery, pulmonary medical and radiation oncology, pulmonary pathology and chest radiology and actively participate in the weekly OHSU Multidisciplinary Lung Cancer Clinic. This course will combine a traditional clinical experience at multiple sites including OHSU, VAH, and Adventist Medical Center with exposure to a rich array of electronic resources. This format will provide a more flexible approach to learning.

RADD 741NR Neuroradiology Continuity Elective (8 cr.)
The goal of this 8-week elective is to provide students a first-hand experience in the practice of clinical Neuroradiology. Students will be integrated into the Neuroradiology service and function in a capacity nearly identical to the junior Diagnostic Radiology residents. During the workday, the student will independently review actual new clinical neuroimaging studies (CT and MRI scans), draft reports detailing pertinent findings and diagnostic impression, and review their reports one-on-one with Neuroradiology faculty - a process identical to how the residents and fellows practice. Additionally, students will attend about 2 hours of teaching conferences daily. This elective is intended for students who are planning to pursue training in a Diagnostic Radiology residency program and who have already taken the RADD 709A General Diagnostic Radiology elective.

RADD 741X Radiology Special Elective Continuity (8 cr.)
The purpose of this continuity clinical elective is for students to have more in-depth experience in Diagnostic Radiology. Students must make special arrangements with a faculty member and the department for an individual program of study. To fulfill Continuity Clinical Experience graduation requirement, the experience must be minimum 8 full-time weeks in duration or equivalent effort over a longer duration if experience is not full-time. Experience must allow students to maintain continuity in at least 2 of the following 3 ways:

o Continuity with the same patient(s)
o Continuity with the same health system
o Continuity with the same preceptor(s)

RADT 701A Radiation Oncology Research (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of Radiation Medicine. Projects are planned, reviewed and approved prior to the beginning of the elective.

RADT 709A Radiation Medicine (4 cr.)
Students participate in the clinical work-up of patients in preparation for radiation therapy as well as in the treatment

and follow-up of already treated patients. Assigned reading and participation in all departmental seminars and conferences are also required. The student will prepare and present a 30 minute talk.

RADT 709B Interventional Radiology (4 cr.)
To gain basic understanding of the minimally invasive, image guided diagnostic and therapeutic techniques that the specialty of interventional radiology can provide to the current healthcare patients. Procedural experience includes: interventional oncology, peripheral vascular and aortic interventions, embolization, TIPS, central venous catheter placement, drainage and feeding tube management, as well as venous/lymphatic interventions. Clinical experience includes: IR outpatient clinic for pre and post procedural patient management as well as IR inpatient management in collaboration with many health care teams including several multidisciplinary patient management groups.

RADT 709E Advanced Interventional Radiology (4 cr.)
This is an advanced four-week elective for students who have already completed the basic interventional radiology elective (RADD 709B) and are looking to delve deeper into the patient care and research aspects of the field. Rotation highlights will include time in the Interventional Radiology Clinics, attending multidisciplinary case conferences, serving on the inpatient IR consult service, with possible additional time in the translational research lab. This is not a primary procedural based rotation, but rather, focuses on the evaluation of patients before and after their procedures, and on the critical role of clinical decision making.

RADT 709RT VIRTUAL Radiation Oncology (4 cr.)
To provide an exposure to the field of Radiation Medicine for students interested in exploring the field. This elective is to augment a formal in person rotation in the department once permissible. Students will spend time learning the field of radiation oncology, its technical basis and sub-disciplines through lectures. Students will then participate in the virtual clinical work-up of patients in preparation for radiation therapy as well as in the treatment and follow up of those already treated patients. Students will rotate with individual attendings and residents through their clinic virtually seeing and assessing patients. Students will spend time learning to contour on several cases that will be reviewed and discussed with radiation oncology residents and attendings. A small research project or discussion on a subset of radiation oncology can be completed during the final week with the course closing, a short presentation and final exam. All elements of this elective will be conducted remotely through online platforms.

RADT 709X Radiation Med Special Elective (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Radiation Medicine. Students must make special arrangements with a faculty member and the department for an individual program of study. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

RADT 709Z Radiation Medicine - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

RADT 710B Introduction to Radiation Oncology (2 cr.)
Students will gain an exposure to the field of Radiation Oncology. In general, students will spend initial time learning more about the field, its technical basis and sub-disciplines. Students will attend educational sessions with the residents, attend tumor boards virtually, and watch prerecorded lectures on the introduction to radiation oncology as well as sub disciplines and radiology modules. The student will participate in the clinical work-up of patients in preparation for radiation therapy as well as in the treatment and follow up of those already treated patients. Students will rotate with individual attendings through their clinic seeing and assessing patients. Students will learn to write notes and prepare for each clinic day. Students will spend time learning to contour on several cases that will be reviewed and discussed with radiation oncology residents and attendings.

RADT 710RE Radiation Oncology-Remote (2 cr.)
To provide an exposure to the field of Radiation Medicine, to augment (but not replace) a formal in person rotation in the department once permissible. For students who have already rotated this course can provide additional depth and can be customized. In general, students will spend initial time learning more about the field, its technical basis and sub-disciplines. Subsequent days will be focused on learning contouring via several cases that will be reviewed and discussed with one of the course directors. One or more radiology remote modules may be included, in addition to normal departmental educational meetings. A small research project can be completed during the second week with the course closing via a mini presentation and final exam. All elements can be conducted remotely through online platform.

RADT 713X Radiation Oncology Special Elective (3-week) (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty. Students must make special arrangements with a faculty member and the department for an individual program of study.

RADT 741X Radiation Oncology Special Elective Continuity (8 cr.)
The purpose of this continuity clinical elective is for students to have more in-depth experience in Radiation Medicine. The Special Elective Request form must be signed off by the faculty member, department Clerkship Director and the Curriculum & Student Affairs office prior to starting.

RSP 741 Oregon AHEC Scholars Program (10 cr.)
The purpose of the Oregon Rural Scholars Program Experience is to provide students who are highly motivated toward rural primary care with an opportunity to experience what their future career path could be. Rural Scholars are competitively admitted into the program during their first year. Each Scholar is matched to a community with which the Scholar will interact throughout his or her training. Depending on the site, students will complete a Core Clinical Experience in a primary care practice during the first 4-weeks (Family Medicine, General Internal Medicine, General Surgery, General Pediatrics, or General Psychiatry), followed by an 8-week long RSP elective in the same practice. Students will develop a deep and comprehensive understanding of a primary care specialty practiced within a rural community setting, as well as concepts of community and public health, epidemiology, and resource allocation. Rural Scholars will simultaneously fulfill their continuity clinical experience and rural clinical experience graduation requirements.

RSP 741U Oregon AHEC Scholars Program - Underserved (10 cr.)
The purpose of the Oregon AHEC Scholars Program - Undeserved Experience is to provide students who are highly motivated toward rural or underserved primary care with an opportunity to experience what their future career path could be. AHEC Scholars are competitively admitted into the program during their first year. If interested in Family Medicine, students will complete a Family Medicine Core Clinical Experience during the first 4-weeks , followed by an 8-week long OASP elective in the same practice. Each Scholar is matched to a community with which the Scholar will interact throughout his or her training. If interested in other specialties, students will choose from a list of other electives. Students will develop a deep and comprehensive understanding of a primary care specialty practiced within a rural or underserved community setting, as well as concepts of community and public health, epidemiology, and resource allocation. Students in this course will be placed at one of the underserved sites.

SBM 710 Skin, Bones & Musculature (13 cr.)
Learners who successfully complete this block will be able to apply the structure and function of the musculoskeletal system to perform a musculoskeletal examination. They will identify patients with joint pain or rash and be able to explain the significance and usefulness of diagnostic tests as well as be able to offer differential diagnoses and preliminary management strategies for these disorders. Students will analyze the mechanisms underlying common musculoskeletal, skin, and rheumatologic diseases. Learners will use principles of professionalism, ethics, communication, epidemiology, bio statistics, informatics, health policy, patient interviewing, and physical examination skills in relation to the musculoskeletal, dermatologic and rheumatologic systems.

SCHI 701A Intro to Scholarly Project 1 (0.5 cr.)
Outline of course:

•Identify a faculty concentration lead that best fits your area of interest by submitting the Baseline Questionnaire on the Scholarly Projects website, LabSpot, before the first class session.
•Attend sessions of the Scholarly Projects Introduction course.
•Complete in-class assignments on research design, data, and other exercises as given.
•Schedule a meeting with the Scholarly Projects librarians to complete the literature search assignment
•Complete an initial one-page outline of the project and serve as a peer reviewer for two other students' outlines.
•Submit a final one-page outline incorporating feedback from peer reviewers.
•Complete online training in human subjects research; submit certificates of completion. Modules are located on the OHSU website in Compass (subjects/research/research integrity: Human Subjects Research (HSR): "Human Research" and "Responsible Conduct of Research (RCR)." Note that projects involving animals or rDNA/infectious agents/toxins require completion of additional modules outside the requirements for this class.

SCHI 701B Intro to Scholarly Project 2 (0.25 cr.)
Outline of course:

• Complete the required pre-work before meeting with a Scholarly Projects librarian.
• Perform a formal literature search guided by the Scholarly Projects librarians on the project topic; record the data sources, search dates, search terms, and yield using the designated form.
• Submit literature search form signed by a Scholarly Projects librarian.
• Identify a project topic and faculty mentor.
• Submit the Scholarly Projects Check-in questionnaire, which is used as a gauge of student progress, and identify students who may need help.

SCHI 701C Intro to Scholarly Project 3 (0.25 cr.)

Outline of course:

• Complete and submit the Scholarly Project Mentor/Mentee Agreement Form. The project mentor must be an OHSU faculty member (not a resident, fellow, etc.). However, students may work with a mentor who is not on faculty at OHSU if they have a co-mentor who is. Mentor agreements are needed for both co-mentors.
• In conjunction with the project mentor, submit all Institutional Review Board (IRB) forms and/or other regulatory forms for the project, as applicable. This step may occur after the Introduction Course depending on the project.
• Complete a project proposal using the template that includes all components listed in the checklist; obtain approval by the project mentor; submit the final version by the posted deadline. The proposal includes a project timeline that explicitly describes when the project work will be conducted and when major goals will be achieved; ensure that the timeline aligns with upcoming scheduled clinical blocks and other activities. The faculty concentration lead will review and sign off on proposal in LabSpot.

SCHI 701RC Introduction to Scholarly Projects 3 - Remediation (0.25 cr.)
Remediation version of SCHI701RC.

SCHI 702 Scholarly Project Work (1-18 cr.)
Scholarly Projects is an in-depth investigation of topics of interest to medical students during the course of their undergraduate medical education (UME) experiences with the goal of creating critical thinkers and lifelong learners. Students who complete Scholarly Projects will be able to think critically about complex clinical problems; expand beyond the established curriculum to investigate topics and problems in more depth; identify, define, and answer important questions relevant to clinical practice and healthcare delivery; and work effectively within a learning community. Students will also understand and apply principles of professionalism, ethics, communication, and collaboration while pursuing their projects.

SCHI 702R Scholarly Project Remediation (1-12 cr.)
Remediation version of SCHI702.

SCHI 702Z Scholarly Projects International (1-12 cr.)
International version of SCHI 702: Scholarly Projects is an in-depth investigation of topics of interest to medical students during the course of their undergraduate medical education (UME) with the goal of creating critical thinkers and lifelong learners. SCHI 702 is the work phase of the Scholarly Project curriculum. Students will work with their mentors, completing the work of conducting the project including data collection, analysis, and interpretation.

SCHI 703 Scholarly Project: Capstone (1 cr.)
Scholarly Projects is an in-depth investigation of topics of interest to medical students during the course of their undergraduate medical education (UME) experiences with the goal of creating critical thinkers and lifelong learners. Students who complete Scholarly Projects will be able to think critically about complex clinical problems; expand beyond the established curriculum to investigate topics and problems in more depth; identify, define, and answer important questions relevant to clinical practice and healthcare delivery; and work effectively within a learning community. Students will also understand and apply principles of professionalism, ethics, communication, and collaboration while pursuing their projects.

SCHI 703R Scholarly Project Capstone Remediation (1 cr.)
Remediation version of SCHI 703.

SCHI 704A Physician-Scientist Experience I (2 cr.)
This experience is intended for medical students interested in the physician-scientist career path. The course provides mentored research experience and students explore translational medicine with the goal to connect basic sciences with clinical medicine.

SCHI 704AR Physician-Scientist Experience I Remediation (2 cr.)
Remediation version of SCHI 704A.

SCHI 704B Physician-Scientist Experience II (12 cr.)
This experience is intended for medical students interested in the physician-scientist career path. The course provides mentored research experience and students explore translational medicine with the goal to connect basic sciences with clinical medicine.

SCHI 704BR Physician-Scientist Experience II Remediation (12 cr.)
Remediation version of SCHI 704B.

SCHI 704C Physician-Scientist Experience III (4 cr.)
This experience is intended for medical students interested in the physician-scientist career path. The course provides mentored research experience and students explore translational medicine with the goal to connect basic sciences with clinical medicine.

SCHI 704CR Physician-Scientist Experience III Remediation (4 cr.)
Remediation version of SCHI 704C.

SCHI 704M MCR Scholarly Project Coursework (1-6 cr.)
MCR scholarly project coursework provides an in-depth investigation of topics of interest with the goal of creating

critical thinkers and lifelong learners. In this course, students identify, define, and answer important scientific or clinical questions relevant to healthcare, and work effectively within learning communities. Students also apply principles of professionalism, ethics, communication, and collaboration while pursuing their projects. Students are required to complete 6 credits of this course either during the MCR program or clinical curriculum phase of MD program. This course will satisfy the MD Program's SCHI 702 graduation requirement.

SURG 701A Surgery Research (2-12 cr.)
Students will participate in research (arrangement made by student) within the department of surgery. At the completion of the rotation, the student should turn in a summary of the research performed (2-4 pages) which includes background of the process you are studying and the question you are trying to answer, methods (including statistical analysis), results, and a description of your actual research experience. Using preliminary data to write an abstract is encouraged. Students should also include a plan for eventual submission and presentation of your work. Students must fill out a form and have approval from the surgical faculty mentor, the surgery department and the dean’s office prior to signing up. Please contact the surgery coordinator for the requirements for this course.

SURG 701C Surgery Research Preclinical (4 cr.)
Students participate in surgery research (arrangement made by student). At the completion of the rotation, they should turn in a summary of the research performed (2-4 pages). This should include a section on the background of the process you are studying and the question you are trying to answer. Next, you should include a description of your actual research experience. This should include the methods of your research project and which specific information was obtained. The summary should also describe methods used for statistical analysis. Using preliminary data to write an abstract is encouraged. Students should also include a plan for eventual submission and presentation of your work.

SURG 705SB Introduction into Surgery Basics (1 cr.)
The Surgical Education Course at OHSU School of Medicine is designed to equip medical students in the didactics phase with essential skills and knowledge for success in the field of surgery. Recognizing the significance of informal competencies gained in the operating room, the course aims to bridge the gap between academic learning and practical experience. Through structured instruction in small groups, students will learn crucial aspects such as proper scrubbing and gowning techniques, sterile protocols, and an understanding of OR staff roles. By providing guidance and hands-on training, the course seeks to enhance students' competency in the surgical environment, enabling them to excel in their surgical preceptorships and clinical rotations. Ultimately, this course strives to nurture well-prepared, skilled, and compassionate future surgeons, regardless of their background, to contribute positively to the medical field.

SURG 709A Trauma Surgical ICU - OHSU (6 cr.)
Students have the opportunity to participate in the management of complex, critically ill trauma, general surgery, and transplant patients. This is a highly educational experience that combines opportunities for patient management with excellent bedside and didactic teaching. OHSU is a quaternary care center for the state of Oregon and one of the only two Level 1 Trauma Centers, adding to the excellence of this opportunity. Students make daily rounds with trauma surgeons, fellows, residents, and PAs. This is an excellent educational experience secondary to bedside teaching as well as multiple planned conferences to include Trauma Conference, Morbidity and Mortality, and a didactic lecture series. Students also get the opportunity to present a case they have managed at one of the Trauma Conferences. Throughout the rotation, students will be presented with case-based modules and will receive feedback on these assignments. Students will take a final exam at the end of the rotation.

SURG 709B General Surgery Blue Sub-Internship - OHSU (6 cr.)
The rotation focuses primarily on the pancreas, the hepatobiliary system, diseases of the adrenal glands and spleen, along with some aspects of foregut surgery and hernia repair. The physicians are trained in both minimally invasive and open surgery. You will develop skills evaluating, diagnosing and caring for surgical patients. You will be able to identify critical aspects of patient care in patients with diseases of the pancreas, hepatobiliary system, adrenal glands, spleen, and foregut disease. You will have hands on experience in the operating room as a part of the operative team. Responsibilities include evaluating consult patients in the emergency room, on the hospital wards and in our out-patient clinics. You will round on and present your patients on the wards as well as assist with wound care. You will be able to participate in multidisciplinary tumor conferences and you will be expected to deliver succinct and informative patient presentations. You will be expected to have the ability and willingness to work in a cooperative manner with all other healthcare personnel who care for our patients. After completing this rotation, you will have an in-depth knowledge of benign and malignant disease of the pancreas, hepatobiliary system, adrenal disorders and surgical diseases of the spleen.

SURG 709CB Rural Surgery - South Coast (4 cr.)

Students will spend time with all the surgical specialties available in the Coos Bay/North Bend area. This includes general surgery, urology, ENT, orthopedics, and gynecological surgery. Students will have exposure to a broad-based surgery service. Students will have an opportunity to experience the use of robotic surgery. They will develop a higher level of comfort evaluating, diagnosing, and treating surgical patients. They will learn to identify critical points in inpatient and outpatient follow-up of surgical patients. They will also have hands on experience with minor office procedures. Students are expected to participate in a community based student project and attend a one hour weekly didactic class.

SURG 709D General Surgery Gold Sub-Internship - OHSU (6 cr.)
The rotation focuses specifically on clinical oncology through participation in radiotherapy and chemotherapy clinics, surgical oncology clinic and tumor boards, surgery conference and inpatient rounds. The breadth of diseases span tumors of the breast, skin, liver, pancreas, biliary tree, intestines, as well as endocrine and neuroendocrine tumors. You will develop skills evaluating, diagnosing and caring for surgical patients. You will be able to identify critical aspects of patient care. You will be expected to provide at least one detailed review to the team regarding a disease entity and treatment that they encounter during rotation. You will have hands on experience in the operating room assisting with operative procedures. Responsibilities include evaluating consult patients, on the hospital wards and in our out-patient clinics. You will round on and present your patients on the wards as well as participating in clinic. You will be expected to have the ability and willingness to work in a cooperative manner with all other healthcare personnel who care for our patients.

SURG 709G Vascular Surgery Sub-Internship - OHSU (6 cr.)
The goal of this sub-internship rotation in vascular surgery is to develop proficiency in the evaluation and management of patients with vascular diseases. This rotation is designed for students who are interested in exploring a career in general or vascular surgery. Students will evaluate and manage patients during inpatient rounds, outpatient clinics, and emergency room evaluations under the supervision of the vascular surgery faculty and residents/fellows. They will participate in procedures in the operating room and interventional suite. By the end of this rotation, students will be expected to understand the pathophysiology of and be able to make initial treatment plans for patients with hemodialysis access needs, thoracic and/or abdominal aortic aneurysms, acute arterial occlusion, chronic arterial occlusive disease, extra-cranial carotid disease, and acute and chronic venous diseases.

SURG 709GE Vascular Surgery - OHSU (6 cr.)
The purpose of this rotation is for students to participate in the evaluation and management of patients with vascular diseases. Students will participate in the continuum of care of patients presenting with vascular diseases including preoperative evaluation and risk stratification/reduction, operative management of vascular diseases, postoperative management (both inpatient and outpatient setting) and surveillance of surgical (open and endovascular) outcomes. Students will be expected to understand the pathophysiology of, and participate in the care of patients with hemodialysis access needs, thoracic and/or abdominal aortic aneurysms, acute arterial occlusion, chronic arterial occlusive disease, extracranial carotid occlusive disease, and acute and chronic venous diseases. Students will attend didactic lectures, participate in clinical rounds, and scrub into open and endovascular cases. Students will see patients in the clinic, on the ward, and in the cardiovascular intensive care unit.

SURG 709GS Community-Based Surgical Care (5 cr.)
This rotation is meant to expose students to surgical care in a small community that provides care to patients with a variety of health care exposure and needs. Depending on availability, students have the opportunity to rotate with Acute Care Surgery, Bariatric Surgery, Breast Surgery, General Surgery, or Vascular Surgery while they are at Good Samaritan Regional Medical Center.

SURG 709GV Vascular Surgery - VAMC (6 cr.)
Course Purpose Statement: The purpose of this rotation is for students to participate in the evaluation and management of patients with vascular diseases. Students will participate in the continuum of care of patients presenting with vascular diseases including preoperative evaluation and risk stratification/reduction, operative management of vascular diseases, postoperative management (both inpatient and outpatient setting) and surveillance of surgical (open and endovascular) outcomes. Students will be expected to understand the pathophysiology of, and participate in the care of patients with hemodialysis access needs, thoracic and/or abdominal aortic aneurysms, acute arterial occlusion, chronic arterial occlusive disease, extracranial carotid occlusive disease, and acute and chronic venous diseases. Students will attend didactic lectures, participate in clinical rounds, and scrub into open and endovascular cases. Students will see patients in the clinic, on the ward, and in the cardiovascular intensive care unit.

SURG 709H General Surgery - Springfield (6 cr.)
This rotation is for students who want to further develop a higher level of comfort evaluating, diagnosing, and treating surgical patients. They will learn to identify critical points in inpatient and outpatient care and follow-up of surgical patients. They will have the opportunity to work at PeaceHealth Sacred Heart Medical Center RiverBend in

Springfield, a Level II Trauma Center, and at the RiverBend Ambulatory Surgery Center. Students participating in rotations in this community will work one on one with their attending with increased autonomy functioning at an intern level. There are no residents practicing at this hospital or community clinics. Students will spend the majority of the time in general surgery or Trauma Surgery but will have exposure to a broad-based surgery service. They will also have hands on experience with minor office procedures.

SURG 709K Rural Gen Surg - Grants Pass (6 cr.)
Students will have exposure to a rural general surgery practice and identify the important issues involved in being a rural surgeon (that differ from practicing in a tertiary referral center). They will develop a higher level of comfort evaluating, diagnosing, and treating surgical patients and will learn to identify critical points in inpatient and outpatient care of surgical patients. They will have exposure to the broad spectrum of rural general surgical procedures and will also have hands on experience with minor office procedures. Students will be assigned a preceptor surgeon who will supervise their experience. The majority of the time will be spent in general surgery, but students will have the opportunity to rotate through other surgical specialties.

SURG 709KF Rural Surgery - Klamath Falls (6 cr.)
The purpose of the Klamath Falls General Surgery clinical experience is for students who have completed at least 4 weeks of surgery core clinical experience and are interested in a surgical career to participate in the care and operative management of surgical patients in a rural setting. Students will learn the specific issues encountered by a rural surgeon and how they differ from those practicing in an urban or tertiary setting. Students will hone their skills in evaluating, diagnosing, and treating a broad range of surgical patients. Students will see patients in the outpatient clinics, emergency room, and inpatient wards. Students will gain hands-on experience with minor office procedures and assist in the operating room.

SURG 709L General and Burn Surgery Sub-Internship - Emanuel (6 cr.)
The rotation includes general surgery, acute burn care and the surgery required thereto (ICU and step-down care), reconstructive burn care, and a variety of complex wound management cases, such as necrotizing soft tissue infections, open abdomen/fistulas, purpura fulminans, pressure ulcers, etc. The burn ICU generally has between 5-7 patients in some phase of their surgical critical care. We are doing 80-100 cases per month.

SURG 709M Rural General Surg- Gold Beach (6 cr.)
Students will have exposure to a rural general surgery practice and identify the important issues involved in being a rural surgeon (that differ from practicing in a tertiary referral center). Student will develop a higher level of comfort evaluating, diagnosing, and treating surgical patients. The majority of the time will be spent in General Surgery, but they will also have exposure to the broad spectrum of rural surgery procedures. They will evaluate patients in both inpatient and outpatient setting, have hands on experience with minor office procedures and assist in the operating room.

SURG 709PA General & Hepatobiliary Surgery - Providence Portland (6 cr.)
The focus of the rotation will be on the management of a broad variety of malignant and benign general surgical disease using advanced general surgical techniques. Students will have the opportunity to have focused experiences in hepatobiliary/pancreatic, esophageal, or colorectal diseases. They will have the opportunity to participate in other general surgery experiences as well. Students will be assigned a preceptor surgeon who will supervise their experience. Students will participate in outpatient clinics, operating room, and the inpatient ward. They will have the opportunity to gain experience by scrubbing into a wide variety of operations.

SURG 709R Abdominal Organ Transplant - OHSU (6 cr.)
This course is designed to educate medical students regarding the surgical management of liver and kidney transplantation as well as hepatobiliary surgery. Exposure to transplant patients will help students appreciate the process of abdominal organ transplantation from the patient perspective. Interaction with experts in the field will allow the student to expand their clinical knowledge in kidney disease, liver disease and transplant surgery. The student will participate in rounds, clinic, selection committee meetings, and tumor board conferences, as well as assist with surgical procedures. The student may have the option of participating in local organ procurement procedures when they occur.

SURG 709RE General Surgery Red/Purple Sub-Internship - OHSU (6 cr.)
This course specifically focuses on conditions and surgery of the foregut (esophagus, stomach and small bowel). The physicians are trained in minimally invasive, bariatric and robotic surgery as well as conventional surgical approaches. You will develop a higher level of comfort evaluating, diagnosing, triaging surgical patients, and working on a multi-functioning specialty team. You should be able to identify critical points in inpatient and outpatient follow-up of surgical patients with morbid obesity or diseases of the esophagus or stomach. You will have hands on experience with minor clinical procedures. Responsibilities include working up patients, pre- and post-operative care, evaluating in the emergency room and outpatient clinics, rounding in wards,

assisting in surgeries, postoperative care rounds, and surgical would care. You will also participate in multidisciplinary conferences. You should be able to design and implement a patient plan, write orders, and give patient presentations. After completing this rotation, you will have an in-depth knowledge of benign esophageal conditions, spastic disorders of the esophagus, esophageal and gastric cancer, metabolic syndrome and the consequences of bariatric surgeries and gallbladder disease.

SURG 709RR Rural General Surgery-Redmond (6 cr.)
Students will have exposure to a rural general surgery practice and identify the important issues involved in being a rural surgeon (that differ from practicing in a tertiary referral center). They will also have exposure to the broad spectrum of rural general surgical procedures and follow patients in both the inpatient and outpatient setting. They will also have hands on experience with minor office procedures as well as assist in surgeries.

SURG 709S General Surgery Sub-Internship - St. Vincent (6 cr.)
The students further develop higher level of comfort evaluating, diagnosing, and treating surgical patients, while functioning at an intern level. They will spend the majority of the time in general surgery, but will have exposure to a broad based surgery service. They will learn to identify critical points in inpatient and outpatient follow-up of surgical patients. They will also have hands on experience with minor office procedures.

SURG 709T Surgery-Trauma at Emanuel (6 cr.)
The purpose of the Emanuel Trauma and Critical Care clinical experience is to allow students to participate in the care and operative management of acutely injured patients in a Level 1 trauma center. They will care for the critical ill patient in the ICU. Students will hone their skills in evaluating, diagnosing, and treating surgical patients, as well as, delivering patient presentations on the ward, ICU, and at conferences. Students will assist with procedures in the operating room, attend teaching conferences, and assume an active role on a multi-functioning specialty team.

SURG 709U Sub-Internship General Surgery-Green (6 cr.)
This course specifically focuses on conditions and surgery of the colon and rectum, and ventral hernias. The physicians are trained in minimally invasive, robotic and open surgery. You will develop a higher level of comfort evaluating, diagnosing, triaging surgical patients, and working on a multi-functioning specialty team. You should be able to identify critical points in inpatient and outpatient follow-up of surgical patients with diseases of the colon and rectum and of all hernias. You will have hands on experience with minor clinical procedures. Responsibilities include working up patients, pre- and post-operative care, evaluating in the emergency room and outpatient clinics, rounding in wards, assisting in surgeries, postoperative care rounds, and surgical wound care. You will also participate in multidisciplinary conferences. You should be able to design and implement a patient plan, write orders, and give patient presentations. After completing this rotation, you will have an in-depth knowledge of benign and malignant disease of the colon and rectum as well as of complex ventral hernias.

SURG 709UC General Surgery Green Sub-Internship - OHSU (6 cr.)
This course specifically focuses on conditions and surgery of the colon and rectum. The physicians are trained in laparoscopic, robotic, and open surgery. You will develop a higher level of comfort evaluating, diagnosing, triaging surgical patients, and working on a multi-functioning specialty team. You should be able to identify critical points in inpatient and outpatient follow-up of surgical patients with diseases of the colon and rectum. You will have hands on experience with minor clinical procedures. Responsibilities include working up patients, pre- and post-operative care, evaluating in the emergency room and outpatient clinics, rounding in wards, assisting in surgeries, postoperative care rounds, and surgical wound care. You will also participate in multidisciplinary conferences. You should be able to design and implement a patient plan, write orders, and give patient presentations. After completing this rotation, you will have an in-depth knowledge of benign and malignant disease of the colon and rectum.

SURG 709UH General Surgery Orange Sub-Internship - OHSU (6 cr.)
This course specifically focuses on conditions and surgery of the abdominal wall. The service includes a variety of case types and will include complex gastrointestinal surgery related to fistula disease. The physicians are trained in laparoscopic, robotic, and open surgery. You will develop a higher level of comfort evaluating, diagnosing, triaging surgical patients, and working on a multi-functioning specialty team. You should be able to identify critical points in inpatient and outpatient follow-up of surgical patients with diseases of the colon and rectum. Responsibilities include working up patients, pre- and post-operative care, evaluating in the emergency room and outpatient clinics, rounding in wards, assisting in operations, postoperative care rounds, and surgical wound care. You will also participate in weekly hernia rounds and conferences. You should be able to design and implement a patient plan, write orders, and give patient presentations. After completing this rotation, you will have an in-depth knowledge of abdominal wall anatomy and strategies for hernia repair and abdominal wall reconstruction.

SURG 709V General Surgery - VAMC (6 cr.)
This is a four-week course in general surgery. The VA rotation offers exposure to a wide variety of surgeries and surgical diseases, including surgical oncology, vascular, foregut, biliary, colorectal, minimally invasive, and general surgery. Students will be fully participating members of a team in preoperative and postoperative care, in both inpatient and ambulatory settings, evaluate consults from ED or other services, and assist in surgery and wound care. Students who want to experience a practicing role and responsibilities in ensuring patient care value the VA experience. In addition, you will gain experience evaluating complex patients with significant medical co-morbidities. You should be able to design and implement patient care plans, write orders and give patient presentations. You will be participating in twice weekly student and resident education conferences as well as weekly pre-operative indications conferences. After completing this rotation, you should have an in-depth knowledge of a broad range of surgical diseases and their management.

SURG 709VA Surgical ICU- VAMC (6 cr.)
The purpose of the VAMC Surgical Intensive Care Unit clinical experience is to allow students to participate in the care of critically ill or injured patients. Students will hone their skills in evaluating, diagnosing, and treating surgical patients, as well as, delivering effective bedside patient presentations. Students will see patients exclusively in the VAMC SICU, attend ICU teaching conferences, and assume an active role on a multidisciplinary critical care team.

SURG 709X General Surgery Special Elective 4-Week (4 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Surgery. Students must make special arrangements with a faculty member and the department for an individual program of study. Contact the surgery coordinator regarding specific requirements for this course.

SURG 709Z Surgery - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

SURG 710EM Emergency General Surgery Introduction - OHSU (3 cr.)
Students will work with attendings, fellows, residents, and ancillary staff to aid in non-trauma emergency surgery by providing the know-how and decision-making skills necessary for daily practice. Students are expected to participate in daily rounds, attend all lectures and conferences. They will have opportunities to evaluate patients, synthesize, write patient notes, manage orders, communicate with patients and other health care team members, see patients in outpatient setting, and participate in procedures/surgeries as appropriate for level of training.

SURG 710F Wound & Hyperbaric Oxygen Medicine (2 cr.)
Students will learn to workup and evaluate the etiology and underlying contributing factors for a chronic non-healing wound. Students participate in both the OHSU and VAMC wound clinics. They will participate in the treatment of these wounds including placement of compression wraps, offloading casts, and perform debridements. They will learn the principles of hyperbaric oxygen therapy.

SURG 710GE Vascular Surgery Introduction - OHSU (3 cr.)
Students will work with attendings, fellows, residents, and ancillary staff to aid in non-trauma emergency surgery by providing the know-how and decision-making skills necessary for daily practice. Students are expected to participate in daily rounds, attend all lectures and conferences. They will have opportunities to evaluate patients, synthesize, write patient notes, manage orders, communicate with patients and other health care team members, see patients in outpatient setting, and participate in procedures/surgeries as appropriate for level of training.

Special comment: Students who were assigned to EGS in their Core Surgery rotation will NOT be allowed to take this elective.

SURG 710N Surgical Nutrition (2 cr.)
Students will spend 5-10 hours per week of discussion/didactic sessions with faculty plus 20-30 hours per week of clinical responsibilities. (They will average 35 hours a week.) Students will be expected to take overnight call on a schedule determined by faculty availability. Student responsibilities include working up patients, participating in operations, and postoperative care rounds with surgical, wound care, nutritional, and multidisciplinary teams. Didactics and discussions will focus on topics and literature relevant to surgical nutrition. In clinical duties, special emphasis will be placed on care of patients with special nutritional needs. At the completions of the rotation, students should be able to design and implement a plan for nutrition management for a patient throughout the course of their surgical condition.

SURG 710OM Obesity Management Metabolic Medicine and Bariatric Surgery - OHSU (2 cr.)
This course aims to introduce students to the modern, evidence-based treatment of patients with obesity through clinical experience with diverse interprofessional fields including endocrinology, surgery, nutrition, and psychology. This two-week course will focus on clinical encounters with patients in outpatient, inpatient, and operative settings.

Some components of this elective course can be tailored based on a student's professional interests and goals. There is also an opportunity to incorporate a specific focus on pediatric patients with obesity if desired.

SURG 710ON Multidisciplinary Breast Oncology (2 cr.)
This course is designed to give the student a comprehensive understanding of the diagnosis and treatment of breast cancer by learning from the clinical specialists who manage the disease from diagnosis to treatment and survivorship. The multidisciplinary approach also provides exposure to a variety of clinical specialties and highlights the collaborative nature of breast cancer management.

SURG 710Q Transition to Surgical Internship (2 cr.)
The course focuses on teaching technical and patient management skills expected of any surgical intern using a hands-on approach and case-based scenarios. Simulations and labs will be used to teach technical skills with concurrent and summary feedback provided by residents and faculty. The emphasis is on preparing students to manage common problems encountered in surgical patients. Students will be asked to independently assess and form a plan of action of patient care in a number of settings including via mock page scenarios.

SURG 710X General Surgery Special Elective 2-Week (3 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Surgery. Students must make special arrangements with a faculty member and the department for an individual program of study. Contact the surgery coordinator regarding specific requirements for this course.

SURG 710Z Surgery-Away (2 cr.)
Medical students are responsible for making their own arrangements for an away rotation, including receiving the department's review and approval prior to leaving for the rotation. The student must submit approval forms to Curriculum and Student Affairs Office prior to leaving for rotation.

SURG 730 Surgery Core Clinical Experience (6 cr.)
The purpose of the Surgery core clinical experience is for students to learn the principles of operative and perioperative management of surgical patients and to learn to recognize an acutely ill or injured patient. Students will be able to perform a surgical history and physical examination, and create an ordered differential diagnosis and initial treatment plan. Students will learn the basic principles of wound healing and management of chronic wounds. Students will participate in the care of patients in inpatient and outpatient setting, including the operating room where they will be able to demonstrate proper suturing and knot tying techniques.

SURG 730R Surgery Core Clinical Experience -Remediation (6 cr.)
Remediation version of SURG 730.

SURG 741BC Continuity: Breast Surgery - St. Vincent (8 cr.)
The care of the breast cancer patient is complex and multidisciplinary. Surgery for breast cancer is just one component in what can be an exhaustive set of treatments. The goal of this elective is to expose medical students to the multidisciplinary care of breast cancer patients from diagnosis through treatment. This will include examining issues in care related to surgery, pathology, radiology, medical oncology, radiation oncology, medical genetics and social work.

SURG 741G Continuity: Vascular Surgery - OHSU/VAMC (10 cr.)
The purpose of the Vascular Surgery Continuity Clinical Experience is for students interested in a vascular surgical career to experience an in-depth opportunity to participate in the evaluation and management of patients with vascular diseases. This eight-week rotation will allow students to follow patients from their preoperative clinic visit through their surgery and postoperative care. Students will participate in preoperative evaluation and risk stratification/reduction, scrub into open and endovascular cases, participate in clinical ward rounds both on the floor and in the intensive care unit, and learn about surveillance of surgical (open and endovascular) outcomes in an outpatient setting. Students will be expected to understand the pathophysiology of, and participate in the care of patients with hemodialysis access needs, thoracic and/or abdominal aortic aneurysms, acute arterial occlusion, chronic arterial occlusive disease, extracranial carotid occlusive disease, and acute and chronic venous diseases.

SURG 741GC Continuity: Gender Confirming Surgery - OHSU (12 cr.)
The student will longitudinally follow transgender patients from their preop appointment through surgery and their postoperative care. They will together with the resident team take care of any inpatients they have assisted in the OR with. They are expected to learn basics of affirming care. Technically they will be expected to learn deep dermal suturing, subcuticular suturing, efficient knot tying and surgical hemostasis. They also will partake in monthly multidisciplinary transgender meeting as well as patient education classes. When not needed on service they are able to partake in other plastic surgery services.

SURG 741LG General Surgery Continuity-La Grande (12 cr.)

Students will have the opportunity to experience rural general surgery at a critical access hospital in Eastern Oregon. This continuity experience will allow students to understand the differences in the professional and personal aspects of a rural general surgery practice compared to an urban tertiary hospital. They will gain proficiency in the evaluation, diagnosis, and management of conditions which make up the foundation of general surgery and will be exposed to a broad variety of patients. This rotation will include a great deal of hands-on experience ranging from minor procedures in the office to 1st assist for most cases in the OR. Students will see patients in the clinic as well as the inpatient setting and will take home call with their preceptor. Unique to this course is the ability for students to gain true continuity with their patients by participating in every aspect of their surgical care. Students will follow their patients through pre-op visits and diagnostic workup, intra-operative course, post-operative care, and outpatient follow-up. Additionally, students will learn hands on experience in upper and lower endoscopy and will be present for trauma call. The majority of a student's time will be spent with general surgery but they may also have the opportunity to spend time in other surgical specialties including ENT, Orthopedics, OB/GYN, and Urology. Students should have a strong interest in general surgery and/or rural practice. Experience in IMED or General Surgery is preferred but not required.

SURG 741X Continuity: Special Elective Surgery 8-Week (10 cr.)
The purpose of the Continuity Clinical Experience is for students interested in a surgical career to experience an in-depth opportunity to participate in the evaluation and management of patients within an area of interest to the student. This eight-week rotation will allow students to follow patients from their preoperative clinic visit through their surgery and postoperative care. Students should participate in preoperative evaluation and risk stratification/reduction, scrub into, participate in clinical ward rounds both on the floor and in the intensive care unit, and learn about surveillance of surgical outcomes in an outpatient setting. Students will be expected to understand the pathophysiology of, and participate in the care of patients. You need to obtain approval to sign up for this course.

SURG 741Z Surgery Continuity Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Surgery at an outside institution. Students must make special arrangements with an away institution.

TRAN 702 Transition to Medical School (2 cr.)
Transition to Medical School (TTMS) is a 1-week orientation that helps students prepare for their upcoming journey to becoming a physician. The course includes information about the overview of the MD Program, as well as an introduction to fellow classmates, staff, faculty, coursework, and general expectations. The course is required prior to entering the Fundamentals Block of the Foundations of Medicine curriculum.

TRAN 703 Transition to Clinical Experience (2 cr.)
The purpose of the Transition to Clinical Experiences course is to prepare post-Foundational students for their expanded clinical roles. Students will learn the necessary skills, behaviors, and attitudes to make a successful transition from the classroom to the healthcare environment. Students who complete this course will be adequately prepared to work on and within interprofessional teams as well as care for and learn from patients.

TRAN 703R Transition to Clinical Experience-Remediation (2 cr.)
Remediation version of TRAN 703.

TRAN 704 Transition to Residency (1 cr.)
Transition to Residency is a 3-week course taken during the final year of medical school that will help prepare students for transitioning into residency programs as physicians. First two weeks of the course is remote-based. The third week of the course includes didactic and small group sessions, as well as active-learning instruction and activities around four general themes: (1) Communicating with patients and families; (2) Communicating with colleagues; (3) Understanding and applying essential non-clinical aspects of medical practice; and (4) Practicing basic clinical and procedural skills. Passing the course is required prior to graduation from OHSU School of Medicine's Undergraduate Medical Education program.

TRAN 704R Transition to Residency-Remediation (1 cr.)
Remediation version of TRAN 704.

UROL 701A Urology Research (4-week) (2-12 cr.)
Students will have the opportunity to learn about either basic or clinical science research through a faculty-supervised project. Research can be in any areas of Urology. Projects are planned, reviewed and approved prior to the beginning of the elective.

UROL 709A General Urology (4-week) (4 cr.)
This rotation is intended for students interested in learning about Urology as it applies to everyday clinical practice and who are not considering a career in Urology or Surgery. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students will be exposed to the full range of urologic diseases in pediatric urology, adult urology, or both in an outpatient and inpatient setting with an emphasis on

the diagnosis and treatment of problems encountered in general practice. Students will have extensive exposure to outpatient management of urologic patients, inpatient management and urologic consultation, and the most commonly performed urologic surgeries (i.e., surgery for prostate cancer, kidney stones, prostatic enlargement, urinary incontinence). There will be opportunities to learn basic skills such as Foley insertion, perform microscopic urinalyses, or measure bladder residuals during the rotation. Students may choose to focus primarily on outpatient urology. Students will spend time at OHSU, VAMC, and/or Doernbecher. Students may choose to focus on adult or pediatric urology, or both, by providing advance notice to the department. Students will be asked to complete the National Core Medical Student Curriculum in Urology (online) during their rotation.

UROL 709B Pediatric Urology (4-week) (4 cr.)
This is a two or four-week rotation intended for students early in their clinical experience who are interested in an introduction to Pediatric Urology. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students can expect to observe and participate in the management of a variety of pediatric urological disorders in an inpatient, operative, and outpatient setting. Students may be exposed to a wide range of conditions, including urinary tract infections, vesico-ureteral reflux, hydronephrosis, undescended testis, hypospadias, and common pediatric urologic problems. Students will spend 2 or 4 weeks at Doernbecher. Students will be asked to complete the National Medical Student Curriculum in Urology (online) as well as other assigned reading during their rotation. They will complete a short examination based on their readings at the end of the rotation.

UROL 709C Sub-I Urology (6 cr.)
This rotation is intended for students considering a career in Urology. Students function in a sub-intern role with house staff and faculty on the urology service and participate in all educational activities of the OHSU urology program. Students can expect to observe and participate in the management of a wide variety of adult & pediatric urological disorders in an outpatient, inpatient, and operative setting. Students will be exposed to the full range of urologic subspecialties, including urologic oncology, pediatric urology, male infertility, stone disease, female and male reconstructive urology. Students will spend 1-2 weeks at OHSU, 1 week at the VAMC (pending credentialing approval) and 1-2 weeks at Doernbecher. Students will give a presentation at the weekly departmental Grand Rounds at the end of the rotation.

UROL 709D Introduction to Adult Urology (4 cr.)
This is a two or four-week rotation intended for students early in their clinical experience who are interested in an introduction to Adult Urology. The rotation can be two or Four Weeks in length. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students can expect to observe and participate in the management of a variety of adult urological disorders in an inpatient, operative, and outpatient setting. Students may be exposed to a wide range of urologic sub-specialties, including urologic oncology, male infertility, stone disease, female and male reconstructive urology, as well as general urology. Students will spend 2 or 4 weeks at OHSU or the Portland VAMC. Students will be asked to complete the National Medical Student Curriculum in Urology (online) as well as other assigned reading during their rotation. They will complete a short examination based on their readings at the end of the rotation.

UROL 709Z Urology - Away (4 cr.)
Medical students are responsible for making their own arrangements for any away rotation, including receiving the department's review and approval prior to leaving for the rotation.

UROL 710A General Urology (2-week) (2 cr.)
This rotation is intended for students interested in learning about Urology as it applies to everyday clinical practice and who are not considering a career in Urology or Surgery. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students will be exposed to the full range of urologic diseases in pediatric urology, adult urology, or both in an outpatient and inpatient setting with an emphasis on the diagnosis and treatment of problems encountered in general practice. Students will have extensive exposure to outpatient management of urologic patients, inpatient management and urologic consultation, and the most commonly performed urologic surgeries (i.e., surgery for prostate cancer, kidney stones, prostatic enlargement, urinary incontinence). There will be opportunities to learn basic skills such as Foley insertion, perform microscopic urinalyses, or measure bladder residuals during the rotation. Students may choose to focus primarily on outpatient urology. Students will spend time at OHSU, VAMC, and/or Doernbecher. Students may choose to focus on adult or pediatric urology, or both, by providing advance notice to the department. Students will be asked to complete the National Core Medical Student Curriculum in Urology (online) during their rotation.

UROL 710B Pediatric Urology (2-week) (2 cr.)
This is a two-week rotation intended for students early in their clinical experience who are interested in an introduction to Pediatric Urology. The rotation can be two or four weeks in

length. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students can expect to observe and participate in the management of a variety of pediatric urological disorders in an inpatient, operative, and outpatient setting. Students may be exposed to a wide range of conditions, including urinary tract infections, vesico-ureteral reflux, hydronephrosis, undescended testis, hypospadias, and common pediatric urologic problems. Students will spend 2 or 4 weeks at Doernbecher. Students will be asked to complete the National Medical Student Curriculum in Urology (online) as well as other assigned reading during their rotation. They will complete a short examination based on their readings at the end of the rotation.

UROL 710C Introduction to Adult Urology (2- week) (2 cr.)
This is a two-week rotation intended for students early in their clinical experience who are interested in an introduction to Adult Urology. The rotation can be two or four weeks in length. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students can expect to observe and participate in the management of a variety of adult urological disorders in an inpatient, operative, and outpatient setting. Students may be exposed to a wide range of urologic sub-specialties, including urologic oncology, male infertility, stone disease, female and male reconstructive urology, as well as general urology. Students will spend 2 or 4 weeks at OHSU or the Portland VAMC. Students will be asked to complete the National Medical Student Curriculum in Urology (online) as well as other assigned reading during their rotation. They will complete a short examination based on their readings at the end of the rotation.

UROL 741A Primary Care Adult Urol. Cont. (8 cr.)
This rotation is intended for students interested in learning about Urology as it applies to everyday clinical practice and who are not considering a career in Urology or Surgery. Students work closely with house staff and faculty and participate in all educational activities of the OHSU urology program. Students will be exposed to the full range of urologic diseases in pediatric urology, adult urology, or both in an outpatient and inpatient setting with an emphasis on the diagnosis and treatment of problems encountered in general practice. Students will have extensive exposure to outpatient management of urologic patients, inpatient management and urologic consultation, and the most commonly performed urologic surgeries (i.e., surgery for prostate cancer, kidney stones, prostatic enlargement, urinary incontinence). There will be opportunities to learn basic skills such as Foley insertion, perform microscopic urinalyses, or measure bladder residuals during the rotation. Students may choose to focus primarily on outpatient urology. Students will spend time at OHSU, VAMC, and/or Doernbecher. Students may choose to focus on adult or pediatric urology, or both, by providing advance notice to the department. Students will be asked to complete the National Core Medical Student Curriculum in Urology (online) during their rotation.

UROL 741X Urology Continuity Special Elective (8 cr.)
The purpose of this elective is for students to have more in-depth experience in a subspecialty of Urology. Students must make special arrangements with a faculty member and the department for an individual program of study. Students must obtain departmental approval to enroll in this.

UROL 741Z Urology Continuity Away (8 cr.)
The purpose of this elective is for students to have more in-depth experience in Urology at an outside institution. Students must make special arrangements with an away institution.

School of Nursing

ACNP 701 Advanced Adult-Gerontology Pharmacology (2 cr.)
This course builds on knowledge of the basic principles of pharmacology to establish a knowledge base for advanced practice nurses making independent clinical judgments in the pharmacologic management and evaluation of adults and older adults who have unstable chronic, complex acute and critical conditions. Pharmacologic assessment including risks of complex medical regimes, drug interactions, incompatibilities, adverse events and contraindications is emphasized. Applicable Federal and State laws and appropriate patient education is integrated.

ACNP 702 Diagnostic Reasoning in Adult-Gerontology Acute Care (3 cr.)
This course explores the process of diagnosis by focusing on the cognitive processes necessary to ensure diagnostic accuracy. Concepts central to diagnostic methodology are explored, including hypothetico-deductive reasoning, logical fallacies, premature closure, and anchoring bias. Pre-test and post-test probabilities are discussed, and the influence of diagnostic test sensitivity and specificity on clinical diagnoses are explored. Clinical cases are presented on a weekly basis to assist in the development of clinical thinking.

ACNP 703 Management of Common Urgent Care Problems in Adult-Gerontology Acute Care (2 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with an emphasis on conditions commonly found in urgent and primary care practice. Diagnostic

reasoning and decision-making skills are developed, with special attention given to the impact of age-related physical and cognitive changes found throughout adult development and their impact on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic. Clinical discussions will include triage strategies for deciding between outpatient care and inpatient admission. Challenges associated with transitions between acute and primary care settings will be discussed.

ACNP 740L Acute Care Diagnostic & Clinical Lab I (1 cr.)
This is the first course in a 5-course series covering laboratory techniques that is designed to support and reinforce the didactic content taught in ACNP 741-ACNP745. The course includes an introduction to common diagnostics, such as interpretation of 12-lead electrocardiograms, chest and abdominal radiographs and basic computerized tomography interpretation.

ACNP 741 Management I for Adult-Gerontology Acute Care (3 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with a focus in cardiovascular disorders. Diagnostic reasoning and decision-making skills are developed, with special attention given to the impact of age-related physical and cognitive changes found throughout adult development on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic.

ACNP 741L Acute Care Diagnostic & Clinical Lab II (1 cr.)
This is the second course in a 5-course series covering laboratory techniques that is designed to support and reinforce the didactic content taught in ACNP 741-ACNP745. This course focuses on interventional procedures such as arterial and central line placement, chest tube insertion, suturing, advanced airway management including endotracheal intubation, and lumbar punctures. These skills are enhanced through use of cadaver exploration and procedural application. Procedural labs are conducted to prepare students for upcoming clinical rotations and further clinical simulation.

ACNP 742 Management II for Adult-Gerontology Acute Care (4 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with an emphasis on cardiac and pulmonary disorders. Diagnostic reasoning and decision-making skills are developed, with special attention given to the impact of age-related physical and cognitive changes found throughout adult development, on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic.

ACNP 742L Acute Care Diagnostic & Clinical Lab III (1 cr.)
This is the third course in a 5-course series covering laboratory techniques that is designed to support and reinforce the didactic content taught in ACNP 741-ACNP745. This course focuses on the development of clinical skills in a laboratory setting, including the use of high-fidelity simulation to refine diagnostic reasoning and clinical interventions. The course includes content on a variety of diagnostic and interventional procedures such as interpretation of 12-lead electrocardiograms, radiographs, hemodynamics, and clinical lab values.

ACNP 743 Management III for Adult-Gerontology Acute Care (4 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with an emphasis on renal, urologic, infectious and autoimmune conditions. Diagnostic reasoning and decision-making skills are developed, with special attention given to the impact of age-related physical and cognitive changes found throughout adult development, on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic.

ACNP 743L Acute Care Diagnostic & Clinical Lab IV (1 cr.)
This is the fourth course in a series of laboratory courses that continue to focus on the development of clinical skills in a laboratory setting, including the use of high-fidelity simulation to refine diagnostic reasoning and clinical interventions. The course includes content on a variety of diagnostic and interventional procedures such as interpretation of 12-lead electrocardiograms, radiographs, hemodynamics, and clinical lab values. This course series is designed to support and reinforce the didactic content taught in the 526 Adult Gerontology Acute Care Management course. Efforts are made to connect content from the management series to this laboratory course on a weekly basis.

ACNP 744 Management IV for Adult-Gerontology Acute Care (4 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with an emphasis on specific neurologic, endocrine and abdominal conditions. Diagnostic reasoning and decision making skills are developed, with special

attention given to the impact of age-related physical and cognitive changes found throughout adult development, on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic.

ACNP 744L Acute Care Diagnostic & Clinical Lab V (1 cr.)
This is the final course in a 5-course series covering laboratory techniques that is designed to support and reinforce the didactic content taught in ACNP 741-ACNP745. This course focuses on the use of high-fidelity simulation to refine diagnostic reasoning and clinical interventions. The course includes content on a variety of diagnostic and interventional procedures such as interpretation of 12-lead electrocardiograms, radiographs, hemodynamics, and clinical lab values.

ACNP 745 Management V for Adult-Gerontology Acute Care (4 cr.)
This didactic course focuses on competencies in advanced pathophysiology, assessment, diagnosis, and collaborative management of adult patients with selected episodic/chronic health problems, with an emphasis on specific oncologic, hematologic, and trauma conditions, as well as a focus on palliative care, pain and nutrition. Diagnostic reasoning and decision-making skills are developed, with special attention given to the impact of age-related physical and cognitive changes found throughout adult development, on diagnosis and treatment. Further consideration is given to health promotion, patient education, and risk reduction in each selected topic. Additional topics surrounding geriatric syndromes will be presented in this course.

ACNP 791 Practicum in Adult-Gerontology Acute Care I (2 cr.)
In this first clinical practicum course, concepts learned in the Health Assessment course will be applied in a clinical setting. The primary focus of this course is to further develop virtual clinical assessment, diagnostic reasoning, and case presentation skills, as well as proper documentation of clinical history and physical and progress notes. Students perform comprehensive clinical assessments, including planning appropriate diagnostics, and therapeutic interventions. This course acts as the initial preparation for the four term clinical practicum series.

ACNP 792 Practicum in Adult-Gerontology Acute Care II (3 cr.)
This second clinical practicum initiates a five-term series of clinical rotations focusing on the clinical management of patients, adolescent to geriatric age, with complex chronic, acute and critical illness and injury. Clinical placements are arranged by faculty and will include participation on a variety of interprofessional medical and surgical teams. Clinical rotations require students to perform as a member on a clinical team. Students will have a variety of team specific duties assigned to them, including the evaluation and management of patients, and participation in team based educational opportunities. Clinical conferences will focus on student case presentations for diagnostic reasoning and clinical intervention. Conference may include acute care journal club and discussions of selected practice specific topics.

ACNP 793 Practicum in Adult-Gerontology Acute Care III (4 cr.)
This third clinical practicum is the second in a five-term series of clinical rotations focusing on the clinical management of patients, adolescent to geriatric age, with complex chronic, acute and critical illness and injury. Clinical placements are arranged by faculty and will include participation on a variety of interprofessional medical and surgical teams. Clinical rotations require students to perform as a member on a clinical team. Students have a variety of team specific duties assigned to them, including the evaluation and management of patients, and participation in team based educational opportunities. Clinical conferences will focus on student case presentations for diagnostic reasoning and clinical intervention. Conference may include acute care journal club and discussions of selected practice specific topics.

ACNP 794 Practicum in Adult-Gerontology Acute Care IV (4 cr.)
This fourth clinical practicum is the third in a five-term series of clinical rotations focusing on the clinical management of patients, adolescent to geriatric age, with complex chronic, acute and critical illness and injury. Clinical placements are arranged by faculty and will include participation on a variety of interprofessional medical and surgical teams. Clinical rotations require students to perform as a member on a clinical team. Students will have a variety of team specific duties assigned to them, including the evaluation and management of patients, and participation in team based educational opportunities. Clinical conferences will focus on student case presentations for diagnostic reasoning and clinical intervention. Conference may include acute care journal club and discussions of selected practice specific topics.

ACNP 795 Practicum in Adult-Gerontology Acute Care V (4 cr.)
This clinical practicum continues a series of clinical rotations focusing on the clinical management of patients, adolescent to geriatric age, with complex chronic, acute and critical illness and injury. Clinical placements are arranged by faculty and will include participation on a variety of interprofessional medical and surgical teams. Clinical rotations require students to perform as a member on a clinical team. Students

have a variety of team specific duties assigned to them, including the evaluation and management of patients, and participation in team based educational opportunities. Clinical conferences will focus on student case presentations for diagnostic reasoning and clinical intervention. Conferences may include acute care journal club and discussions of selected practice specific topics.

ACNP 796 Practicum in Adult-Gerontology Acute Care VI (4 cr.)
This final clinical practicum completes a series of clinical rotations focusing on the clinical management of patients, adolescent to geriatric age, with complex chronic, acute and critical illness and injury. Clinical placements are arranged by faculty and will include participation on a variety of interprofessional medical and surgical teams. Clinical rotations require students to perform as a member on a clinical team. Students have a variety of team specific duties assigned to them, including the evaluation and management of patients, and participation in team based educational opportunities. Clinical conferences will focus on student case presentations for diagnostic reasoning and clinical intervention. Conferences may include acute care journal club and discussions of selected practice specific topics.

FNP 714 Health Promotion & Health Protection (3 cr.)
This course emphasizes assessment and management of health promotion and protection of individuals, families, and communities throughout the lifespan. Students will examine evidence-based strategies and theoretical frameworks for optimal health outcomes. Students will also practice techniques for addressing these concepts in a clinical setting.

FNP 730 Professional Development for the Family Nurse Practitioner (2 cr.)
The purpose of this course is to explore various aspects of professional development related to be a career as a family nurse practitioner, providing students with necessary resources.

FNP 740 Applied Clinical Reasoning (3 cr.)
This course focuses on diagnostic reasoning for family nurse practitioners in the context of assessment and management of acute primary care health problems across the lifespan. Application of the process for clinical decision-making (i.e., hypothesis formulation and hypothesis testing) is done using common primary care health problems.

FNP 741 Family Primary Care Management I (4 cr.)
This course is the first of a four-course series which focuses on management of acute and common chronic health problems of children, adults (including the elderly), and families encountered in primary care settings. An evidence-based approach, guided by theoretical considerations, current research, national guidelines, and clinical expertise will provide the framework for the course.

FNP 742 Family Primary Care Management II (3 cr.)
This is the second in a four-course series which focuses on management of acute and common chronic health problems of children, adults (including the elderly), and families encountered in the primary care settings. An evidence-based approach, guided by theoretical considerations, current research, national guidelines, and clinical expertise will provide the framework for the course.

FNP 743 Family Primary Care Management III (3 cr.)
This is the third in a four-course series which focuses on management of acute and common chronic health problems of children, adults (including the elderly), and families encountered in the primary care settings. An evidence-based approach, guided by theoretical considerations, current research, national guidelines, and clinical expertise will provide the framework for the course.

FNP 744 Family Primary Care Management IV (3 cr.)
This is the fourth in a series of four sequential courses that focus on the diagnosis and management of acute and chronic health problems commonly encountered in the primary care settings. The framework for this course is an evidence-based approach of patient care across the lifespan focusing on the role of the advanced practice nurse.

FNP 781 Diagnostic & Procedures I (1 cr.)
FNP 781 the first of a two-quarter series introducing students to a range of diagnostic skills and procedures commonly used in a primary care setting. Utilizing a mixture of didactic and lab sessions, students will practice procedural and decision-making skills required for management of urgent and emergent patient illnesses and injuries.

FNP 782 Diagnostic & Procedures II (3 cr.)
FNP 782 is the second of a two-quarter series introducing students to a range of diagnostic skills and procedures commonly used in a primary care setting. Utilizing a mixture of didactic and lab sessions, students will practice procedural and decision-making skills required for management of urgent and emergent patient illnesses and injuries.

FNP 791 Practicum in Family Primary Care Management I (3 cr.)
FNP 791 is the first of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management.

The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 792 Practicum in Family Primary Care Management II (3 cr.)
FNP 792 is the second of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 793 Practicum in Family Primary Care Management III (3 cr.)
FNP 793 is the third of a seven-quarter series of series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 794 Practicum in Family Primary Care Management IV (3 cr.)
FNP 794 is the fourth of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 795 Practicum in Family Primary Care Management V (4 cr.)
FNP 795 is the fifth of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 796 Practicum in Family Primary Care Management VI (6 cr.)
FNP 796 is the sixth of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

FNP 797 Practicum in Family Primary Care Management VII (6 cr.)
FNP 797 is the seventh of a seven-quarter series of clinical practicum and seminar courses that will provide the experiential base for independent practice as a family nurse practitioner. During this series the student will build their competencies from beginner to entry professional level. In conjunction with the FNP 721 series of courses, it builds the knowledge foundation covering clinical care management. The seminars will facilitate the reflection, synthesis and integration of program coursework and clinical experience.

HSOL 540 Creating Healthy Systems and Nurse Wellbeing (3 cr.)
This course will examine the overall health of U.S. Nurses, and their workplaces. Students will explore factors that contribute to how the health of American nurses often being worse than that of the general population and multilevel solutions to this problem. Organizational attributes that contribute to nurse and staff wellbeing will be discussed.

HSOL 541 Navigating Complexity and Chaos (3 cr.)
This course will examine the change in thinking, approach, and outcomes when comparing a linear view of improvement with a complexity science approach. Ecological and atomistic fallacies and their impact on multilevel system analysis and planning will be discussed. Discussions will guide an understanding of dynamic systems, fractals, and the interrelation of complexity and chaos to understand systems.

HSOL 542 Healthcare Operations: The intersection of quality, regulations, law, and ethics (3 cr.)
This course will discuss the micro and macro challenges managers face when operationalizing policy and practice in any setting. A focus on how leaders can bring all the pieces of operations together successfully while navigating human resources, culture, operations, law and regulations while influencing organizational design and strategy influence quality, safety and costs of care and the patient experience.

HSOL 543 Health Policy and Economics (3 cr.)
This course will provide an overview of healthcare policy at the state and national level, and provide a foundation for

evaluating its impact on health outcomes. Social determinants of health and its impact on access to healthcare services, variations in the quality of those services will be discussed.

HSOL 544 Project Management: Leading projects to successful outcomes (3 cr.)
This course will discuss various process improvement and change management tools utilized by healthcare organizations to improve care. Students will enhance their intrapreneurship skills through the balanced use of design thinking, motivational techniques, risk taking, knowledge sharing, and empowerment.

HSOL 545 Leading Interprofessional Patient Centered Teams (2 cr.)
This course introduces the student to the competencies for interprofessional collaboration and discuss the history of interprofessional education and collaboration as well as barriers. The nature and potential sources of growing interprofessional conflict occurring within the context of care will be explored. Students will learn how to successfully build and manage interprofessional teams.

HSOL 546 Organizational Communication (3 cr.)
In this course, students will learn an advanced understanding of how communication and workplace relationships influence organizational culture, team productivity and managerial effectiveness. A focus will be on professional communication skills in writing through organizing, thinking critically, and communicating ideas and information in documents and presentations.

NAP 730 Scientific Underpinnings for Nurse Anesthesia Practice (1 cr.)
This course is designed as an appraisal of selected scientific topics that are foundational to the specialty of nurse anesthesia. An emphasis is placed on concepts of inorganic and organic chemistry, biochemistry, and physics related to the delivery of anesthesia in the clinical setting.

NAP 731 Anesthesia Pharmacology I (4 cr.)
This is the first course in a 2-course series designed to provide the nurse anesthesia student with a thorough understanding of the basic science of pharmacology. The primary focus will be on topics that are essential to current anesthesia practice. These include pharmacodynamics, pharmacokinetics, pharmacotherapeutics and toxicology, and pharmacogenetics.

NAP 732 Anesthesia Pharmacology II (2 cr.)
This is the second course in a 2-course series designed to provide the nurse anesthesia student with a thorough understanding of the basic science of pharmacology. The primary focus will be on topics that are essential to current anesthesia practice. These include pharmacodynamics, pharmacokinetics, pharmacotherapeutics and toxicology, and pharmacogenetics.

NAP 733 Fundamentals of Anesthesia Practice I (4 cr.)
This is the first of two courses that introduces the student to core concepts of anesthesia practice. The focus is on the principles of airway management, the use of specialized equipment, and the application of anesthesia pharmacology. Students will have an opportunity to practice an array of anesthesia skills and begin to develop critical thinking in a high-fidelity setting.

NAP 734 Fundamentals of Anesthesia Practice II (4 cr.)
This is the second of two courses that expands upon core concepts of anesthesia practice. The focus is on the principles of preoperative patient evaluation, intraoperative management, advanced anesthesia techniques and the application of anesthesia pharmacology to clinical scenarios. Students will have an opportunity to practice an array of anesthesia skills and develop clinical reasoning in a high-fidelity setting.

NAP 735 Anesthesia for Surgical Procedures (4 cr.)
The focus of this course is the application of core anesthesia concepts to diverse patient populations undergoing surgeries and medically related procedures. This course emphasizes the assessment, planning and anesthetic management for commonly performed procedures. Relevant literature will be reviewed to apply best practices to clinical scenarios encountered by the nurse anesthetist.

NAP 736 Anesthesia for Advanced Procedures (3 cr.)
This course integrates knowledge of core anesthesia concepts with physiology and pathophysiology to the management of patients undergoing complex surgical procedures. The course will focus on the anesthesia implications of patients undergoing cardiothoracic, vascular, neurosurgical, organ transplant, and major abdominal procedures. Relevant literature will be reviewed to apply best practices to the management of these advanced procedures.

NAP 737 Anesthesia for Specialty Practice (3 cr.)
This course applies core principles of anesthesia to the specialized techniques and management of pediatric, obstetric and trauma populations. Relevant anatomy, physiology, pathophysiology, co-morbid conditions, and procedures common to these specialty populations are examined. In addition, pertinent literature will be utilized to highlight current trends in the anesthesia management of these specialty cases.

NAP 738 Anesthesia & Co-Existing Disease (2 cr.)

This course will expand on concepts of pathophysiology and the related anesthesia implications. A case-based approach allows the students to integrate knowledge of anesthesia principles, anesthesia pharmacology, and comorbid conditions for the perioperative management of patients with selected disorders. Students will formulate and evaluate evidenced-based approaches to anesthesia management for patients with various pathophysiologic conditions.

NAP 739 Regional Anesthesia Techniques (2 cr.)
This course introduces the student to the techniques of peripheral nerve blocks for surgical anesthesia and post-operative pain management. This course expands on knowledge of human anatomy and pharmacology to provide a multimodal approach to acute and chronic pain management. Students will develop hands-on skills for performing a variety of regional anesthetic blocks. The content includes ultrasound and nerve stimulator techniques utilized in the administration of peripheral nerve blocks.

NAP 740 Nurse Anesthesia Seminar (1-2 cr.)
This seminar series expands the students' understanding of nurse anesthesia practice and the nurse anesthesia profession. The series will emphasize assessment of comprehensive theoretical knowledge, clinical correlation, and the professional role of the nurse anesthetist.

NAP 780 Applied Pathophysiology for Nurse Anesthesia (3 cr.)
This course provides an in-depth review of the pathophysiology and perioperative management of patients with selected complex, major organ system disease.

NAP 790A Clinical Practicum in Nurse Anesthesia (3 cr.)
Throughout this clinical practicum series, the student will integrate fundamental nurse anesthesia knowledge and skills into clinical practice. The student, with instruction, will relate these basic concepts to the provision of safe, patient-centered care along the entire perianesthesia continuum.

NAP 790B Advanced Clinical Practicum in Nurse Anesthesia (1-8 cr.)
Throughout this clinical practicum series, the student will integrate fundamental nurse anesthesia knowledge and skills into clinical practice. The student, with guidance, will apply these basic concepts in the provision of patient care along the entire perianesthesia continuum.

NMID 730 Fundamentals of Teaching Nurse-Midwifery Students (3 cr.)
This course is designed as an overview of fundamental principles of classroom and clinical teaching applied to the education of nurse-midwives. Content will include principles of adult learning, teaching and learning styles, clinical supervision and mentoring, competency-based education and evaluation of learning. Required for all nurse-midwifery students.

NMID 731 Fundamentals of Obstetric & Gynecologic Ultrasound (2 cr.)
This course is designed for the student or medical professional who has limited or no formal training in obstetric and gynecologic ultrasound. This course examines normal and sonographic anatomy as well as common abnormalities.

NMID 740 Perinatal Physiology (3 cr.)
The purpose of this course is to facilitate an understanding of the physiological mechanisms relevant to the maternal experience, fetal life, and the neonatal period. This course will focus primarily on the physiology of normal maternal/fetal/newborn issues and cover some common complications and pathology.

NMID 741 Foundations of Midwifery Care During the Reproductive Cycle (2 cr.)
This course focuses on the analysis of research, theory, models, and standards that provide the foundation of midwifery care. Psychosocial and cultural aspects of health care are emphasized. Attention is given to the psychosocial development of the childbearing family, the historical development of health care and health care policy for individuals, midwifery history, and the midwifery and ethical models of care.

NMID 742 Primary Care for Nurse-Midwives (4 cr.)
This course is designed for graduate students in the nurse-midwifery specialty and focuses upon non-reproductive primary care management. Diagnostic reasoning is used to differentiate common problems. An evidence-based approach to primary care drawing upon theories, research, clinical knowledge and national standards will be used to develop therapeutic plans for common non-reproductive health problems of adolescent and adult individuals.

NMID 743 Perinatal Pharmacology (2 cr.)
The purpose of this course is to synthesize pharmacologic principles and knowledge of drugs commonly encountered and prescribed by nurse-midwives. The management of drugs during pregnancy, labor, postnatal and neonatal period are addressed.

NMID 750 Reproductive Health Care Management (3 cr.)
This course focuses upon the application of research, theory, and knowledge relevant to the common health needs and psychosocial experiences of individuals in relation to their reproductive physiology. This course provides the basic knowledge and practice essential for the advanced practice nurse in the area of reproductive health.

NMID 751 Antepartum & Postpartum Management I (3 cr.)
This course focuses on the critical analysis and application of current theory, knowledge, and research relevant to the primary management of childbearing individuals and their families during the antepartum and postpartum periods. Particular attention is given to pregnancy physiology and to acquiring a thorough understanding of normal processes. Identification of populations at greatest risk for adverse outcomes and of specific health care needs and beliefs of culturally diverse populations are addressed. Risk assessment, education, health promotion, and ethical considerations of the childbearing family are also emphasized.

NMID 752 Antepartum & Postpartum Management II (2 cr.)
This second management course focuses on pregnancy pathophysiology and the critical analysis and application of current theory, knowledge, and research relevant to the primary management of childbearing individuals and their families during the antepartum and postpartum periods. Identification of populations at greatest risk for adverse outcomes and of specific health care needs and beliefs of culturally diverse populations are addressed. Risk assessment, education, health promotion, and ethical considerations of the childbearing family experiencing complications are explored.

NMID 753 Nurse-Midwifery Management in the Intrapartum Period (4 cr.)
This course is a critical analysis and application of current theory, research, and knowledge relevant to the nurse-midwifery management of the pregnant individual's care in the intrapartum period. The current nurse-midwifery and obstetric management models and the analysis of factors which influence these models are systematically evaluated.

NMID 754 Advanced Reproductive Health Care Management (3 cr.)
This course focuses upon the application of research, theory and knowledge relevant to complex health needs and psychosocial experiences of individuals in relation to their reproductive physiology.

NMID 755 Management of the Newborn (2 cr.)
A critical analysis and application of current research, theory, and knowledge relevant to the nurse-midwifery/nurse practitioner management of the normal newborn.

NMID 790G Practicum in Advanced Women's Health Care (2 cr.)
This practicum is designed to build upon management and clinical skills in antepartum, postpartum, and gynecological areas for an advanced practicum experience. The course is intended to be taught over several terms, with an individualized plan of study designed in conjunction with the course coordinator. The site in which the practicum is conducted will reflect the student's and course coordinator's joint assessment of learning needs in preparation for the advanced practicum placement.

NMID 790P Primary Care Practicum for Nurse-Midwives (2 cr.)
This course focuses upon clinical application of content from NMID 742: Primary Care for Nurse- Midwives. Students will be assigned to primary care clinical sites with preceptor guidance and faculty supervision. Clinical seminars will be used to synthesize theoretical and research perspectives with clinical aspects of patient care using material from student experiences. This is a required course for nurse-midwifery students.

NMID 791 Practicum in Antepartum & Postpartum Management (2 cr.)
This course focuses on clinical application of content from NMID 751: Antepartum and Postpartum Management. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 792 Practicum in Nurse-Midwifery Management of the Intrapartum Period (2 cr.)
This course focuses on clinical application of content from NMID 753: Nurse-Midwifery Management of the Intrapartum Period. Students will continue to have clinical experiences in antepartum management while adding clinical experience in inpatient assessment, intrapartum and postpartum management. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 793 Practicum in Nurse-Midwifery Management I (3 cr.)
This course focuses on clinical application of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 794 Practicum in Nurse-Midwifery Management II (2 cr.)
This course focuses on clinical application of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 795 Practicum in Nurse-Midwifery Management III (2 cr.)
This course focuses on clinical application of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 796 Practicum in Nurse-Midwifery Management IV (2 cr.)
This course focuses on clinical application synthesis of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 797 Practicum in Nurse-Midwifery Management V (2 cr.)
This course focuses on clinical application synthesis of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 798 Practicum in Nurse-Midwifery Management VI (3 cr.)
This course focuses on clinical application synthesis of content from previous nurse-midwifery management courses. Emphasis is on essential content basic to the provision of skilled nurse-midwifery care as well as advancing skills. Continuing discussion of care for culturally diverse populations as well as care for persons with low-literacy skills is included. Students will have weekly clinical experiences in various sites under the direct supervision of clinical faculty or community preceptors. Seminars will be used to synthesize and integrate theoretical and research perspectives with the clinical aspects of patient care.

NMID 799 Advanced Practicum in Nurse-Midwifery Management (9 cr.)
This advanced practicum experience provides an opportunity for the student to explore professional issues related to nurse-midwifery in an off-campus site. This experience is designed to develop breadth and depth in complex clinical decision making essential for beginning nurse-midwifery practice.

NRS 201 Individual Educational Review (1-2 cr.)
This course is designed for students whose LOA was triggered by academic probation who return from LOA to assure student readiness to progress in the program. Focus of the course will be safety in the clinical environment.

NRS 210 Foundations of Health Assessment and Health Promotion (9 cr.)
This course introduces the learner to framework of the OCNE curriculum. The emphasis on health promotion across the life span includes learning about self-care as well as patient health practices. To support self and patient health practices, students learn to access evidence about healthy lifestyle patterns and risk factors for disease/illness, apply growth and development theory, interview patients in a culturally sensitive manner, identify members of an interprofessional team, and use reflective thinking about their practice as nursing students. Includes classroom and clinical learning experiences. The clinical portion of the course includes practice with selected core nursing skills.

NRS 211 Foundations of Nursing in Chronic Illness I (6 cr.)
This course expands on assessment and common interventions with the focus on patients with chronic illnesses common across the life span in multiple ethnic groups. The patient's and family's "lived experience" of the condition is explored. Clinical practice guidelines and research evidence are used to guide clinical judgments in the care of individuals

with chronic conditions. Multidisciplinary team roles and responsibilities are explored in the context of delivering safe, high-quality health care to individuals with chronic conditions (includes practical and legal aspects of delegation). Cultural, ethical, legal, and health care delivery issues are explored through case scenarios and clinical practice. The course includes classroom and clinical learning experiences. The clinical portion of the course includes practice with selected core nursing skills.

NRS 212 Foundations of Nursing in Acute Care I (6 cr.)
This course introduces the learner to assessment and common interventions (including relevant technical procedures) for care of patients across the lifespan who require acute care, including normal childbirth. Disease/illness trajectories and their translation into clinical practice guidelines and/or standard procedures are considered in relation to their impact on providing culturally sensitive, client-centered care. Includes classroom and clinical learning experiences.

NRS 230 Clinical Pharmacology I (3 cr.)
This course introduces the theoretical background that enables students to provide safe and effective care related to drugs and natural products to persons throughout the lifespan. It includes the foundational concepts of principles of pharmacology, nonopioid analgesics, and antibiotics, as well as additional classes of drugs. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, understanding of pharmacokinetics and pharmacodynamics, developmental physiologic considerations, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. Drugs are studied by therapeutic or pharmacological class using an organized framework.

NRS 231 Clinical Pharmacology II (3 cr.)
This sequel to Clinical Pharmacology I continues to provide the theoretical background that enables students to provide safe and effective nursing care related to drugs and natural products to persons throughout the lifespan. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of information, monitoring and evaluating the effectiveness of drug therapy, teaching persons from diverse populations regarding safe and effective use of drugs and natural products, intervening to increase therapeutic benefits and reduce potential negative effects, and communicating appropriately with other health professionals regarding drug therapy. The course addresses additional classes of drugs and related natural products not contained in Clinical Pharmacology I.

NRS 232 Pathophysiological Processes I (3 cr.)
This course introduces pathophysiological processes that contribute to many different disease states across the lifespan and human responses to those processes. It includes the foundational concepts of cellular adaptation, injury, and death; inflammation and tissue healing; fluid and electrolyte imbalances; and physiologic response to stressors, as well as additional pathophysiological processes. Students will learn to make selective clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes.

NRS 233 Pathophysiological Processes II (3 cr.)
This sequel to Pathophysiological Processes I continues to explore Pathophysiological processes that contribute to disease states across the lifespan and human responses to those processes. Students will learn to make selected clinical decisions in the context of nursing regarding using current, reliable sources of pathophysiology information, selecting and interpreting focused nursing assessments based on knowledge of pathophysiological processes, teaching persons from diverse populations regarding pathophysiological processes, and communicating with other health professionals regarding pathophysiological processes. The course addresses additional pathophysiological processes not contained in Pathophysiological Processes I.

NRS 300 Individual Educational Review (1-2 cr.)
This course is designed for students whose LOA was triggered by academic probation who return from LOA to assure student readiness to progress in the program. Focus of the course will be safety in the clinical environment.

NRS 305 Reading and Conference (1-3 cr.)
Reading and conference

NRS 309 Practicum (1-3 cr.)
Practicum

NRS 313 Concepts in Health Promotion throughout the Lifespan (3 cr.)
This course explores concepts of holistic health promotion influences on health behaviors while introducing learners to the Oregon Consortium of Nursing Education (OCNE) nursing competency framework. The emphasis on health promotion across the lifespan includes learning about self-care as well as

patient health practices. Learners expand on health promotion concepts and apply evidence about health promotion and health education considerations to patient-nurse interactions. Learners will explore health behavior change and tools related to health and motivational enhancement.

NRS 314 Chronic Illness and End of Life (3 cr.)
This course introduces the learner to the Oregon Consortium in Nursing Education (OCNE) competencies and student resources at OHSU. The focus is the nursing care for people living with chronic and end stage illness and their families. Concepts to be examined include the impact of chronic and end-stage disease processes on the individual and family developmental stages, as well as spiritual and cultural beliefs. Ethical and legal issues related to individuals and their families living with chronic disease include advocacy, self-determination, autonomy and health equity, the impact on chronic illness on individuals, as well as the well-being of caregivers, staff, and self, will be explored.

NRS 321 Foundations of Nursing in Chronic Illness II and End of Life (9 cr.)
This course builds on Foundations of Nursing in Chronic Illness I. Chronic Illness II expands the student's knowledge related to family care giving, symptom management and end of life concepts. These concepts are a major focus and basis for nursing interventions with patients and families. Ethical issues related to advocacy, self-determination, and autonomy are explored. Complex skills associated with the assessment and management of concurrent illnesses and conditions are developed within the context of client and family preferences and needs. Skills related to enhancing communication and collaboration as a member of an interdisciplinary team are further explored. Exemplars include patients with chronic mental illness and addictions as well as other chronic conditions and disabilities affecting functional status and family relationships. The course includes classroom and clinical learning experiences. (Can follow Nursing in Acute Care II and End-of-Life).

NRS 322 Foundations of Nursing in Acute Care II and End of Life (9 cr.)
This course builds on Nursing in Acute Care I, focusing on more complex and/or unstable patient care conditions, some of which may result in death. These patient care conditions require strong noticing and rapid decision-making skills. Evidence base is used to support appropriate focused assessments, and effective, efficient nursing interventions. Life span and developmental factors, cultural variables, and legal aspects of care frame the ethical decision-making employed in patient choices for treatment or palliative care for disorders with an acute trajectory. Case scenarios incorporate prioritizing care needs, delegation and supervision, and family and patient teaching for either discharge planning or end-of-life care. Exemplars include acute conditions affecting multiple body systems. Includes classroom and clinical learning experiences.

NRS 331 Nursing in Chronic Illness and End-of-Life Care (9 cr.)
This course begins with assessment and common interventions (including technical procedures) for patients with chronic illnesses common across the life span in multiple diverse populations. Concepts of chronic illness are a major focus including the patient's and family's lived experience of the condition, care giving, symptom management, and end-of-life issues as the basis for nursing interventions with patients and families. Cultural, legal, ethical, and health care delivery issues related to advocacy, self-determination, autonomy and social determinants of health are explored through case scenarios and clinical practice. Skills associated with the assessment and management of concurrent illnesses and conditions as a member of an interprofessional team are developed within the context of clinical practice guidelines, research evidence, and patient and family preferences and needs. Exemplars include patients with chronic physical and mental illness and disabilities affecting functional status and family relationships. Includes classroom and clinical learning experiences.

NRS 332 Nursing in Acute Care Across the Lifespan (12 cr.)
This course focuses on the application of clinical judgment in the care of culturally diverse patients across the lifespan who are experiencing prevalent acute conditions or acute exacerbations of chronic conditions that may be complex, rapidly-changing, and incorporate multiple biological systems. Legal and ethical aspects of care are incorporated to guide evidence-based, patient-centered nursing care. Includes classroom and clinical learning experiences.

NRS 401 Individual Educational Review (1-2 cr.)
This course is designed for students whose LOA was triggered by academic probation who return from LOA to assure student readiness to progress in the program. Focus of the course will be safety in the clinical environment.

NRS 405 Reading and Conference (1-6 cr.)
Reading and conference

NRS 407 Seminar (1-6 cr.)
Seminar

NRS 409 Practicum (1-6 cr.)
Practicum

NRS 410 Population Health Practice (9 cr.)

This course is intended to prepare nurses in the practice of community and population health. Students are given an opportunity to apply population health principles to address health disparities. Community and population health are examined as a synthesis of knowledge from nursing, public health, the social sciences and epidemiology. Students analyze prevalent population health issues, explore population interventions and participate with the community as client to promote quality, culturally proficient, and preventive healthcare. Frameworks of community and public health are examined and community assessments are conducted using a systems approach that promotes health literacy and embraces cultural diversity.

NRS 410A Population Health Practice (3 cr.)
This course, along with NRS 410B, is intended to prepare registered nurses in the practice of community and public health nursing enabling them to contribute to the overall public health mission of assuring conditions conducive to health. It examines community and public health nursing as a synthesis of knowledge from nursing, public health, and the social sciences, and complements concurrent epidemiology and statistics courses. Students will examine frameworks of community and public health; analyze prevalent population-based health issues, including chronic disease and disability; conduct community assessments; and explore population-based interventions. Exemplars will be selected from priority concern areas as well as local population needs. Includes classroom, independent, and clinical experiences.

NRS 410B Population Health Practice (6 cr.)
This course, along with NRS 410A, is intended to prepare registered nurses in the practice of community and public health nursing enabling them to contribute to the overall public health mission of assuring conditions conducive to health. It examines community and public health nursing as a synthesis of knowledge from nursing, public health, and the social sciences, and complements concurrent epidemiology and statistics courses. Students will examine frameworks of community and public health; analyze prevalent population-based health issues, including chronic disease and disability; conduct community assessments; and explore population-based interventions. Exemplars will be selected from priority concern areas as well as local population needs. Includes classroom, independent, and clinical experiences.

NRS 411 Epidemiology (3 cr.)
Epidemiology is the study of the distribution and determinants of death, disease and disability in human populations. In this course, students will learn the basic principles and methods of epidemiologic investigation; examine studies of the distribution and dynamic behavior of health determinants; understand etiologic factors, modes of transmission, and pathogenesis; and explore concepts in social epidemiology. Applying epidemiologic case studies, students will engage systems and complex thinking to evaluate programs and policies in population health and nursing.

NRS 412 Nursing Leadership in Health Care Delivery Systems (10 cr.)
This course requires the learner to consider his/her role as a leader in nursing and in health care. Focus is on the knowledge and skills required to improve health care delivery and client outcomes from a systems perspective. Historical, legal, ethical, regulatory, socio-cultural, economic, and political factors influencing the health care system and professional nursing practice provide context to the learning. Students will understand how nursing leadership influences client care and practice within the broader health care delivery system. This course includes classroom and clinical learning experiences.

NRS 412A Nursing Leadership in Health Care Delivery Systems (3-5 cr.)
This course requires the learner to consider their role as a leader in nursing and in health care. Focus is on the knowledge and skills required to improve health care delivery and client outcomes from a systems perspective. Historical, legal, ethical, regulatory, socio-cultural, economic, and political factors influencing the health care system and professional nursing practice provide context to the learning. Students will understand how nursing leadership influences client care and practice within the broader health care delivery system. This course includes classroom and clinical learning experiences. 5 credits for RNBS (3 credits for accelerated baccalaureate students)

Prerequisites: Admission to Baccalaureate Completion Program for RNs(RNBS) or Accelerated Baccalaureate Program.

Accelerated Baccalaureate students: NRS 210, NRS 230, NRS 231, NRS 232, NRS 233 and NRS 331

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baccalaureate students).

Prerequisites: Admission to Baccalaureate Completion Program for RNs(RNBS) or Accelerated Baccalaureate Program.

Accelerated Baccalaureate students: NRS 210, NRS 230, NRS 231, NRS 232, NRS 233 and NRS 331. RNBS: prior or concurrent NRS 412A

NRS 412RA Professional Nursing in Health Policy and Health Care Delivery Systems (3 cr.)
The course examines the role of the nurse as a leader in nursing and in health care. Focus is on the role of the professional nurse in the broader healthcare delivery system. Legal, ethical, regulatory, and political factors influencing patient/population health provide context to the learning.

NRS 412RB Nursing Leadership: Health Care Culture and Collaborative Practice (3 cr.)
This course examines the role of the professional nurse within health care teams as well as within the broader health care system. Emphasis placed on influence of the nurse on health care culture, interprofessional team dynamics, and overall quality and safety of complex systems. Examination of concepts such as complex adaptive systems, Just Culture, interprofessional collaboration and accountability.

NRS 412RC Nursing Leadership & Management in Healthcare (3 cr.)
In this course the learner considers their role as a leader in nursing and in complex health care systems. Students will examine nursing leadership competencies, behaviors, and skills including their own leadership and followership styles. Self-reflection on leadership behaviors and strategies for professional development will be explored.

NRS 412RD Nursing Leadership Practice in Quality Improvement (3 cr.)
In this course the learner will analyze their role as a leader in nursing and in health care. Focus is on the knowledge and skills required to improve health care delivery and client outcomes from quality and safely perspectives. The learner will lead, collaborate, and implement a quality improvement project (QIP) in a healthcare organizational system. The clinical prepares the learner for their role as a baccalaureate prepared registered nurse in any health care setting.

NRS 413 Introduction to Research for Nurses (2 cr.)
This course builds on foundational learning activities in evidence-based practice and research. In the course, students will deepen their understanding of evidence based practice, the research process, and the nursing contribution as they learn to refine research questions and access, critique, and translate evidence into practice.

NRS 424 Integrative Practicum I (9 cr.)
This course is designed to formalize the clinical judgments, knowledge and skills necessary in safe, registered nurse practice. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing work world in a selected setting, balancing demands of job and lifelong learner. Analysis and reflection throughout the clinical experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar, self-directed study and clinical experience.

NRS 424J Exploration of Transition to Practice (1 cr.)
This course builds on prior learning and emphasizes development of in-depth theoretical understanding of transition to nursing practice. Faculty will guide students to consider topics most relevant to entry into nursing practice. Students will independently explore pertinent readings. Teaching learning activity may occur through online sources, face to face seminars, and clinical learning experiences.

NRS 424K Focus on Successful Student Transition (1 cr.)
This course prepares the post AAS learner for transition into the senior year of the baccalaureate nursing program at OHSU. The focus is on evidence-based practice, effective literature searching, and scholarly written communication.

NRS 425 Integrative Practicum II (9 cr.)
A continuation of NRS 224 or 424, this course provides the student with the opportunity for developing deeper understanding of and competence in the nursing care of the selected population. Faculty/Clinical Teaching Associate/Student Triad Model provides a context that allows the student to experience the nursing work world in a selected setting, balancing demands of job and lifelong learner. The course is designed to help the learner in the transition to the work world. Emphasis is on the health care needs of the selected population, and the associated systems and policy issues. Includes seminar, self-directed study and clinical learning experiences.

NRS 425J Exploration of Transition to Practice (1 cr.)
This course builds on prior learning from NRS 424J and emphasizes review of pertinent research and identification of entry level practice implications. Topic researched from NRS 424J will be further developed with practice recommendations explored and disseminated. Teaching learning activities may occur through on-line sources, face-to-face seminars and clinical learning experiences.

NRS 426A Integrative Practicum (6 cr.)

This course provides the student with the opportunity for developing deeper understanding of and competence in the nursing care of selected populations. Practice experiences are included and require the student to integrate new practice related knowledge and skills. The course is designed to help the learner in the transition to the work world and enhance the practice of the experienced nurses. Emphasis is on the health care needs of selected populations, and the associated systems and policy issues. Includes asynchronous online theory activities, self-directed study, and experiential practice.

NRS 427 Practice Integration (3 cr.)
This course is the first course of the Baccalaureate Completion Program for RNs. The course provides students a transition into baccalaureate nursing education. Students will examine aspects of their nursing practice and set professional goals. They will also gain experience using available evidence to inform their practice. The course is structured around the following Oregon Consortium for Nursing Education fundamentals: Evidence-Based Practice, Leadership, Relationship Centered Care and Care and Clinical Judgement. Forum discussions, Reflective Portfolios, Case Studies, and other course assignments address each of these fundamentals.

NRS 435 Integrated Practicum (12 cr.)
This course is designed to formalize the clinical judgments, knowledge and skills necessary for practice of nursing with a selected population. The experience focuses on complex clinical judgments, interdisciplinary team functioning and leadership, and the development of habits for lifelong learning. Faculty/ preceptor/ student analysis and reflection throughout the experience provide the student with evaluative criteria against which they can judge their own performance and develop a practice framework. Includes seminar and precepted clinical learning experience.

NRS 440 Ambulatory Care Nursing and Professional Practice (5 cr.)
Today's nurse practices within the dynamic evolution of the traditional healthcare landscape. Healthcare is shifting away from episodic, downstream, hospital-based acute care, into care provided within diverse ambulatory care settings, using a health prevention and promotion primary care model, focused on population health, quality of care and value of services. This course intends to introduce students to nursing practice within this evolving and dynamic ambulatory care environment. First evaluated and defined is the impact of high functioning ambulatory care on healthcare cost, outcomes and experience. Next, focus is given to the value of the nursing professional role within the ambulatory care delivery model, as well as within collaborative partnerships. Students examine ambulatory models of care and initiatives through which nurses lead the coordination and management of complex and at-risk populations, those with chronic diseases and those transitioning between healthcare settings. Next students examine the role technology and informatics have on the ability of the ambulatory nurse to deliver and increase access to healthcare. Finally, barriers and opportunities to fully optimize the ambulatory nursing role are evaluated.

NRS 441 Value Informed Nursing Practice (5 cr.)
This course intends to prepare nurses to advocate for and lead value-informed nursing practice. Students examine core principles of value within healthcare systems including why payment models are transitioning from fee for service to value based. The concept of "Value Informed Nursing Practice" is examined though historical, economic, financial, environmental, scope of practice, and ethical foundations. Also analyzed are the historical, current, and future algorithms and methods used to determine and measure the value and impact of the nursing role itself. Students have the opportunity to research, create, propose and advocate for an innovative, nurse-driven patient or community facing intervention aimed at reducing waste and improving the value of care.

NRS 442 Advanced Topics in Palliative and End of Life Nursing Care (5 cr.)
This course equips students with the information and skills needed to provide high-quality palliative and end of life care across diverse practice settings, addressing the assessment and management of contemporary challenges in palliative care. The course delves deeply into the impact of chronic and end-stage disease processes on individuals across various developmental stages and prepares students to assess and address the physical, psychological, social, and spiritual needs of patients and families, navigate complex ethical and legal issues, and collaborate effectively in interprofessional teams. Additionally, students will be able to provide culturally sensitive care, promote clear communication, and uphold the philosophy and principles of hospice and palliative care across diverse healthcare settings.

NURS 505 Reading and Conference (1-4 cr.)
Students will need to make arrangements with faculty on a one-on-one basis.

NURS 508 Concepts for Advanced Nursing Practice: Ethics (2 cr.)
This course focuses on current and emerging advanced nursing practice roles and the ethical aspects of inter-professional practice, scholarship, and health care delivery.

NURS 509 Advanced Clinical Practicum (1-6 cr.)

Course description to be developed between faculty and student taking this clinical practicum. Open number for practicum hours to be counted in program of study for academic credit. Does not replace required practicum in specialty program of study. Used for special situations in which a student requires additional practicum hours to be counted for academic credit.

NURS 509A Focus in Population Health (3 cr.)
This practicum course develops and refines a student's competency in managing: a caseload, a population, an educational program, or health services. Within one of these contexts, the student takes a role in initiating, managing, or sustaining, collaborative efforts related to a change and or improvement in services. This practicum may be taken for variable credit.

NURS 509AA Practicum in Teaching (1-3 cr.)
This course provides students with the opportunity to design, implement, and evaluate a variety of learning experiences appropriate to the course environment and outcomes expected of the designated learners. Opportunity to use several different teaching modalities will be provided, including classroom, seminar, clinical, laboratory and on-line.

NURS 509BB Focus in Psychiatric Mental Health (3 cr.)
This course develops and refines a student's competence in managing an educational program or health services with psychiatric mental health clients, their families and/or community. Within one of these contexts, the student takes a role in initiating, managing, or sustaining collaborative efforts related to a change and/or improvement in services.

NURS 509GG Focus in Adult Geriatric Health (3 cr.)
This course develops and refines a student's competence in managing an education program or health services with adult geriatric clients, their families and/or community. Within one of these contexts, the student takes a role in initiating, managing, or sustaining collaborative efforts related to a change and/or improvement in services.

NURS 509MC Practicum/Capstone: Leading and Managing Change (2-3 cr.)
The Graduate Capstone Practicum is a culminating experience designed to provide students with an opportunity to apply nursing leadership knowledge and skills acquired throughout the program of study focusing on the competencies of the graduate level nurse leader. The experience will involve a project related to a professional nursing phenomenon of interest such as, but not limited to: direct patient care issue, quality/process improvement, healthcare policy, or nursing administration.

NURS 510 Health Assessment & Health Promotion in Vulnerable Populations (3 cr.)
This course focuses on development of health assessment skills that inform clinical decision making and planning for clinical care. Students practice health assessment skills and use specific case-based exercises to hone their utilization and interpretation of diagnostic tests. Students are guided in how to make in-depth assessments of clients experiencing a variety of conditions specific to their clinical focus.

NURS 511 Current Issues in Pharmacology: A Pathophysiologic Approach (4 cr.)
This course builds on knowledge of the basic principles of pharmacology to establish a knowledge base for nurse educators to provide safe and effective teaching related to the clinical use of drugs commonly used in a variety of settings for a range of pathophysiological problems. Principles of pharmacokinetics, pharmacodynamics, and pharmacotherapeutics of selected categories of drugs are reviewed along with the associated relevant pathophysiology. Using a case study approach, students will learn how to engage learners and to facilitate their retention of specific pharmacological content, and the achievement of outcomes related to the application of medication related knowledge and skills.

NURS 512 Leadership and Organizational Behavior (3 cr.)
This course will describe the general history and evolution of management theory and practice and how organizational behavior developed into its own field. Students will learn how to apply these theories to guide and direct an organization successfully.

NURS 513 Concepts of Advanced Nursing Knowledge & Leadership (2-3 cr.)
The purpose of this course is to explore core concepts that are essential to performing current and emerging roles in healthcare delivery and design. Advanced nursing knowledge and higher-level leadership skills for improving health outcomes are examined. Select content in organizational systems leadership and quality improvement; informatics and technology, health policy, population health, and professional role issues will be introduced. This course is offered for variable credit.

NURS 515A Advanced Physiology & Pathophysiology I (3 cr.)
This foundational course uses physiological concepts as a basis for understanding pathophysiological processes across the life span. Pathophysiological processes are selected from those commonly encountered in advanced nursing practice and include both disease processes and non-disease-based processes (e.g., pain). Emphasis is placed on the physiological and pathophysiological base for managing clinical problems.

A working knowledge of undergraduate anatomy, physiology, and pathophysiology is assumed.

NURS 515B Advanced Physiology & Pathophysiology II (3 cr.)
This sequel to NURS 515 A continues to emphasize in-depth knowledge of physiologic concepts essential for advanced practice nursing. Physiologic processes related to the central and peripheral (including autonomic) nervous systems; cardiovascular, respiratory, renal, digestive, endocrine and reproductive systems; hematopoiesis, innate and adaptive immunity, microcirculation, neural control of skeletal, cardiac and smooth muscle, and acid-base balance are discussed at biochemical, cellular, organ, system, and organism levels. Exemplar pathologies will be utilized throughout the course to demonstrate disruption of normal physiology in disease. Emphasis is on integration of concepts as a basis for understanding interrelationships among complex physiologic and pathophysiologic processes, throughout the lifespan. This course prepares students for more detailed exploration of pathophysiology in future clinical management courses.

NURS 517A Advanced Health & Physical Assessment (3 cr.)
This course focuses on development of clinical decision-making skills in the process of health assessment across the lifespan. The course provides advanced theory in the assessment of an individual within the context of the family, psycho-social cultural considerations, functional ability, presence of health risk factors and developmental stage. The concepts of diagnostic reasoning and differential diagnosis will be introduced. The lab component includes hands-on advanced practice health assessment skills.

NURS 517B Advanced Health & Physical Assessment Lab (1 cr.)
This lab will apply theory content related to advanced physical assessment and clinical decision-making skills in the process of health assessment across the lifespan. The lab provides skill development necessary for the assessment of an individual within the context of the family, psychosocial-cultural considerations, functional ability, presence of health risk factors and developmental stage. Application of physical exam concepts related to diagnostic reasoning and differential diagnosis will be reviewed.

NURS 519 Principles of Pharmacology & Prescribing for Advanced Practice Registered Nurses (4 cr.)
This course applies the principles of pharmacology, including pharmacogenomics, pharmacokinetics and pharmacodynamics, by analysis of common drug classes prescribed by advanced practice nurses across the life span. Factors influencing successful therapy such as effectiveness, safety, acceptability, cost, genetic/environmental influences, alternative regimens, and patient behaviors will be integrated into patient decision-making exercises and discussion. This course is part one in a series which will be further met by specialty specific pharmacology course(s).

NURS 524 Evaluating Evidence (3 cr.)
This course focuses on the evaluation of evidence for health care practice and the care environment. Emphasis is placed on the skills needed to identify, access, and critique the various forms of evidence that inform practice decision. Focus is primarily on students emerging abilities to identify strengths, limitations, and gaps in evidence as well as generate questions.

NURS 538 Emerging Trends in Nursing Education Curriculum (2 cr.)
This course addresses philosophical and pedagogical approaches to developing curriculum in academic and service settings. Emphasis is given to developing and analyzing curriculum that is congruent with institutional and program mission, philosophy and goals, professional standards, and the needs and expectations of an educational institution's community of interest. Essential components of curriculum evaluation will be introduced and legal, ethical and accreditation issues related to curriculum design and content will be explored.

NURS 546A Clarifying Racism - Institutional Racism (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on issues of institutional racism in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on institutional racism. Students will develop communication techniques for reflecting about issues of institutional racism. This may include writing, speaking, listening, and other applicable skills.

NURS 546B Clarifying Racism - Foundational Concepts of Bias (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on foundational concepts attributed to bias in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on foundational concepts attributed to bias. Students will develop communication techniques for reflecting about foundational concepts attributed to bias. This may include writing, speaking, listening, and other applicable skills.

NURS 546C Clarifying Racism - Unequal Treatment (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on issues of race and racism in unequal treatment in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on unequal treatment through the lens of racism. Students will develop communication techniques for reflecting about issues of unequal treatment related to race and racism. This may include writing, speaking, listening, and other applicable skills.

NURS 547 Introduction to Epidemiology & Population Health (3 cr.)
In this course, students will gain introductory knowledge of epidemiologic principles and their practical application to health and health care. Students will apply epidemiologic methods to answer questions about the distribution of disease, death, disability and risk exposures in populations. The concepts of rates, risk, study design, and causal relationships between exposures and health outcomes as they pertain to select populations will be introduced.

NURS 551 Complex Health Conditions (3 cr.)
In this course, students will gain advanced knowledge in understanding and intervening with complex health conditions related to individuals and populations in their practice area the nursing care of older adults experiencing common geriatric syndromes. This course will provide opportunities for students to apply this knowledge in the context of educating current and future healthcare professionals, through case-based learning activities.

NURS 552 Understanding & Intervening in Common Mental Health Problems of Elders (3 cr.)
This course focuses on the major mental health issues faces by older adults and their family caregivers: dementia, delirium, depression. Other mental health issues that affect the older population are also covered including: substance abuse and issues at end-of-life. The theoretical and research base for mental health nursing interventions will be presented. Emphasis will be placed on helping nurses in research and advanced practice understand the specific dynamics of the older adult's mental health concerns and develop interventions, programs, or research tailored to meet the needs of older individuals and their family members or caregivers across a variety of settings.

NURS 554A Inclusive Education Practices 1 (2 cr.)
This course provides learners the opportunity to explore factors that influence creating a welcoming academic learning environment where all can succeed and thrive. The science of learning and facilitators and barriers to learning will be reviewed. Topics explored will include: belonging, mindset, trauma-informed educational practices, and accommodations for learners with disabilities. This course provides learners an authentic service-learning opportunity to work with the nursing educational community on an identified project to improve inclusion and belonging. This course will focus on stakeholder engagement and problem assessment and initial search for solutions.

NURS 554B Inclusive Education Practices 2 (1 cr.)
This course provides learners an authentic service-learning opportunity to work with the nursing educational community on an identified project to improve inclusion and belonging. Opportunities will be provided to propose recommended strategies to selected nursing education practices to improve inclusion and to support stakeholders in implementing change.

NURS 559 Understanding Social Determinants of Health (3 cr.)
This course focuses on the social determinants of health and their influence on health outcomes. Factors that contribute to development of vulnerable populations and health disparities will be explored. Opportunities to appraise existing available tools and resources for learning and communicating about social determinants of health and health disparities for a focus population will be provided. Implications for nursing education, research, practice, and policy development are explored.

NURS 561 Best Practices in Teaching Nursing (4 cr.)
This course emphasizes best practices in the science of learning as applied to performance-based curriculum models and instructional design. Students will review best practices in higher education and teaching for healthcare professionals and have the opportunity to define educational goals and align the goals with assessment of learning, learning activities, and selection of instructional strategies. Students will have the opportunity to gain skills in designing and conducting learning activities and guiding learners using active learning strategies.

NURS 562 Learning Assessment in Nursing (2 cr.)
This course introduces approaches, processes, and tools that can be used to assess learning especially in a practice discipline. Topics include: design of performance assessment tasks, development of instructional rubrics to aid student learning and to guide performance assessment, test development and analysis, issues in grading achievement and course/program evaluation.

NURS 563 Simulation in Nursing Education (3 cr.)

Students will be introduced to the theoretical basis for simulation-based learning experiences as well as the standards of best practice in simulation education. Current simulation pedagogies will be explored. Opportunities to participate in realistic (high fidelity) simulation will be integrated, using scenario development, debriefing and assessment strategies. Emphasis will be placed on simulations that include clinical judgment, teamwork, interprofessional communication and resource management.

NURS 564 Clinical Teaching (3 cr.)
This course examines a variety of clinical teaching models. It emphasizes the design of inclusive clinical learning experiences, drawing on studies of human learning, novice-expert development, clinical judgment, and clinical education. Students will explore the role responsibilities and essential competencies of various members of the clinical education team. Issues in clinical education, both in academic and practice settings, will be investigated.

NURS 580 Budget & Finance for the Nurse Leader (3 cr.)
This course provides a framework for understanding financial management for the nurse leader. The core concepts of revenue streams, workflows, budgets and budget variances will be examined. Financial data driven decision making will be a focus.

NURS 591 Online Teaching (3 cr.)
This elective course introduces online teaching techniques and technologies. Students will explore applications of e-learning in a variety of settings and discuss how constructivist theories apply to online teaching and learning. A practical, hands-on approach to apply a wide variety of online tools as well as a blend of synchronous and asynchronous components will be used to model and effective online course.

NURS 601 Research Practicum (1-6 cr.)
The research practicum provides the doctoral student with an opportunity to work with a faculty mentor on some aspect of the faculty member's research related to nursing science. This course may be repeated for credit.

NURS 603 Dissertation (1-9 cr.)
The development and conduct of dissertation research.

NURS 605 Reading and Conference (1-9 cr.)
The reading and conference provides an opportunity for an in depth review and synthesis of a specified body of literature under the guidance of a faculty of record. A description of the content area and the objectives for the reading and conference must be developed with the faculty of record and filed with the student's program of study.

NURS 607D Dissertation Seminar (1 cr.)
This seminar focuses on support and facilitating student progress through the stages of dissertation work. Students, doctoral candidates who have successfully completed the first two years of the program, will be involved in a forum for scholarly exchange and learning regarding the completion of the dissertation, manuscript preparation and dissemination, and professional development in preparation for a postdoctoral or faculty role. The seminar will complement the student-Chair relationship. Doctoral students are required to enroll in dissertation seminar while conducting the dissertation.

NURS 607H Selected Topics in Nursing (1-3 cr.)
This course introduces students to concepts underlying new competencies (e.g. evidence-based practice, leadership, delegation), and research related to teaching these new competencies. Seminar also provides the opportunity to explore elements of the faculty role and rights and responsibilities of members of an academic community. Students and faculty will negotiate a set of relevant concepts for the seminar for a given term.

NURS 609 Practicum in Teaching (1-9 cr.)
Teaching practicum

NURS 609AA Practicum in Teaching (1-3 cr.)
This course provides students with the opportunity to design, implement, and evaluate a variety of learning experiences appropriate to the course environment and outcomes expected of the designated learners. Opportunity to use several different teaching modalities will be provided, including classroom, seminar, clinical, laboratory and on-line.

NURS 613 Research Design & Methods (3 cr.)
This course focuses on issues related to research design and sampling methods. Students will learn how to select research designs and sampling methods based on research questions and/or hypotheses, conceptual frameworks/theories, and philosophical assumptions. Specific content will address methodological rigor and ethical concerns.

NURS 614 Philosophical & Theoretical Foundations for Health Science Research (3 cr.)
This course focuses on the philosophical and theoretical foundations for health science research. Student will discuss a diverse array of philosophies that have informed scientific inquiry. The course will also introduce students to conceptual and theoretical perspectives that frame health science research, with particular attention to middle-range theories. Philosophical underpinnings of selected theories will be explored and their implications for research examined.

NURS 618 Inquiry and Proposal Development I (2 cr.)

This first course in a 2-course series focuses on students' initial development of a research proposal. Students will define an area of interest and find, organize, and use scientific literature to develop a logical foundation for their research study. Through searches for theories and studies pertinent to their own research area of interest, students will identify strengths and weaknesses in earlier studies and organize and synthesize the knowledge base to reveal patterns and gaps that lead to new research questions. The course will also require students to read and critique grant proposals.

NURS 619 Inquiry and Proposal Development II (2 cr.)
The second course in a 2-course series focuses on development of a research proposal through the integration of theory, methods and knowledge gained in PhD course work. Students will gain skills in grant writing and grantsmanship and learn an overview of funding mechanisms and the funding process (including NRSAs).

NURS 620 Responsible Conduct of Research & Scholarship (2 cr.)
This course focuses on review and discussion of various aspects of Responsible Conduct of Research and Scholarship (RCRS). Students will learn to conduct quality research as the foundation for a strong professional reputation as a researcher. RCRS involves the awareness and application of established professional norms and ethical principles in the performance of all activities related to scientific research.

NURS 630 Advanced Measurement (3 cr.)
This course focuses on advanced measurement. Students will learn theories and psychometric assumptions integral to selecting and developing measures. Students will acquire in-depth understanding of common approaches to reliability including Classical Test Theory, Generalizability Theory, and Item Response Theory, and the applicability of each to measurement in health research. Students will develop skill in evaluating items, examining and interpreting reliability, and selecting approaches to establish validity, including content, criterion-related, and construct validity. This course also will cover exploratory and confirmatory factor analysis and multi-trait/multi-method matrix approaches to validity testing.

NURS 632 Mixed Methods Research (3 cr.)
This course focuses on different strategies used in inquiry that employ quantitative research, qualitative research, and the intentional integration thereof. Specific emphasis is placed on identifying and bridging diverse philosophical positions that often underlie mixed methods research and on data integration as a means to maximize the strengths of the qualitative and quantitative approaches and minimize their weaknesses. The importance of varied methodological and disciplinary expertise to the success of mixed methods teams will also be explored.

NURS 633 Pro seminar (1 cr.)
This pro-seminar focuses on introduction and exposure of students to active programs of research within the School and across OHSU in the areas of 1) Integrative Biobehavioral Research and 2) Health Equity Research. Students will learn about the breadth of ongoing interprofessional/team science in these areas through faculty presentations, assigned articles, and informal, facilitated discussions.

NURS 635 Literature Review, Synthesis & Inquiry (2 cr.)
This course focuses on skill development for conducting a literature review and synthesis, then using this synthesis to support the formulation of questions for future research. These skills are foundational for the research process, including writing successful grant applications and publications. Students will expand their knowledge and expertise in the literature of their areas of interest, and describe a) the current state of the science, and b) gaps in knowledge that should be addressed to inform research questions that will importantly advance science within the student's area of interest.

NURS 636 Inquiry & Proposal Development (2 cr.)
This course focuses on initial development of a research proposal through the integration of knowledge in theories, methodologies, and literature. Students will gain skills in reviewing/critiquing grant proposals and learn an overview of funding mechanisms and the funding process.

NURS 638 Emerging Trends in Nursing Education Curriculum (2 cr.)
This course addresses philosophical and pedagogical approaches to developing curriculum in academic and service settings. Emphasis is given to developing and analyzing curriculum that is congruent with institutional and program mission, philosophy and goals, professional standards, and the needs and expectations of an educational institution's community of interest. Essential components of curriculum evaluation will be introduced and legal, ethical and accreditation issues related to curriculum design and content will be explored.

NURS 639 Evaluating Evidence for Nursing Practice (3 cr.)
This course will focus on the development of skills for systematically accessing and evaluating nursing literature. Nursing literature will be analyzed for its conceptual roots, clarify and consistency, and logical development, as well as its relevance and significance for nursing practice.

NURS 641 Applied Health Statistics I: Descriptive, Associative & Comparative Statistics (4 cr.)

This first course in a 3-course series focuses on a conceptual understanding of analysis and interpretation of descriptive and inferential statistics. Students will develop skills in the performance and interpretation of common statistical tests, including tests of central tendency and dispersion, correlations, chi-square tests, t-tests and analysis of variance, and develop an understanding of when particular tests should be employed. This course will also cover sample size estimation/power calculation procedures for common hypothesis testing. Applying health statistics as part of a logical argument is emphasized as opposed to detailed knowledge of the underlying mathematics.

NURS 642 Applied Health Statistics II: Generalized Linear Modeling (3 cr.)
This second course in a 3-course series focuses on conceptual understanding of generalized linear modeling. Students will develop skills in the performance and interpretation of techniques such as multivariate linear, logistic, gamma and negative binomial regression, and develop an understanding of when particular approaches should be employed. This course also will cover common functions within generalized linear modeling such as tests of interaction, moderator and mediator, as well as multilevel modeling, handling of complex sampling designs and common approaches to model selection. Applying health statistics as part of a logical argument is emphasized in this course as opposed to detailed knowledge of the underlying mathematics.

NURS 643 Applied Health Statistics III: Longitudinal Design & Analysis (3 cr.)
In this advanced course on applied health statistics, students will develop a conceptual understanding of common design issues in longitudinal research and the classic and emerging approaches to the analysis of longitudinal data. Students will develop skills in the performance and interpretation of techniques such as multilevel, mixture, growth, estimation and survival modeling, and develop an understanding of when particular approaches should be employed. This course will also cover handling of common longitudinal data issues such as dropout, missing data and time-dependent confounding.

NURS 644 Qualitative Research I (3 cr.)
This course focuses on qualitative research methodologies. Students will develop conceptual understanding of various qualitative research methods, and basics of data collection, analysis, and interpretation of qualitative data in health science research. Students also gain practical knowledge and skills for conducting qualitative research congruent with the philosophical assumptions underlying the research methodology. Methodological rigor and ethical concerns particular to qualitative methods will also be discussed.

NURS 645 Qualitative Research II (4 cr.)
This second course in a 2-course series focuses on a comprehensive examination of qualitative research methods. Students will develop in-depth understanding and advanced skills to design and conduct rigorous qualitative research. Students also will have opportunities to explore various tools that are supportive to qualitative data collection and analysis such as qualitative data analysis software. Emphasis is placed on approaches and considerations unique to qualitative research methodologies used in nursing and other health sciences.

NURS 647 Introduction to Epidemiology & Population Health (3 cr.)
In this course, students will gain introductory knowledge of epidemiologic principles and their practical application to health and health care. Students will apply epidemiologic methods to answer questions about the distribution of disease, death, disability and risk exposures in populations. The concepts of rates, risk, study design, and causal relationships between exposures and health outcomes as they pertain to select populations will be introduced.

NURS 648 Introduction to Structural Equation Modeling (3 cr.)
In this advanced course on quantitative methods and analysis, students will build on earlier statistics courses by developing a conceptual understanding of the structural equation modeling framework from both a frequentist and Bayesian perspective. Students will develop skills in interpreting and fitting a range of SEM's including path analysis, confirmatory factor analysis, and models that include both structural and measurement components. Special topics will include modeling longitudinal data, handling missing data, and conducting power analysis with the Monte Carlo capabilities of Mplus. Students will receive instruction and practice using Mplus software to achieve these goals. The link between quantitative research methodologies and statistical strategies will be emphasized.

NURS 651 Complex Health Conditions (3 cr.)
In this course, students will gain advanced knowledge in understanding and intervening with complex health conditions related to individuals and populations in their practice area the nursing care of older adults experiencing common geriatric syndromes. This course will provide opportunities for students to apply this knowledge in the context of educating current and future healthcare professionals through case-based learning activities

NURS 652 Understanding & Intervening in Common Mental Health Problems of Elders (3 cr.)
This course focuses on the major mental health issues faced by older adults and their family caregivers: dementia,

delirium, depression. Other mental health issues that affect the older population are also covered, including: substance abuse and issues at end-of-life. The theoretical and research base for mental health nursing interventions will be presented. Emphasis will be placed on helping nurses in research and advanced practice understand the specific dynamics of the older adult's mental health concerns and develop interventions, programs, or research tailored to meet the needs of older individuals and their family members or caregivers across a variety of settings.

NURS 653 Health Care Systems for Vulnerable Populations (3 cr.)
This course focuses on health services delivery to populations at particular risk for [health care disparities] OR [poor health status and limited access to care]. Students will gain advanced knowledge regarding how services are organized, accessed, delivered, and financed. Topics will include philosophical underpinnings that influence health care policies, privately and publicly delivered systems, and current issues and trends in care delivery in the U.S. Students will have opportunities to apply course concepts to a specific vulnerable population.

NURS 659 Understanding Social Determinants of Health (3 cr.)
This course focuses on the social determinants of health and their influence on health outcomes. Factors that contribute to development of vulnerable populations and health disparities will be explored. Opportunities to appraise existing available tools and resources for learning and communicating about social determinants of health and health disparities for a focus population will be provided. Implications for nursing education, research, practice, and policy development are explored.

NURS 661 Best Practices in Teaching Nursing (4 cr.)
This course emphasizes best practices in the science of learning as applied to performance-based curriculum models and instructional design. Students will review best practices in higher education and teaching for healthcare professionals and have the opportunity to define educational goals and align the goals with assessment of learning, learning activities, and selection of instructional strategies. Students will have the opportunity to gain skills in designing and conducting learning activities and guiding learners using active learning strategies.

NURS 662 Learning Assessment in Nursing (2 cr.)
This course introduces approaches, processes, and tools that can be used to assess learning especially in a practice discipline. Topics include: design of performance assessment tasks, development of instructional rubrics to aid student learning and to guide performance assessment, test development and analysis, issues in grading achievement and course/program evaluation.

NURS 663 Simulation in Nursing Education (3 cr.)
Students will be introduced to the theoretical basis for simulation-based learning experiences as well as the standards of best practice in simulation education. Current simulation pedagogies will be explored. Opportunities to participate in realistic (high fidelity) simulation will be integrated, using scenario development, debriefing and assessment strategies. Emphasis will be placed on simulations that include clinical judgment, teamwork, interprofessional communication and resource management.

NURS 664 Clinical Teaching (3 cr.)
This course examines a variety of clinical teaching models. It emphasizes the design of inclusive clinical learning experiences, drawing on studies of human learning, novice-expert development, clinical judgment, and clinical education. Students will explore the role responsibilities and essential competencies of various members of the clinical education team. Issues in clinical education, both in academic and practice settings, will be investigated.

NURS 671 Introduction to Health Equity Research (3 cr.)
This course focuses on inquiry related to reducing health disparities. Students will learn about common approaches to health equity research including community-engaged approaches to understand social determinants of health and improve health outcomes among rural, disabled and other disadvantaged populations; interventions to increase health literacy/numeracy; and research addressing gender differences in health outcomes. Emphasis will be placed on unique philosophical/theoretical underpinnings, practical approaches and policy implications related to health equity research.

NURS 672A Applied Health Equity Research (3 cr.)
This course focuses on advanced theoretical and practical knowledge and content expertise necessary for the conduct of health equity research. Students will gain in-depth exposure to a variety of elements required to carry out health equity research including advanced application of health equity theory, community participation, study design, data collection and analysis, and disseminating findings to multiple stakeholders including the community and policy makers. Students are expected to gain breadth of knowledge related to published research in a substantive research area. Emphasis also will be placed on developing leadership in interdisciplinary/team science.

NURS 672B Applied Health Equity Research (3 cr.)
This final course in applied health equity research integrates content across the series. Students will demonstrate their

breadth of knowledge by preparing a research proposal and will be exposed to a variety of strategies for disseminating research findings to multiple stakeholders. Emphasis also will be placed on developing leadership in interdisciplinary/team science.

NURS 673 Introduction to Integrative Biobehavioral Research (3 cr.)
In this introductory course on inquiry related to the full scope of human responses to illness and intervention based on the interrelationships of psychosocial, behavioral and biological processes, students will learn about common approaches to biobehavioral research including multidisciplinary research on physical activity and nutrition, physical functioning, symptoms, biomarkers and palliative care within individuals and families. Emphasis will be placed on unique philosophical/theoretical underpinnings, practical approaches and policy implications related to integrative biobehavioral research.

NURS 674A Applied Integrative Biobehavioral Research (3 cr.)
This first course in a 2-course series builds upon content introduced in NURS 673 and focuses on advanced theoretical and practical knowledge and content expertise necessary for the conduct of integrative biobehavioral research. Students will gain in depth exposure to a variety of elements required to carry out biobehavioral research including advanced application of behavioral and biological theories, study design, and biological and behavioral data collection and integration. Students are expected to gain breadth of knowledge related to published research in a substantive research area. Emphasis will also be placed on identifying core elements of strong interdisciplinary/team science.

NURS 674B Applied Integrative Biobehavioral Research (3 cr.)
This final course in applied integrative biobehavioral research integrates content across the series. Students will demonstrate their breadth of knowledge by preparing a research proposal and will be exposed to a variety of strategies for disseminating research findings to multiple stakeholders. Emphasis also will be placed on developing leadership in interdisciplinary/team science.

NURS 675 Policy & Leadership (3 cr.)
This course focuses on the concepts of leadership and followership in the conduct of research. Students will understand the evolving roles and responsibilities of a scholar in relationship to influencing policy at institutional and governmental levels based on knowledge of the relevant evidence.

NURS 680 Dissemination of Scholarship (1 cr.)
The purpose of this course is to provide graduate nursing students with the understanding and skills they need to recognize avenues for scholarly dissemination. To demonstrate their learning, students will identify appropriate conferences and journals for dissemination of their work, critique similar publications, locate author guidelines, and prepare an abstract for submission. Students in this course will also explore topics related to publication including ethics, career opportunities in academia, and the goals of scholarly inquiry.

NURS 691 Online Teaching (3 cr.)
This elective course introduces online teaching techniques and technologies. Students will explore applications of e-learning in a variety of settings and discuss how constructivist theories apply to online teaching and learning. A practical, hands-on approach to apply a wide variety of online tools as well as a blend of synchronous and asynchronous components will be used to model and effective online course.

NURS 702 Concepts for Doctoral Nursing Practice (1 cr.)
In this course, competencies for doctoral nursing practice will be examined for application in the clinical residency. Ethical principles will be analyzed and extended to the conduct of clinical inquiry in doctoral nursing practice.

NURS 703 DNP Project (1-3 cr.)
Students independently conduct a DNP project within the advanced nursing practice specialty. The project is developed within the context of the students' DNP Practicum experience and requires students to integrate delivery and evaluation of practice.

NURS 703A DNP Project Planning (2 cr.)
The purpose of this course is to plan an improvement science project for the terminal DNP benchmark. Students will work with their chairperson to design a project to meet program expectations. Students will write a project proposal and plan for Institutional Review Board (IRB) submission. At the end of this course students will submit the project proposal for faculty approval. Students move to the implementation and evaluation of the project in 703B. Alternate projects in program development/evaluation or centered on policy may be developed with chairperson approval.

NURS 703B DNP Project (1-5 cr.)
The purpose of this course is to implement, evaluate and disseminate an approved DNP Project within the advanced nursing practice specialty. The project takes place within the context of the student's practicum experience. It provides an experience that can be the foundation for future clinical scholarship.

NURS 705 Reading and Conference (1-3 cr.)
The reading and conference provide an opportunity for an in-depth review and synthesis of a specified body of literature under the guidance of a faculty of record. A description of the content area and the objectives for the reading and conference must be developed with the faculty of record and filed with the student's program of study.

NURS 709 Advanced Nursing Practice Practicum (1-5 cr.)
Students integrate practice experiences within an advanced nursing practice specialty/population with the scholarly activities of their Doctor of Nursing Practice (DNP) program of study. The student works toward a synthesis and integration of program competencies within the context of the student's chosen population.

NURS 715 Methods of Clinical Inquiry (3 cr.)
Strategies for selecting clinical inquiry designs and analyzes for answering practice questions are applied to students selected inquiry questions. Students analyze and interpret qualitative and quantitative data.

NURS 720 Roles, Responsibilities & Concepts for Advanced Practice Nursing (3 cr.)
The purpose of this course is to explore key components that are essential to advanced practice nursing roles. Ethical and legal responsibilities are emphasized related to patient outcomes and safety. Professionalism, scope of practice, leadership and policy are explored within advanced practice work environments.

NURS 721 Ethics for Advanced Practice Nursing (3 cr.)
The purpose of this course is to explore ethical theories and principles and how they influence various dimensions of health care. Professional responsibilities of advanced practice registered nurses in clinical care, research, and healthcare organizations will be explored. Ethical principles are applied to delivery of care, scholarly inquiry, and leadership.

NURS 722 Informatics & Technology for Healthcare (3 cr.)
The purpose of this course is to explore the organization, collection, analysis and dissemination of information in health care. This course will serve as an introduction to clinical informatics with a focus on the electronic health record, telemedicine, and technological approaches to quality and safety. Ethical and legal dimensions of healthcare technology are examined. Students learn the basics of database design for the collection and analysis of patient outcomes data.

NURS 723 Critical Appraisal of Evidence (3 cr.)
This course is the first in a series to prepare students to deliver patient-centered care that emphasizes evidence-based practice (EBP) and quality improvement (QI). The purpose of this course is to introduce students to the different types of evidence and the critical appraisal process. The philosophical underpinnings and methods of knowledge development are introduced. Descriptive and inferential statistics are reviewed. The key steps in the EBP process and its importance to advanced nursing practice are highlighted.

NURS 724 Application of Evidence to Clinical Practice (3 cr.)
This course is the second in a series to prepare students to deliver patient-centered care that emphasizes evidence-based practice (EBP) and quality improvement (QI). The purpose of this course is to provide students with an opportunity to evaluate evidence in the context of practice-based decision making. Students will identify a clinical problem and apply the clinical inquiry process. The focus is on critiquing evidence for practical application. Implementation science, models and change theories used in translating knowledge into action are highlighted.

NURS 725 Improvement Science (3 cr.)
This course is the third in a series to prepare students to deliver patient-centered care that emphasizes evidence-based practice (EBP) and quality improvement (QI) focusing on improvement science (IS) methodologies. The purpose of this course is to utilize improvement science to eliminate discrepancies between identified standards of care and clinical practice. Students will build core competencies in improvement science, including appraising the IS literature, differentiating IS methodologies, testing and measuring change, displaying findings and participating in continuous improvement activities.

NURS 726 Health Care Economics & Finance (3 cr.)
This course will provide the foundation for assessing the financial impact of practice policies, procedures, and initiatives when meeting the health needs of the practice populations. The course will emphasize principles of economics and finance, the analysis of practice quality, and cost effectiveness of care. Strategies to design effective and realistic care delivery or practice initiatives are examined.

NURS 727 Leadership & Health Systems (3 cr.)
This course is designed for the practical and integrated application of leadership and system theories to real-world problems in healthcare. Upon completion of this course, students will be prepared to understand and engage in healthcare leadership at the entry level.

NURS 728 Health Policy & Population Health (3 cr.)
This course will provide an overview of healthcare policy at the state and national level, and provide a foundation for evaluating its impact on health outcomes. Basic principles of population health will be explored within the context of epidemiology, determinants of health, health equity, and health disparities. Social, political, legal, and economic factors

are used to understand the relationship between health policy and population health.

NURS 746A Clarifying Racism - Institutional Racism (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on issues of institutional racism in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on institutional racism. Students will develop communication techniques for reflecting about issues of institutional racism. This may include writing, speaking, listening, and other applicable skills.

NURS 746B Clarifying Racism - Foundational Concepts of Bias (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on foundational concepts attributed to bias in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on foundational concepts attributed to bias. Students will develop communication techniques for reflecting about foundational concepts attributed to bias. This may include writing, speaking, listening, and other applicable skills.

NURS 746C Clarifying Racism - Unequal Treatment (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in health care. This course will provide students with evidence-based knowledge on issues of race and racism in unequal treatment in health care settings, with a focus on best practices for providing health care for diverse individuals and groups. The course will cover a variety of readings on unequal treatment through the lens of racism. Students will develop communication techniques for reflecting about issues of unequal treatment related to race and racism. This may include writing, speaking, listening, and other applicable skills.

NURS 780 Essentials of Affirming LGBTQ+ Health (3 cr.)
This course will offer learners the opportunity to explore the unique components of providing competent and affirming care to members of the LGBTQ+ community. A series of case studies will be utilized to engage learners in scenarios with HIV +, transgender male, transgender female, non-binary, women who have sex with women (WSW), and men who have sex with men (MSM) identified patients.

NURS 788 Exploring Social Justice and Bias in Healthcare through Scholarly Personal Narrative (3 cr.)
This course is designed to look at healthcare and science from a scholarly personal narrative perspective. The scholarly personal narrative (SPN) process has gained traction within the academic sciences because it incorporates a critical evaluation of topics and yet combines a personal perspective when reflecting upon our interpretation of the topic no matter the scholarly domain the topic is derived. It is because we all bring our own lens to any given topic that this work is crucial to understanding ourselves and others. Our experiences in life mold our perspectives in both positive and negative ways. When we explore both new and old topics, we inherently bring our perspectives with us and this can shape how we few any given issue. This concept has its foundation in a post-modern perspective of the world. We see the world from our vantage point. Exploring topics from our perspectives and bias when brought forward into a safe and exploratory environment, one can learn to see how our "way of seeing things" can be informed by the manner in which other "see things." Through dialogue and discussion, we can learn to see the manner in which others live their own experiences through their interpretation of a topic.

NURS 790 DNP Practicum (1-6 cr.)
This clinical course allows the post-master's DNP student to synthesize and integrate program competencies in varied clinical settings. Students can seek clinical experiences that allow exploration of new skills for clinical practice, as well as experiences with teaching, policy making, or leadership. Mentored experiences in this course allow the student to demonstrate acquired knowledge in the DNP program as well as expand their experiences to meet the DNP Essentials.

PMH 750 Foundations for PMHNP Practice (2 cr.)
This purpose of this course is to build a foundation for practice as a psychiatric-mental health nurse practitioner. The role of the PMHNP is discussed with attention to development of the role, ethics and legal considerations. Health promotion is emphasized as a critical aspect of care delivery in mental health practice. Students will analyze the social and contextual factors that have influenced mental health systems of care, psychiatric-mental health nursing and inform current practice.

PMH 752 Psychiatric Interviewing (3 cr.)
The purpose of this course is for students to build a foundational knowledge of psychiatric interviewing. Students will utilize strategies to conduct comprehensive psychiatric evaluation and develop therapeutic relationships central to

the work of the PMHNP. Simulation lab will be used to demonstrate and practice skills.

PMH 755 Professional Practice for PMHNP (1 cr.)
This purpose of this course is to engage in interprofessional learning about community mental health systems and policy including legal and ethical issues impacting care. Students participate in campus and community activities related to mental health promotion, advocacy, emerging treatment and models of care. Students appraise and integrate learning using self-reflection. Professional communication skills are developed through presentations and/or other scholarly activities.

PMH 760 Mental Health & Illness Foundations (1 cr.)
The purpose of this course is to build a foundation for practice as a psychiatric mental health nurse practitioner. The role of the PMHNP is discussed with attention to development of the role, ethics and legal considerations. Health promotion is emphasized as a critical aspect of care delivery in mental health practice. Students will analyze the social and contextual factors that have influenced mental health systems of care, psychiatric mental health nursing and inform current practice.

PMH 761 PMHNP Clinical Practice Foundations (2 cr.)
This purpose of this course is to build a foundation for practice as a psychiatric-mental health nurse practitioner. The role of the PMHNP is discussed with attention to development of the role, ethics and legal considerations. Health promotion is emphasized as a critical aspect of care delivery in mental health practice. Students will analyze the social and contextual factors that have influenced mental health systems of care, psychiatric-mental health nursing and inform current practice.

Anticipated topics include: Diagnostic Reasoning, Cultural Diversity/Relativism/Humility in Psychiatry, BPS Model, Screening, Psychopharmoclogy Basics, Outcomes Driven Care, Legal Foundations, and Risk Assessment.

PMH 762 Therapy Foundations (1 cr.)
The purpose of this course is to build a foundation for psychotherapeutic practice as a psychiatric mental health nurse practitioner. Students will analyze, compare and contrast models of human development, personality development, attachment, and family systems. The course examines the tenets of holistic, collaborative, and trauma informed care as students develop a foundational knowledge of therapeutic modalities, group therapy, and basic therapeutic communication skills.

PMH 770 Rural Mental Health for PMHNP (1 cr.)
This course explores issues in providing mental health care across the lifespan to populations residing in rural areas of the US. The epidemiology of mental health and illness in rural areas will be examined, focusing on how this affects the mental health care provider role. Role adaptations, treating urgent and emergent conditions first line, and leadership opportunities will be analyzed with an emphasis on professional interdisciplinary collaboration and working in integrated health care systems.

PMH 771 Assessment & Diagnosis Across the Lifespan for PMHNP (6 cr.)
This purpose of this course is to utilize knowledge of psychopathology, neuroscience, and diagnostic classification to assess, diagnose, evaluate, and document mental health problems and psychiatric disorders across the lifespan for clinical decision making. Diagnostic reasoning is introduced, with attention to social, cultural and systems perspectives. Students learn to select and interpret appropriate standardized measurement tools as part of the assessment process. Communication, education, and collaboration with the client's formal and informal support systems, parents/guardians, family, school, support systems, and the interdisciplinary teams are emphasized.

PMH 772 Intro to Psychotherapy (3 cr.)
This purpose of this course is to provide an overview of theories and models used in individual and group psychotherapy. Students will utilize strategies to develop therapeutic relationships central to the work of the PMHNP. Psychodynamic principles, supportive therapy and behavioral strategies are emphasized. Simulation lab will be used to demonstrate and practice skills.

PMH 773 Psychotherapy & Therapeutic Interventions (5 cr.)
This purpose of this course is for student to implement cognitive behavioral, interpersonal and supportive therapy for diverse populations across the lifespan. Students establish therapy goals, develop treatment plans, and monitor progress for individuals, groups and families with respect to diagnosis, personality, presentation and unique environmental factors. Students incorporate therapeutic interventions that support mental health for children, adolescents, adults and families in comprehensive treatment plans. Students will assess group and family processes toward the development of interventions for groups and families.

PMH 774 Psychopharmacology Across the Lifespan for PMHNP (6 cr.)
The purpose of this course is to provide a foundation in the principles and practices of prescribing psychotropic medications across the lifespan. Students will apply knowledge of neuroanatomical, neurophysiological , pharmacodynamic and pharmacokinetic principles to develop

individualized psychopharmacologic treatment plans across the lifespan. Issues including informed consent, disordered substance use and other risks impacting a diverse patient populations will be explored.

PMH 775 Advanced Intervention and Management for PMHNP (2 cr.)
This purpose of this course is to integrate multiple therapeutic modalities for the provision of mental health care to diverse populations. Students focus on complex care delivery with individuals across the continuum of care. Students design interventions for complex patient presentations including medical and psychiatric co-morbidities and substance use.

PMH 776 Advanced Psychopharmacology: Adults (2 cr.)
This course builds on the principles that were the focus of NURS 574A. Students will analyze and discuss the research and clinical evidence for prescribing psychopharmacologic agents based on target symptoms, neurobiological circuits to which these symptoms can be putatively attributed, and practice guidelines with an emphasis placed on interactive learning via case studies. This course will include the prescription of psychopharmacologic agents for adults with persistent, refractory symptoms; treating patients with comorbid substance abuse issues; and other complex clinical situations.

PMH 777 Seminar in Teaching, Mentoring, and Scholarship (1 cr.)
This is a seminar course with student designed/faculty guided and approved activities to meet selected goal of: (select one)

1. Teaching: Student will participate in didactic instruction related to pedagogy followed by participation alongside faculty in lab or clinical simulation of first year students.
2. Mentoring: Student will participate in didactic instruction related to mentoring followed by formalized mentoring of first or second year students (e.g. mentor proposal development for DNP project related to mentor's completed project)
3. Scholarship: Student will develop a scholarship goal for the term with a specific deliverable for evaluation (e.g. publishable manuscript, improvement project)

PMH 781A Assessment & Diagnosis-PMHNP: Adult (4 cr.)
This purpose of this course is to utilize knowledge of psychopathology, neuroscience, and diagnostic classification to evaluate mental health problems and psychiatric disorders in adults for clinical decision making. Students focus on assessment structure, data gathering, and documentation, as well as diagnostic reasoning and formulation with attention to social and cultural perspectives. Students learn to critically appraise and apply appropriate standardized measurement tools as part of the assessment process. Communication, education, and collaboration are emphasized.

PMH 781B Assessment & Diagnosis-PMHNP: Child/Adolescent (2 cr.)
This purpose of this course is to evaluate mental health problems and psychiatric disorders in childhood and adolescence for clinical decision making. Students focus on biopsychosocial formulation and family systems with attention to social and cultural perspectives. Students learn to evaluate and apply appropriate standardized measurement tools as part of the assessment process. Communication, education, and collaboration are emphasized.

PMH 783 Adult Psychotherapy (3 cr.)
This purpose of this course is for the student to implement selected therapies for the adult and older adult populations. Students establish therapy goals, develop and document comprehensive treatment plans. Students incorporate therapeutic interventions that support mental health in treatment planning and monitor progress with respect to diagnosis, personality, presentation and unique environmental factors.

PMH 785 Child & Family Therapies (3 cr.)
This purpose of this course is for the student to implement selected therapies for adolescents, children, and families. Students establish therapy goals, develop and document comprehensive treatment plans. Students incorporate therapeutic interventions that support mental health in treatment planning and monitor progress with respect to diagnosis, personality, family system, presentation and unique environmental factors.

PMH 790K Adults (1-6 cr.)
This course is the adult clinical practicum and supervision seminar for PMHNP students. Students will synthesize the knowledge and skills they acquire throughout their clinical practicum and this will serve to prepare the student to enact the role of the PMHNP in diverse clinical settings with a variety of psychiatric patient populations. Case presentations will form the basis of supervision. Students will also discuss general issues that arise in their concurrent clinical placements.

PMH 790KC Children & Adolescents (1-6 cr.)
This course is the child & adolescent clinical practicum and supervision seminar for PMHNP students. Students will synthesize the knowledge and skills they acquire throughout their clinical practicum and this will serve to prepare the student to enact the role of the PMHNP in diverse clinical settings with a variety of psychiatric patient populations. Case presentations will form the basis of supervision. Students will

also discuss general issues that arise in their concurrent clinical placements.

PNP 740 The Science of Child Development (3 cr.)
This course introduces students to philosophical models, evolving science, and controversies that informs our understanding of and approach to children, spanning the pediatric spectrum from birth to young adulthood.

PNP 741 Pediatric Assessment & Diagnostics I (3 cr.)
This course introduces students to the unique aspects of pediatric health assessment, physical diagnosis, and technological skills needed used in primary care pediatrics. Students are required to complete either PEARS or PALS certification by the end of the course.

PNP 742 Evaluation & Management: Pediatric Primary Care (4 cr.)
This course introduces students to current evidence and emerging science underlying contemporary approaches to primary care for infants, children, and adolescents. Emphasis is placed on health promotion/protection, disease prevention, screening, and early intervention.

PNP 743 Evaluation & Management: Common Pediatric Conditions (4 cr.)
This course introduces students to current evidence and emerging science underlying contemporary approaches to the assessment and management of common pediatric health conditions, injuries, and diseases. Emphasis is placed on episodic care and identification of the need for referrals/consultations.

PNP 744 Adolescent Health (3 cr.)
This course engages students in the critical analysis and application of current and emerging evidence relevant to the primary care management of the adolescent. Focus is primarily on the promotion of healthy behaviors and risk reduction, management of common health-related conditions, and transition to adult care.

PNP 745 Pediatric Pharmacology (2 cr.)
This course introduces students to the therapeutic principles that inform safe drug therapy in pediatrics across the health care continuum. Emphasis is placed on the unique aspects of pediatric pharmacology, including developmental pharmacology, the interactions and impact of development on pharmacokinetics and –dynamics, and emerging discoveries in pharmaco-genetics/genomics.

PNP 746 Evaluation & Management: Chronic/Specialty Care (3 cr.)
This course introduces advanced practice nursing students to current evidence and emerging science that support contemporary approaches to the assessment and management of common chronic pediatric health conditions and diseases, across the pediatric lifespan and across clinical practice settings.

PNP 747 Pediatric Psychopharmacology & Interventions (2 cr.)
This course provides essential knowledge on the assessment, management, and surveillance of common mental health disorders in pediatric settings for the advanced primary or acute care clinician. Students will analyze clinical assessment data and practice guidelines to guide treatment decisions. Pharmacologic and brief psychotherapeutic interventions will be addressed in the context of working within collaborative, inter-/intra-professional, patient-centered, health care teams.

PNP 748 Evaluation & Management: Pediatric Acute/Complex Care (4 cr.)
This course introduces students to current evidence and emerging science underlying contemporary approaches to the assessment and management of the acutely ill, physiologically unstable, and/or technologically dependent pediatric patient. Emphasis is placed on urgent, critical, and restorative care.

PNP 749 Pediatric Assessment & Diagnostics II (3 cr.)
This course introduces students to advanced pediatric health assessment, pediatric physical diagnosis, and technological skills used in acute/emergency/critical care pediatrics.

PNP 760 Pediatric Clinical Simulated Experiences I (1 cr.)
This second clinical simulation course builds on previous pediatrics clinical and didactic coursework and provides opportunities to enhance, integrate and apply knowledge and skills in the roles of the Pediatric Nurse Practitioner. A series of simulated clinical experiences are individualized to provide students with opportunities to build practical and theoretical depth with children and their caregivers across the health care continuum from wellness through acute and/or critical care. Students are expected to integrate knowledge of disease, advanced physiology and assessment, medical, nursing, and symptom management, in order to provide care across the population age span. Students will apply Pediatric Nurse Practitioner roles in the care of patients and families.

PNP 761 Pediatric Clinical Simulated Experiences II (1 cr.)
This second clinical simulation course builds on previous pediatrics clinical and didactic coursework and provides opportunities to enhance, integrate and apply knowledge and skills in the roles of the Pediatric Nurse Practitioner. A series of simulated clinical experiences are individualized to provide students with opportunities to build practical and theoretical depth with children and their caregivers across the health

care continuum from wellness through acute and/or critical care. Students are expected to integrate knowledge of disease, advanced physiology and assessment, medical, nursing, and symptom management, in order to provide care across the population age span. Students will apply Pediatric Nurse Practitioner roles in the care of patients and families.

PNP 790 PNP Clinical Practicum - Primary Care I (3 cr.)
This first, beginning-level clinical course provides advanced practice nursing students the opportunity to apply concepts from Pediatric Primary Care I didactic coursework: 1) directly in pediatric primary care clinical practice settings, and 2) indirectly through guided case studies. Emphasis is on developing advanced pediatric health assessment and patient/family-centered communication skills. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 791 PNP Clinical Practicum - Primary Care II (3 cr.)
This second, beginning-level clinical course provides advanced practice nursing students the opportunity to apply concepts from Pediatric Primary Care II didactic coursework: 1) directly in pediatric primary care clinical practice settings, and 2) indirectly through guided case studies. Emphasis is on developing advanced pediatric health assessment and patient/family-centered communication skills. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 792 PNP Clinical Practicum - Chronic/Specialty Care (3 cr.)
This clinical course provides advanced practice nursing students with an opportunity to apply concepts from Pediatric Chronic/Specialty Care didactic coursework: 1) directly in pediatric chronic/specialty care clinical practice settings, and 2) indirectly through guided case studies. Emphasis is placed on advanced pediatric health assessment and patient/family-centered communication skills. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 793 PNP Clinical Practicum - Acute Care I (3 cr.)
This first, beginning-level clinical course provides advanced practice nursing students with an opportunity to apply concepts from Pediatric Acute/Complex Care didactic coursework: 1) directly, in pediatric acute/complex care clinical practice settings, and 2) indirectly, through guided case studies. Emphasis is placed on acute care, advanced pediatric health assessment and patient/family-centered communication skills. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 794 PNP Clinical Practicum - Acute Care II (4 cr.)
This clinical course provides advanced practice nursing students with continued opportunities to apply concepts from Pediatric Acute/Complex Care didactic coursework: 1) directly in pediatric acute/complex care clinical practice settings, and 2) indirectly through guided case studies. Emphasis is placed on complex care, advanced pediatric health assessment, patient/family-centered communication skills. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 795 PNP Clinical Practicum - Immersion I (4 cr.)
This advanced-level clinical course immerses advanced practice nursing students in a variety of pediatric primary and/or acute care clinical settings. Emphasis is placed on synthesis of didactic content, continued assimilation of the novice role of the primary and acute care pediatric nurse practitioner, and collaboration with other health care professionals/agencies while providing high quality pediatric primary care. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

PNP 796 PNP Clinical Practicum - Immersion II (5 cr.)
This advanced-level clinical course immerses advanced practice nursing students in a variety of pediatric primary and/or acute care clinical settings. Emphasis is placed on synthesis of didactic content, continued assimilation of the novice role of the primary and acute care pediatric nurse practitioner, and collaboration with other health care professionals/agencies while providing high quality pediatric primary care. Students are assigned to clinical practice settings with a preceptor. Faculty guidance/supervision is provided.

School of Public Health

AGE 557 National Long-term Care Policy (3 cr.)
See Portland State University Bulletin for details.

AGE 657 National Long-term Care Policy (3 cr.)
See Portland State University Bulletin for details.

BSTA 500 Reading & Research in Biostatistics (1-3 cr.)
The student and the instructor plan the course of study consistent with the student's interest and degree objectives.

BSTA 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of

foundational and program competencies and application of those competencies to complex public health issues.

BSTA 504 Topics in Biostatistics (1-3 cr.)
The course covers selected current topics in Biostatistics at the intermediate to advanced levels. Topics may change from year to year.

BSTA 509PE Practice Experience (1-4 cr.)
Students must attend a PE orientation (via canvas.pdx.edu) prior to registering and are encouraged to attend a PE info session. Detailed information about the PE can be found on the Practice Experience SPH webpage.

PEs are a total of 4 credits and 160 “contact hours.” Students demonstrate 5 competencies via at least two deliverables, as well as submit a learning agreement (the term before PE registration), a midway progress report, a portfolio, and perform an oral presentation.

Biostats students register for BSTA 509PE. PHP students register for CPH 509PE. Epi students for EPI 504PE. ESHH students register for ESHH 509PE. HSMP students register for HSMP 509PE. HP students register for PHE 504PE

BSTA 510 Biostatistics Lab (3 cr.)
The course provides hands-on data analysis and/or biostatistical consulting experience to students outside classroom settings. Students will have opportunities to perform data analysis with inputs from faculty members. Students should have adequate skills in at least one statistical program among STATA, SAS, or R and has finished BSTA 512 linear Models or equivalent. Students meet weekly for 1 hour with the course instructor for discussion on their projects and are also encouraged to have regular meetings with an assigned faculty advisor and/or consultee(s). Students are expected to work individually or in a team of 2~3 on actual data analysis. The workload will be at least 9 hours per week including all activities (classes, meetings, readings, coding, and analysis).

BSTA 510IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

BSTA 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

BSTA 511 Estimation & Hypothesis Testing for Applied Biostatistics (4 cr.)
The objective of this 4-credit course is to provide students with a solid background in descriptive and inferential statistical methods, and to provide training and examples of how these methods can be implemented using statistical software. Throughout this course, emphasis will be placed on accurately summarizing and interpreting each statistical analyses so the conclusions are understandable to an audience that may not have formal training in statistics. The course begins with ways to describe key features of data using various graphs and numerical summary measures. Next, basic probability concepts will be explored to establish the basis for statistical inference; the binomial, Poisson and normal distributions will be introduced. Confidence intervals and hypothesis testing using parametric (normal theory) and non-parametric approaches will be covered for both the one- and two-sample situation. Methods of inference for proportions and the analysis of two-way tables will also be examined. The course ends with an introduction to one-way analysis of variance (ANOVA), correlation between two variables, and simple linear regression. Throughout this course, emphasis will be placed on selecting the appropriate statistical method(s), computing the necessary quantities (e.g. test statistics, interval estimate), and then interpreting and communicating the results/conclusions. Computer applications using Stata (or R) are included as part of the course to introduce you to basic data management, reading output generated by statistical software, and to assist with the computational/graphical aspects of data analysis. If you are enrolled in BSTA 611/EPI 625, additional "honors" problems are included as part of each weekly problem set and one additional mid-term project is expected.

BSTA 512 Linear Models (4 cr.)
BSTA 512 is primarily designed for Biostatistics Graduate Certificate students in Department of Public Health and Preventive Medicine, and BSTA 612 for PhD students from Behavioral Neuroscience or other PhD programs. In this course, we will focus on Linear models that include Regressions Analysis and Analysis of Variance (ANOVA). In conjunction with the conceptual and theoretical supporting the topics. For students of BSTA 612/EPI 626, extra homework problems and reading materials will be assigned

along with one extra week of lecture on mixed-effects models for longitudinal/repeated measure data.

BSTA 513 Categorical Data Analysis (4 cr.)
Categorical Data Analysis (Biostatistics III) is the third course in the required sequence for Biostatistics Certificate Program and the Epi/Biostat tracks in the MPH program. This course covers topics in categorical data analysis such as cross tabulation statistics, statistics for matched samples, and methods to assess confounding and interaction via stratified tables. It will also explore logistic regression in detail, and relate results back to those found with stratified analyses. Similar to linear regression in Biostatistics 2, topics for logistic regressions will include parameter interpretation, statistical adjustment, variable selection techniques and model fit assessment. If time allows, students will have the opportunity to briefly explore other analysis methods. Most homework assignments for this course are to be completed using statistical software.

BSTA 514 Statistical Analysis of Time-to-Event Data (3 cr.)
This course introduces students to analysis of time-to-event (i.e. survival) data, covering methods for estimation, hypothesis testing, and regression methods for censored data with covariates. Methods widely used in the health sciences are covered, including Kaplan-Meier (empirical) estimate of the survival function and its associated statistical tests. The Cox proportional hazards regression model is presented in detail, along with some extensions of this model. As time allows, other topics will be introduced including parametric survival models, frailty models and/or models incorporating competing risks. Power and sample size computations for time-to-event data will also be introduced. Most assignments will be completed using statistical computing software. Contextualizing results in the context of health sciences problems and research questions is stressed throughout the course.

BSTA 515 Data Management & Analysis in SAS (3 cr.)
This course is designed for students who want to develop and expand their skills in data management, statistical analysis and graphics for real world applications using SAS. After brief introduction, the course will cover intermediate to early advanced level programming skills in SAS. The class will be taught in a computer lab in order to give the student hands-on experience using SAS to manage data, perform analysis and produce graphs. Class sessions and homework will be oriented around particular data management and analysis tasks. Health-related data sets will be provided for students to use. This course could be extremely helpful in preparation for MPH theses or other research projects. Students are expected to supply their own laptop computer with SAS software for this course.

BSTA 516 Design & Analysis of Surveys (3 cr.)
This course is designed to introduce basic concepts, techniques, and current practice of sample survey design and analysis. Specific topics covered include introduction to statistical sample design, such as simple random sampling, systematic sampling, stratified random sampling, cluster sampling, multistage sampling. Complex designs will also be included. Topics in estimation and analysis include probability weighting, weight adjustments, ratio and regression estimators, and methods for estimating variance from complex surveys. In conjunction with the conceptual and theoretical developments, homework assignments and data analysis projects will be assigned in supporting the topics.

BSTA 517 Statistical Methods in Clinical Trials (3 cr.)
This course is designed for students who are interested in learning design and analysis of clinical trials. Starting with a brief introduction to the four phases of clinical trials, the course will cover the most widely used sing-stage and two-stage trial designs. Sample size computations associated with major designs, methods of randomization and blinding, and analysis methods for different designs and endpoints will all be introduced. Towards the end of the course there will be several advanced topics overview sessions such as Bayesian methods in clinical trials, adaptive clinical trial design, designs for cancer clinical trials, etc. These special topics sessions will be open to wider audiences not necessarily enrolled in the Biostatistics Certificate program (e.g. clinical researchers from OHSU Knight Cancer Institute or OCTRI, or interested faculty from OHSU departments). Guest lecturers may be invited to some of the sessions. In addition to homework assignments, students will form groups and work on class project under the supervision of the instructor.

BSTA 518 Spatial Data with GIS (3 cr.)
This course is designed for students in Biostatistics Certificate Program, the Epidemiology & Biostatistics track of the Oregon MPH program and others who are interest in GIS/Spatial Statistics applications for environmental and health related research. Geographic information system (GIS) software is a powerful tool for assessment, decision-making, and information sharing. GIS provides a platform for the analysis of health data in relationship to population demographics, socioeconomic factors, surrounding social and health services, and the natural environment. The course will also cover basic statistical methods for the analysis of spatial data such as kriging and spatial clustering. The class will be taught in a computer lab and students are required to do a course project with a data set throughout the quarter under the supervision of the instructor.

BSTA 519 Applied Longitudinal Data Analysis (3 cr.)
This course is designed for students who have taken the basic applied statistical courses and wish to learn the more

advanced statistical methods for longitudinal data. Longitudinal data consist of measurements of response variables at two or more points in time for many individuals. This course covers the statistical properties of longitudinal data and special challenges due to the repeated measurements on each individual, exploratory methods and statistical models for longitudinal data as well as some exposure to estimation methods and statistical properties of coefficient estimates. For statistical methods, the course will briefly mention the traditional repeated measure analysis of variance (ANOVA) approach for continuous data, and focus more on mixed effects model approach and estimation based on generalized estimating equation. Real life examples will be used to explain the concept and application of these models by using continuous, binary and count data. Homework assignments and final class project play a central role to understand and appropriately apply the methods covered in the course.

BSTA 521 Bayesian Methods for Data Analysis (3 cr.)
Different from other courses in the M.S. program, which are based on the 'frequentist' method of statistical reasoning, where probability is understood to be a long run frequency of a 'repeatable' event, Bayesian methods are based on a different philosophy and enables one to combine information from previous similar and independent studies (prior information), with information from a new study to make updated inference for model parameters. This course will first introduce the concept of Bayesian analysis from the perspective of medical research, review Bayes' rule and basic probability distribution. Then the course will cover basics of Bayesian inference, prior determination, Bayesian computation model criticism and selection. All concepts will be illustrated using real-life examples from biomedical research. The course will also teach students how to use WinBUGS, the software for Bayesian analysis.

BSTA 522 Statistical Learning & Data Science (3 cr.)
This course is designed to introduce theory and methods for statistical learning and data science. Data science is an emerging field that overlaps with computer science, artificial intelligence, machine learning/deep learning and statistics. This is an exciting time to observe the birth of the new field. In recent years, statistical learning has been increasingly becoming crucial in data science. Ever-increasing data complexity and unconventional data create new challenges for traditional statistical learning, and this is an active research area. This course will cover traditional statistical learning methods as well as newer methods for such challenges.

BSTA 523 Design of Experiments: Statistical Principles of Research Design & Analysis (3 cr.)
This course covers experimental design and statistical analysis of biological/clinical data from various experiments. This course provides not only the theoretical aspect of experimental design but also hands-on experience in designing and analyzing experiments. The course begins with a discussion of design principles that include concepts of replication, randomization, blocking, multifactor studies, and confounding. Basic matrix algebra concepts will be explored to establish the basis for linear models. Students, then, are introduced to various experimental designs including analysis of variance (ANOVA) in both single and multi-factorial settings, experiments to study variances, complete/incomplete block designs (CBD), split plot designs, repeated measures ANOVA, analysis of covariance (ANCOVA), response surface designs, and diagnosing agreement between the data and model. The course also provides experience in analyzing unbalanced experimental data. Computer application is included as part of the course to introduce students to data management, reading output, along with interpreting and summarizing results.

BSTA 524 Statistical Methods for Next Generation Sequencing Data (3 cr.)
This course is designed to introduce statistical methods for machine learning and new emerging challenges in big data analysis. In recent years, statistical machine learning has played a crucial role in informatics and data science. Ever increasing data size creates new challenges for traditional statistical learning and this is an active research area. This course will cover traditional statistical learning methods as well as newer methods for such challenges.

BSTA 525 Introduction to Biostatistics (4 cr.)
The goal of this course is to cover the broad range of statistical methods used in health sciences. Methods of summarizing data through graphical displays and numerical measures will be discussed. Basic probability concepts will be explored to establish the basis for statistical inference. Confidence intervals and hypothesis testing will be studied with emphasis in applying these methods to relevant situations. Both normal theory and non-parametric approaches will be studied. Course focus will be to understand when to use basic statistical methods how to compute tests to statistics and how to interpret results. Computer applications (using STATA) are included as part of the course.

BSTA 526 R programming for Health Data Science (3 cr.)
This course aims to develop programming skills in R, a powerful statistical programming language. This course assumes some prior familiarity with R and ranges from advanced beginner topics to intermediate topics. It will cover practical data science skills in R that are useful for a career in statistics, epidemiology, or data science, including loading

data, data wrangling, visualization, automation, machine learning, and running statistical models. A laptop is required for class to participate in coding exercises.

BSTA 530 Biostatistics Lab (3 cr.)
The course provides hands-on data analysis or biostatistical consulting experience to students outside classroom settings. Students will have opportunities to perform data analysis with inputs from faculty members. Students should have adequate skills in at least one statistical program such as R or SAS, and finished BSTA 512 Linear Models or equivalent. Students meet weekly for 1-2 hour with the course instructor for discussion on their projects and are required to have regular meetings with an assigned faculty advisor and consultee(s), if applicable. Students are expected to work individually or in a team of 2-3 on actual data analysis. In addition, there is a weekly reading assignment. The workload will be at least 9 hours per week including all activities (classes, meetings, readings, coding, and analysis).

BSTA 550 Introduction to Probability (3 cr.)
This course is designed to introduce history, concepts and distributions in probability, Monte Carlo simulation techniques, and Markov chains. Students will also learn how to write R codes for various statistical computations and plots. Previous experience in R is not required. R is free software available from http://www.r-project.org.

BSTA 551 Statistical Inference I (3 cr.)
This first of a two-sequence course provides theoretic foundation in biostatistics. Topics will include theory of probability, distributions of random variables, central limit theorem, sampling distributions, point and interval estimation, tests of hypotheses, analysis of variance. The two courses must be taken in sequence.

BSTA 552 Statistical Inference II (3 cr.)
This second of a two-sequence course provides theoretic foundation in biostatistics. Topics will include theory of probability, distributions of random variables, central limit theorem, sampling distributions, point and interval estimation, tests of hypotheses, analysis of variance. The two courses must be taken in sequence.

BSTA 611 Estimation & Hypothesis Testing for Applied Biostatistics (4 cr.)
The objective of this 4-credit course is to provide students with a solid background in descriptive and inferential statistical methods, and to provide training and examples of how these methods can be implemented using statistical software. Throughout this course, emphasis will be placed on accurately summarizing and interpreting each statistical analyses so the conclusions are understandable to an audience that may not have formal training in statistics. The course begins with ways to describe key features of data using various graphs and numerical summary measures. Next, basic probability concepts will be explored to establish the basis for statistical inference; the binomial, Poisson and normal distributions will be introduced. Confidence intervals and hypothesis testing using parametric (normal theory) and non-parametric approaches will be covered for both the one- and two-sample situation. Methods of inference for proportions and the analysis of two-way tables will also be examined. The course ends with an introduction to one-way analysis of variance (ANOVA), correlation between two variables, and simple linear regression. Throughout this course, emphasis will be placed on selecting the appropriate statistical method(s), computing the necessary quantities (e.g. test statistics, interval estimate), and then interpreting and communicating the results/conclusions. Computer applications using Stata (or R) are included as part of the course to introduce you to basic data management, reading output generated by statistical software, and to assist with the computational/graphical aspects of data analysis. If you are enrolled in BSTA 611, additional "honors" problems are included as part of each weekly problem set and one additional mid-term project is expected.

BSTA 612 Linear Models (4 cr.)
BSTA 512 is primarily designed for Biostatistics and Epidemiology students in the School of Public Health, and BSTA 612 for PhD students from Behavioral Neuroscience or other PhD programs. In this course, we will focus on Linear models that include Regressions Analysis and Analysis of Variance (ANOVA). In conjunction with the conceptual and theoretical supporting the topics. For students of BSTA 612, extra homework problems and reading materials will be assigned along with one extra week of lecture on mixed-effects models for longitudinal/repeated measure data.

BSTA 613 Categorical Data Analysis (4 cr.)
This course is designed for students from PhD programs on campus. This course covers topics in categorical data analysis such as statistics for contingency tables, statistics for matched samples, and methods to assess confounding and interaction via stratified tables. We will explore logistic regression in detail, and relate results back to those found with stratified analyses. Similar to linear regression, topics for logistic regression will include: parameter interpretation, statistical adjustment, variable selection techniques and model fit assessment. We will discuss Poisson regression, the model for count data, which is another type of commonly encountered categorical data. All homework assignments have at least a portion to be completed using statistical software. Extra homework problems and reading materials will be assigned.

CPH 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

CPH 505 Reading and Conference (1-3 cr.)
Students are to make arrangements with faculty individually.

CPH 507 Seminar (1-5 cr.)
Seminar

CPH 507A Current Issues in Public Health (3 cr.)
The purpose of this course is to analyze current and controversial issues in public health. The course provides an opportunity to discuss, analyze, make recommendations for, and examine policy outcomes of issues, practices, and current and historically controversial public health events.

CPH 509A Graduate Internship in Public Health (1-6 cr.)
The purpose of the graduate internship is to provide students with a work-related experience designed to integrate theory and practice in an applied setting under supervision. The internship experience permits the student to demonstrate her/his ability to apply knowledge of theory and practice to specific activities in a real-world setting. The internship provides students with a professional experience where they can apply existing and new skills and become more socialized into the field of community/public health. Existing skills are those the student brings from his/her life experience and previous education. New skills include those the student has gained through her/his educational experience in the MPH program. Socialization occurs through mentoring of the student in the work site and professional arena by the preceptor for the internship.

CPH 509FE Graduate Internship in Public Health (1-6 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

CPH 509PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

CPH 510IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

CPH 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

CPH 511 Introduction to Research Design (3 cr.)
The purpose of this course is to enhance students' abilities to comprehend critique and apply research methodology and research-based evidence. Students will locate and critically evaluate evidence generated from quantitative, qualitative, and epidemiological methods, with particular attention paid to statistical significance and clinically meaningful outcomes. Students will transform their own clinical inquisitiveness into practice-based researchable questions and focus on the application of research methods in clinical settings. Students will also gain experience in using publicly available databases and displaying data in a variety of formats.

CPH 521 Social Determinants of Health (3 cr.)
This course focuses on social and economic influences on health and strategies for integration of research into affected communities and public policy improvement.

CPH 522 Communicating Public Health Data (3 cr.)
Traditionally, public health findings and surveillance data are disseminated through publications and reports designed for the academic and scientific community. Today, with growing access to public health data for the general population, there is also the increasing risk of data being misunderstood, misused or poorly interpreted. Thus we have a significant role in synthesizing, interpreting and presenting data in ways that nonscientific audiences can understand and use. The purpose of this course is to explore public health surveillance systems; retrieve and analyze data for health disparities and inequities, and develop communication approaches regarding the findings for: the community at risk, the general public, policy makers, and the press. Principles of communicating scientific data to lay audiences and the concept of "place-based approaches" as effective framing language will be explored. The strengths and limitations of various data presentation formats will be tested as students research different audiences and determine what data to use, the key messages, and how to present the data effectively.

CPH 523 Primary Health Care and Health Disparities: Global Perspectives and Program Development (3 cr.)
This online course will examine the contextual factors of primary health care and global health disparities. Current trends in global health will be described and discussed utilizing research, best practices, international guidelines, and expert opinion. Students will gain a broadened perspective on the impact of primary care interventions in international venues. Students will develop an increased understanding of the complexities associated with global health disparities, interventions and relief efforts, and development.

CPH 526 Epidemiology of Aging & Chronic Disease (3 cr.)
This course introduces the application of epidemiologic methods to the study of older persons and chronic disease. The course will examine concepts and topics including trends in aging and the health of aging populations; health transition, and explanations and consequences of mortality decline; determinants of health and survival; distinctions between normal aging, disease and disability; health promotion and primary, secondary, and tertiary prevention, as applied to older persons; the epidemiology of selected diseases; syndromes and conditions common to older age and chronic illness.

CPH 527 Applied Epidemiology (3 cr.)
This course will utilize epidemiologic methods and frameworks to explore patterns of disease, disability and other public health issues. Students will examine public health systems and practice the application of epidemiologic tools to better understand prevention and control of communicable diseases in diverse populations.

CPH 528 Management Practice & Quality Improvement in Health Care & Public Health Organizations (3 cr.)
Introduction to leadership and management, focusing on effective strategies for creating a productive work environment through techniques like conflict resolution, building collaborative teams, and providing team leadership. Issues of measuring, managing and improving the quality of health care will also be addressed. Current national efforts in performance measures in public health (i.e. county certification) are discussed. Case studies taken from public health departments and other settings will be used to master problem-solving methods.

CPH 531 Social Justice and Public Health (3 cr.)
Public health is the convergence of science, policy, politics, ethics, and activism. From a social justice perspective, public health can be better enacted through the examination and remediation of injustice and inequality. Therefore, this course will involve both intra-reflective and inter-reflective examination of the social and structural inequalities and injustices within our society, locally and globally, and how they impact approaches to promote public health, with a specific emphasis for minoritized populations. The role of a human rights perspective in producing public health and how human rights cut across law, ethics, policies, and advocacy in public health is examined. The role of a human rights perspective will also be addressed as an important part of international health practice.

CPH 535 Professionalism, Ethics & Systems Thinking in Public Health (3 cr.)
This course presents several key theoretical principles and practices of public health. Using a case-based format, the course will examine six competencies of public health practice identified by the Academic Council on Linkages including familiarity with the Core Functions and Essential Services of public health; facility in grant-writing; the relationship of the legal and political systems to public health; interpretation of public health data for public use; pitfalls of policy-making; and the ethics of public health practice and study design. In-depth examination of these issues will prepare the student for leadership roles in community and in public health.

CPH 536 Community Based Participatory Research (3 cr.)
This course examines Community-Based Participatory Research (CBPR) as a research paradigm to understand and address health disparities at the community level. Review of operating principles includes the central place that communities are accorded as units of identity and as co-equals in research, a process that is perceived by community constituents as not dominated by elitists, an emphasis on long-term commitment by all partners, emphasis on co-learning so that the process flows back and forth, use of

exercises that stimulate collective visioning among all partners, incorporation of social ecology approaches as departures for research and practice, use of innovative problem solving approaches and use of multiple methods of data collection. Topics include community theory, development strategies, promising interventions, group development techniques, community diagnosis, and capacity assessments.

CPH 538 Public Health Program Evaluation (3 cr.)
Using case study methodology, this course focuses on the acquisition of technical skills in design, data collection and analysis for the purpose of evaluating public health programs. Program justification and evaluation for policy-making purposes will be emphasized. In addition, alternative forms of evaluation will be examined including rapid assessment, participatory evaluation and historical, social networking and other techniques. Students will have the opportunity to examine public health data sets and to design an evaluation focused on a disparate population as well as develop policy based on critical analysis of several types of evaluations.

CPH 550 Public Health Program Planning (3 cr.)
This course provides an introduction to program planning and experience in the grant writing process, with an emphasis on public health intervention programs. Students will be introduced to program planning, with an emphasis on logic models. Students will be introduced to the key areas of a proposal that must be addressed in grant writing.

CPH 611 Introduction to Research Design (3 cr.)
The purpose of this course is to enhance students' abilities to comprehend critique and apply research methodology and research-based evidence. Students will locate and critically evaluate evidence generated from quantitative, qualitative, and epidemiological methods, with particular attention paid to statistical significance and clinically meaningful outcomes. Students will transform their own clinical inquisitiveness into practice-based researchable questions and focus on the application of research methods in clinical settings. Students will also gain experience in using publicly available databases and displaying data in a variety of formats.

CPH 621 Social Determinants of Health (3 cr.)
This course focuses on social and economic influences on health and strategies for integration of research into affected communities and public policy improvement.

CPH 622 Communicating Public Health Data (3 cr.)
Traditionally, public health findings and surveillance data are disseminated through publications and reports designed for the academic and scientific community. Today, with growing access to public health data for the general population, there is also the increasing risk of data being misunderstood, misused or poorly interpreted. Thus we have a significant role in synthesizing, interpreting and presenting data in ways that nonscientific audiences can understand and use. The purpose of this course is to explore public health surveillance systems; retrieve and analyze data for health disparities and inequities, and develop communication approaches regarding the findings for: the community at risk, the general public, policy makers, and the press. Principles of communicating scientific data to lay audiences and the concept of "place-based approaches" as effective framing language will be explored. The strengths and limitations of various data presentation formats will be tested as students research different audiences and determine what data to use, the key messages, and how to present the data effectively.

CPH 627 Applied Epidemiology (3 cr.)
This course will utilize epidemiologic methods and frameworks to explore patterns of disease, disability and other public health issues. Students will examine public health systems and practice the application of epidemiologic tools to better understand prevention and control of communicable diseases in diverse populations.

CPH 631 Social Justice and Public Health (3 cr.)
Public health is the convergence of science, policy, politics, ethics, and activism. From a social justice perspective, public health can be better enacted through the examination and remediation of injustice and inequality. Therefore, this course will involve both intra-reflective and inter-reflective examination of the social and structural inequalities and injustices within our society, locally and globally, and how they impact approaches to promote public health, with a specific emphasis for minoritized populations. The role of a human rights perspective in producing public health and how human rights cut across law, ethics, policies, and advocacy in public health is examined. The role of a human rights perspective will also be addressed as an important part of international health practice.

CPH 635 Professionalism, Ethics & Systems Thinking in Public Health (3 cr.)
This course presents several key theoretical principles and practices of public health. Using a case-based format, the course will examine six competencies of public health practice identified by the Academic Council on Linkages including familiarity with the Core Functions and Essential Services of public health; facility in grant-writing; the relationship of the legal and political systems to public health; interpretation of public health data for public use; pitfalls of policy-making; and the ethics of public health practice and study design. In-depth examination of these issues will prepare the student for leadership roles in community and in public health.

CPH 636 Community Based Participatory Research (3 cr.)
This course examines Community-Based Participatory Research (CBPR) as a research paradigm to understand and address health disparities at the community level. Review of operating principles includes the central place that communities are accorded as units of identity and as co-equals in research, a process that is perceived by community constituents as not dominated by elitists, an emphasis on long-term commitment by all partners, emphasis on co-learning so that the process flows back and forth, use of exercises that stimulate collective visioning among all partners, incorporation of social ecology approaches as departures for research and practice, use of innovative problem solving approaches and use of multiple methods of data collection. Topics include community theory, development strategies, promising interventions, group development techniques, community diagnosis, and capacity assessments.

CPH 638 Public Health Program Evaluation (3 cr.)
Using case study methodology, this course focuses on the acquisition of technical skills in design, data collection and analysis for the purpose of evaluating public health programs. Program justification and evaluation for policy-making purposes will be emphasized. In addition, alternative forms of evaluation will be examined including rapid assessment, participatory evaluation and historical, social networking and other techniques. Students will have the opportunity to examine public health data sets and to design an evaluation focused on a disparate population as well as develop policy based on critical analysis of several types of evaluations.

CPH 650 Public Health Program Planning (3 cr.)
This course provides an introduction to program planning and experience in the grant writing process, with an emphasis on public health intervention programs. Students will be introduced to program planning, with an emphasis on logic models. Students will be introduced to the key areas of a proposal that must be addressed in grant writing.

EPI 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

EPI 504 Work Experience/Internship (1-6 cr.)
Practicum experience in on-site public health and preventive medicine organizations. Application of principles and skills in public health to real situations under the guidance of professionals in the field. A report integrating knowledge and experience will be required. Arrangements for suitable sites will be made in consultation with the student's graduate advisor.

EPI 504FE Field Experience (1-6 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

EPI 504PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

EPI 505 Reading and Conference (1-4 cr.)
The student and the instructor plan the course of study consistent with the student's interest and degree objectives.

EPI 507 Seminar: Special Topics (1-4 cr.)
Topics vary by term.

EPI 510IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

EPI 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life

settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

EPI 512 Epidemiology I (4 cr.)
Epidemiology I introduces the concepts, principles and methods of epidemiology to graduate students in the School of Public Health. Epidemiology is one of the fundamental sciences used by public health professionals to identify, prevent and control health problems in communities. Specifically, epidemiologic methods are used to investigate the distribution of health-related states or events (e.g. disease, health conditions, etc.) in populations and identify the factors or characteristics that influence or determine these distributions. In addition, epidemiology is used to aide in the implementation and evaluation of public health programs and policies designed to control or ameliorate health problems in populations. In this course, students will learn how to apply epidemiological methods to address questions about the distribution of disease, death, disability and risk exposures in populations, as well as those relating to causal associations between exposures and health outcomes.

EPI 513 Epidemiology II (4 cr.)
This course is the second in a three-course sequence designed for the MPH Epidemiology and Biostatistics majors. Students will develop skills in recognizing strengths and weaknesses of various epidemiological study designs, describing sources of bias that can distort measures of effect/association, and designing case-control studies, cohort studies, and randomized clinical trials. The class will also explore additional study designs used less frequently, such as nested case-control studies and case-crossover studies. Students will gain experience in recognizing and evaluating the roles of bias, confounding, and interaction (effect modification) in data derived from epidemiological studies. Problem-solving exercises will focus on study designs and analysis. Written homework assignments and problem-oriented learning will occupy a central role in facilitating mastery of epidemiologic methods and issues.

EPI 514 Epidemiology III (3-4 cr.)
Will address the amount and types of data needed to establish and defend ideas of causation of community health problems. Will illustrate how data are most effectively translated into health agency policy, public testimony, and/or legislated regulation. Teaching will emphasize the problem-oriented seminar method.

EPI 521 Injury & Violence Prevention (3 cr.)
This course introduces students to the causes and consequences of traumatic injury and violence and the public health approach to injury and violence prevention. Conceptual frameworks that consider behavioral and environmental approaches to injury prevention will be discussed as well as the upstream socio-economic underpinnings of injury and violence causation. EPI 521 is primarily designed for students in a Master's in Public Health (MPH) program, in EPI or related field, in the OHSU-PSU School of Public Health. EPI 621 is designed for PhD students from EPI or other related PhD program.

EPI 525 Biostatistics I (4 cr.)
The objective of this 4-credit course is to provide students with a solid background in descriptive and inferential statistical methods, and to provide training and examples of how these methods can be implemented using statistical software. Throughout this course, emphasis will be placed on accurately summarizing and interpreting each statistical analyses so the conclusions are understandable to an audience that may not have formal training in statistics. The course begins with ways to describe key features of data using various graphs and numerical summary measures. Next, basic probability concepts will be explored to establish the basis for statistical inference; the binomial, Poisson and normal distributions will be introduced. Confidence intervals and hypothesis testing using parametric (normal theory) and non-parametric approaches will be covered for both the one- and two-sample situation. Methods of inference for proportions and the analysis of two-way tables will also be examined. The course ends with an introduction to one-way analysis of variance (ANOVA), correlation between two variables, and simple linear regression. Throughout this course, emphasis will be placed on selecting the appropriate statistical method(s), computing the necessary quantities (e.g. test statistics, interval estimate), and then interpreting and communicating the results/conclusions. Computer applications using Stata (or R) are included as part of the course to introduce you to basic data management, reading output generated by statistical software, and to assist with the computational/graphical aspects of data analysis. If you are enrolled in BSTA 611/EPI 625, additional "honors" problems are included as part of each weekly problem set and one additional mid-term project is expected.

EPI 526 Biostatistics II (3-4 cr.)
EPI 526 is primarily designed for Biostatistics Graduate Certificate students in Department of Public Health and Preventive Medicine, and EPI 626 for PhD students from Behavioral Neuroscience or other PhD programs. In this course, we will focus on Linear models that include Regressions Analysis and Analysis of Variance (ANOVA). In conjunction with the conceptual and theoretical supporting the topics. For students of BSTA 612/EPI 626, extra

homework problems and reading materials will be assigned along with one extra week of lecture on mixed-effects models for longitudinal/repeated measure data.

EPI 527 Biostatistics III (3-4 cr.)
Categorical Data Analysis (Biostatistics III) is the third course in the required sequence for Biostatistics Certificate Program and the Epi/Biostat tracks in the MPH program. This course covers topics in categorical data analysis such as cross tabulation statistics, statistics for matched samples, and methods to assess confounding and interaction via stratified tables. It will also explore logistic regression in detail, and relate results back to those found with stratified analyses. Similar to linear regression in Biostatistics 2, topics for logistic regressions will include parameter interpretation, statistical adjustment, variable selection techniques and model fit assessment. If time allows, students will have the opportunity to briefly explore other analysis methods. Most homework assignments for this course are to be completed using statistical software.

EPI 528 Statistical Consulting (1-6 cr.)
Statistical aspects of design and data analytic models appropriate to classes of experiments most commonly employed in biomedical sciences. One and two-way analysis of variance, factorials, crossovers and repeated measures designs will be covered. Clean as well as messy real data sets will be analyzed using BMDP or SAS computer programs.

EPI 534 Computer Applications in Biostatistics (3 cr.)
This course is designed for students in the Epi/Biostat track of the MPH program who have completed most or all of their required courses. It will introduce students to several data entry, management and analysis software packages that they can use in their future research projects. The philosophy of the instructors is that there is no single "best" software package to manage the research process, but rather many "tools" that can be used in individually or in combination to meet the needs of a given project. Thus, the students will be encouraged to design and present their own processes using the Oregon State birth and death certificate files. In-class examples and exercises will be featured using a "hands-on" format in the department's student computing lab. This course could be extremely helpful in preparation for MPH thesis projects.

EPI 536 Epidemiological Data Analysis & Interpretation (4 cr.)
Students will apply epidemiologic and biostatistical principles to the analysis of National Health and Nutritional Examination Survey (NHANES) data. Hypotheses are formulated based on the NHANES variables and a brief literature review of the public health need for the research. Students work in pairs to plan, organize, and conduct analyses leading to final oral and written presentations of their findings. Class time allows for hands-on experience with data quality assessment, preparation of datasets and variables for analysis, and multivariable modeling. Emphasis is on planning and communicating analytic plans that reflect the causal models generated by students and allow for assessment of confounding and interaction (effect measure modification).

EPI 540 Research Proposal & Design (3 cr.)
This course provides an introduction to research design and proposal writing. It builds upon concepts of epidemiology and biostatistics to enable students to develop a study plan to conduct public health research that is efficient, effective, and ethical. Writing a research proposal is a skill necessary in the professional practice of public health. During this course, students will prepare a written proposal that includes a concise statement of the epidemiologic research question, testable hypotheses, appropriate specific aims, and a plan of work. Students will learn how to formulate a logical argument to establish the significance of their question and to defend their approach. All of the elements of the study plan will be developed, including choice of design, sample size and power, sampling design and recruitment of subjects, measurement of predictor and outcome variables, control of bias and confounding, and statistical analysis. Limited time will be spent on an introduction to budget development and project management. The major product of the course is the completion of a research proposal, which will be prepared according to the submission requirements of a federal funding agency. The instructors will review written work with each student during the term to ensure that all required elements are included in the application.

EPI 556 HIV/AIDS Epidemiology (3 cr.)
The course will start with a review of the known characteristics and pathology of the human immunodeficiency virus infection and pathogenesis of the clinical acquired immunodeficiency syndrome. Biological and behavioral factors that determine the risks of transmission of the HIV infection will be emphasized and public health prevention strategies will be evaluated. The global HIV epidemic will be considered along with the impact of HIV infection on vulnerable populations, especially women and children. Ethical factors and the impact of stigma will be discussed.

EPI 566 Current Issues in Public Health (2 cr.)
Seminar series investigating the relevant issues in the field of public health and preventive medicine. Key public health and preventive medicine professionals from around the region will present their current work. Paper will be required on a topic related to course content.

EPI 567 Global Health Epidemiology (3 cr.)

This elective course is intended to broaden students' understanding of the field of applied epidemiology through the context of a global perspective. Although offered to Masters Level, MPH students, other health professions students often register. Global Health Epidemiology is a required course for students enrolled in the Concentration in Global Health Studies Program for epidemiology students.

EPI 568 Infectious Disease Epidemiology (2 cr.)
This course provides an introduction to infectious epidemiology, and includes fundamental topics such as outbreak investigation, public health communicable disease surveillance and reporting, biological concepts of disease introduction, evolution and spread, and design of population-based studies to valuate features of infectious diseases (e.g., risk factors, method of spread, clinical features, disease prevalence). This course will also introduce some of the categories of communicable diseases and highlight some features of the major diseases within each category. It builds upon concepts of epidemiology (e.g., risk/odds ratio, case-control and cohort studies, statistical significance) to provide students with a strong understanding of infectious disease concepts and methods such as conducting an outbreak investigation.

EPI 576 Chronic Disease Epidemiology (2 cr.)
This course is designed for MPH Epidemiology and MPH and MS Biostatistics program majors, as well as PhD candidates in Epidemiology. The course is intended to give students an understanding of the epidemiology of major chronic diseases in developed countries. It covers three aspects of chronic disease: 1) epidemiology methods used in their study, 2) epidemiologic findings and current status of epidemiologic research into various chronic diseases, and 3) the epidemiology of the major risk factors for chronic diseases. The course is based on presentations by researchers and public health practitioner experts on specific chronic disease topics. Students will gain familiarity with some of the important epidemiologic studies and study innovations that have contributed to our knowledge of chronic diseases and their control.

EPI 603 Epidemiology Dissertation (1-12 cr.)
This course is intended to provide the capstone project and prepare doctoral students to achieve mastery in health & scientific content in an area of public health epidemiology. At least 30 credit hours must be completed for graduation, and the individualized supervisory committee must approve the dissertation prior to submitting it to the Graduate School.

EPI 605 Reading and Conference (1-4 cr.)
Epidemiology topics individually selected by the student and supervising faculty member.

EPI 612 Epidemiology I (4 cr.)
Epidemiology I introduces the concepts, principles and methods of epidemiology to graduate students in the School of Public Health. Epidemiology is one of the fundamental sciences used by public health professionals to identify, prevent and control health problems in communities. Specifically, epidemiologic methods are used to investigate the distribution of health-related states or events (e.g. disease, health conditions, etc.) in populations and identify the factors or characteristics that influence or determine these distributions. In addition, epidemiology is used to aide in the implementation and evaluation of public health programs and policies designed to control or ameliorate health problems in populations. In this course, students will learn how to apply epidemiological methods to address questions about the distribution of disease, death, disability and risk exposures in populations, as well as those relating to causal associations between exposures and health outcomes.

EPI 613 Epidemiology II (4 cr.)
This course is the second in a three-course sequence designed for the MPH Epidemiology and Biostatistics majors. Students will develop skills in recognizing strengths and weaknesses of various epidemiological study designs, describing sources of bias that can distort measures of effect/association, and designing case-control studies, cohort studies, and randomized clinical trials. The class will also explore additional study designs used less frequently, such as nested case-control studies and case-crossover studies. Students will gain experience in recognizing and evaluating the roles of bias, confounding, and interaction (effect modification) in data derived from epidemiological studies. Problem-solving exercises will focus on study designs and analysis. Written homework assignments and problem-oriented learning will occupy a central role in facilitating mastery of epidemiologic methods and issues.

EPI 614 Epidemiology III (4 cr.)
Will address the amount and types of data needed to establish and defend ideas of causation of community health problems. Will illustrate how data are most effectively translated into health agency policy, public testimony, and/or legislated regulation. Teaching will emphasize the problem-oriented seminar method.

EPI 615 Epidemiology Doctoral Seminar (2 cr.)
This advanced applied doctoral-level seminar course synthesizes across students' prior training in epidemiology, biostatistics, applied research, and the disciplines/content areas that are required for students' doctoral research. Drawing from doctoral students' and the instructor's expertise, this course aims to facilitate the professional development required to be a successful PhD student and graduate. The course is repeatable, and best taken for the

first time during the 2nd year of the doctoral program. The principal goals of this seminar class are to: 1) Engage with the CDC's 10 Essential Public Health Services and how they play out in epidemiology and the students' own research. 2) Familiarize students with the historical development, philosophy and culture of the discipline of epidemiology, including entrenched structural racism. 3) Explore, critique, and have in-depth discussions regarding the current state of epidemiologic research and practice, with special emphasis on how to conduct anti-racist epidemiologic studies. 4) Formulate innovative research questions and select appropriate epidemiologic study designs and analytic methods. 5) Refine and verbally present study designs, aims for students' proposed dissertation projects, or research in progress on students' dissertation. Through honing these skills in this seminar, students will reinforce and further build competencies in doctoral education, as laid forth by the American College of Epidemiology, the Association of Schools and Programs of Public Health, and the OHSU-PSU School of Public Health. Specifically, doctoral students will develop the abilities to: 1) Synthesize existing evidence of health determinants to research of public health problems; 2) Analyze ethical problems that arise in epidemiologic research; and 3) Formulate a testable research question and propose a related study design and analytic approach. This education will prepare students to work independently and to collaborate with health professionals in other disciplines on research and applied projects that include epidemiologic elements.

EPI 621 Injury & Violence Prevention (3 cr.)
This course introduces students to the causes and consequences of traumatic injury and violence and the public health approach to injury and violence prevention. Conceptual frameworks that consider behavioral and environmental approaches to injury prevention will be discussed as well as the upstream socio-economic underpinnings of injury and violence causation. EPI 521 is primarily designed for students in a Master's in Public Health (MPH) program, in EPI or related field, in the OHSU-PSU School of Public Health. EPI 621 is designed for PhD students from EPI or other related PhD program.

EPI 625 Doctoral Seminar in Causal Inference Methods (3 cr.)
This advanced doctoral-level course builds upon students' prior training in epidemiology, biostatistics, and applied research, to deepen their exposure to and experience with advanced analytical methods for causal inference. Working within the potential outcomes (counterfactual) causal framework, this course situates this framework within a broader context of causality, introduces advanced causal methods, and provides students an opportunity to implement them in practice. Specific methods taught include propensity scores, inverse probability weights, g-computation, and related approaches. Methods are taught with a mixture of theoretical background, in-class activities, and at-home coding assignments using simulated data provided by the instructor. Throughout, students are encouraged to apply these approaches to their planned or in-progress doctoral research. The principal goals of this seminar class are to: 1) Familiarize students with counterfactual model for causal inference and how it fits in with other causal inference frameworks from epidemiology and beyond. 2) Provide students with the theoretical underpinning of each of several methods for causal inference, including g-computation and inverse probability weighting. 3) Apply these advanced causal methods in-class via assignments and through coding assignments. 4) Encourage students to consider how these advanced epidemiologic methods may be applied in their dissertation research.

EPI 630 Epidemiology Journal Club (1 cr.)
This is an elective course for epidemiology students. Doctoral students are required to register for at least two terms (one credit each) during the first two years of their program. This course is intended to extend students' understanding of the fields of epidemiology and public health research, and their ability to explore and critique research methods. In weekly sessions, the instructor, guest faculty, and students will prepare a peer-reviewed article for class discussion that demonstrates or involves innovative public health content or methods. A secondary goal of this class is to prepare students to perform peer-review themselves (e.g., for journals, study sections) by examples of this work from faculty.

EPI 636 Epidemiologic Data Analysis & Interpretation (4 cr.)
Students will apply epidemiologic and biostatistical principles to the analysis of National Health and Nutritional Examination Survey (NHANES) data. Hypotheses are formulated based on the NHANES variables and a brief literature review of the public health need for the research. Students work in pairs to plan, organize, and conduct analyses leading to final oral and written presentations of their findings. Class time allows for hands-on experience with data quality assessment, preparation of datasets and variables for analysis, and multivariable modeling. Emphasis is on planning and communicating analytic plans that reflect the causal models generated by students and allow for assessment of confounding and interaction (effect measure modification).

EPI 640 Research Proposal & Design (3 cr.)
Provides an introduction to research design and proposal writing. It builds upon concepts of epidemiology and biostatistics to enable students to develop a study plan to conduct public health research that is efficient, effective, and ethical. Writing a research proposal is a skill necessary in the professional practice of public health. During this course, students will prepare a written proposal that includes a

concise statement of the epidemiologic research question, testable hypotheses, appropriate specific aims, and a plan of work.

EPI 650 Mentored Epidemiology Research (1-6 cr.)
This course is based on moving the skill set of prior epidemiologic methods, research, and biostatistical courses into a deeper contemplation and synthesis across methods and theories in epidemiology.

EPI 656 HIV/AIDS Epidemiology (3 cr.)
The course will start with a review of the known characteristics and pathology of the human immunodeficiency virus infection and the pathogenesis of the clinical acquired immunodeficiency syndrome. Biological and behavioral factors that determine the risks of transmission of the HIV infection will be emphasized and public health prevention strategies will be evaluated. The global HIV epidemic will be considered along with the impact of HIV infection on vulnerable populations, especially women and children. Ethical factors and the impact of stigma will be discussed.

EPI 660 Mentored Epidemiology Teaching (1 cr.)
This course is intended to provide a guided, mentored teaching experience for doctoral students in Epidemiology. In addition to typical and course-specific teaching assistant (TA) duties that support the teaching faculty member/course instructor, PhD epidemiology graduates will be provided basic-level preparation for independent teaching. Each TA is expected to perform some or all of the following duties: 1. Prepare for and hold office hours for student enrolled in the course they have been assigned to, 2. Support on-line (Sakai) teaching website for the course, if needed for the course (students must complete a TA confidentiality form for these Sakai activities and submit to the OHSU Teaching and Learning Center). 3. Support the development and distribution of course materials for students and the instructor. 4. Support the evaluation of students' assigned work, including homework, quizzes and tests, term papers, small group activities, computer-lab assignments, etc. 5. Prepare and deliver one or more course sessions under the supervisor of the faculty/course instructor mentor.

EPI 668 Infectious Disease Epidemiology (2 cr.)
Provides an introduction to infectious epidemiology, and includes fundamental topics such as outbreak investigation, public health communicable disease surveillance and reporting, biological concepts of disease introduction, evolution and spread, and design of population-based studies to evaluate features of infectious diseases (e.g., risk factors, method of spread, clinical features, disease prevalence). Will also introduce some of the categories of communicable diseases and highlight some features of the major diseases within each category.

EPI 676 Chronic Disease Epidemiology (2 cr.)
Gives students an understanding of the epidemiology of major chronic diseases in developed countries. It covers three aspects of chronic disease: 1) epidemiology methods used in their study, 2) epidemiologic findings and current status of epidemiologic research into various chronic diseases, and 3) the epidemiology of the major risk factors for chronic diseases. The course is based on presentations by researchers and public health practitioner experts on specific chronic disease topics.

ESHH 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

ESHH 505 Reading and Conference (1-6 cr.)
Environmental health topics individually selected by the student and supervising faculty member.

ESHH 509PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

ESHH 510 Topics (1-4 cr.)
Topics vary by term

ESHH 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the

individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

ESHH 511 Concepts of Environmental Health (3 cr.)
An intensive course designed to familiarize students with fundamentals of environmental health from a scientific and conceptual perspective. Topics are considered within multi-causal, ecological, adaptive systems, and risk-assessment frameworks. Includes consideration of biological, chemical, and physical agents in the environment, which influence public health and well-being. Recommended prerequisite: graduate standing.

ESHH 512 Global & Planetary Health Concepts (3 cr.)
This course provides an introduction to Global Health. It will focus on the factors that make public health a priority at regional and global scales. It will also address the underlying processes that determine public health in a range of regional settings.

ESHH 515 Geographic Information Systems for Public Health (3 cr.)
Public health practitioners track population data to plot disease trends and associated patterns of social and biological determinants of health disparities. This course will cover concepts of basic mapping using Geographic Information System (GIS) software. Types and sources of data will be reviewed, along with their uses for understanding demographic and socioeconomic trends. This is an asynchronous, online “lab” course based on tutorials and case studies. Students interested in a strong understanding of underlying GIS principles should consider GEOG 588 instead of this course.

ESHH 519 Environmental Health in a Changing World (3 cr.)
Environmental hazards that affect human health are examined in the context of current social, political and regulatory pressures. Emphasis will be on public health security and disaster response. Topics include the effect of environment hazards (i.e. tsunami, volcano, flooding, earthquake, storms, extreme heat and cold) on human health, environmental change and emerging and re-emerging disease, government agencies and response planning, technology and public health crises, public health response to terrorism, industrial emergencies, mental health issues, and response for special populations.

ESHH 521 Occupational Health (4 cr.)
Occupational Health students will learn about the current Total Worker Health approach to creating safe and healthful work environments, focusing on workplace hazards and the methods and strategies for their elimination or control. Topics are expected to include occupational health professions, evaluation of hazards and the hierarchy of controls, chemical and physical hazards, psychosocial issues, shift work, workers' compensation and health care, global and emerging issues, special and priority populations (guided by faculty research and student interest), contingent and informal working populations, and workplace interventions (e.g., policy, organizational systems, engineering, job design, ergonomics, leadership, selection and training, and behavior change).

ESHH 529 Environmental Toxicology & Risk Assessment (4 cr.)
This course covers the health effects of chemicals in the environment and regulatory risk assessment. Methods for both human health and ecological risk assessment will be presented including hazard identification, exposure assessment, dose-response relationships, risk communication, toxicity testing, and computational models in toxicology. Special emphasis will be placed upon ethical risk assessment and communication with regards to sensitive sub-populations.

ESHH 530 Environmental and Occupational Health Chemistry (4 cr.)
This course provides an overview of chemical processes that are important in the environment and examines how they impact human health. Topics will include atmospheric chemistry, aquatic chemistry, industrial chemistry, hazardous waste chemistry, environmental restoration, as well as regulations for protecting human and environmental health from hazardous chemicals.

ESHH 532 Ecological Public Health (3 cr.)
The course provides an introduction to biological processes in environmental systems and the influence of human activities on these processes. Topics include ecology and evolution, population growth, natural resources, and environmental sustainability. In addition to fundamental knowledge in biology, students will demonstrate understanding of environmental inter-relationships and contemporary environmental issues.

ESHH 611 Concepts of Environmental Health (3 cr.)
An intensive course designed to familiarize students with fundamentals of environmental health from a scientific and conceptual perspective. Topics are considered within multi-causal, ecological, adaptive systems, and risk-assessment frameworks. Includes consideration of biological, chemical, and physical agents in the environment, which influence public health and well-being. Recommended prerequisite: graduate standing.

ESHH 612 Global & Planetary Health Concepts (3 cr.)

This course provides an introduction to Global Health. It will focus on the factors that make public health a priority at regional and global scales. It will also address the underlying processes that determine public health in a range of regional settings.

ESHH 615 Geographic Information Systems for Public Health (3 cr.)
Public health practitioners track population data to plot disease trends and associated patterns of social and biological determinants of health disparities. This course will cover concepts of basic mapping using Geographic Information System (GIS) software. Types and sources of data will be reviewed, along with their uses for understanding demographic and socioeconomic trends. This is an asynchronous, online "lab" course based on tutorials and case studies. Students interested in a strong understanding of underlying GIS principles should consider GEOG 588 instead of this course.

GEOG 588 Geographic Information Systems (4 cr.)
See Portland State University Bulletin for details.

GEOG 597 Advanced Spatial Quantitative Analysis (4 cr.)
See Portland State University Bulletin for details.

HSMP 502 Independent Study (1-12 cr.)
Independent study

HSMP 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

HSMP 505 Reading and Conference (1-9 cr.)
Credit to be arranged.

HSMP 509 Practicum (1-6 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

HSMP 509FE Practicum (1-6 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

HSMP 509PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

HSMP 510 Selected Studies (1-4 cr.)
Topics vary by term

HSMP 510IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

HSMP 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

HSMP 541 Organizational Behavior in Health Service Organizations (3 cr.)
Provides an overview of organizational theory and behavior in health services organizations. Emphasis is on developing an

understanding of the factors and forces which influence the organization, behavior, and operations of health services delivery organizations through consideration of organizations, their environments, and the roles of individuals working in management.

HSMP 544 Leadership & Governance in Health Services (3 cr.)
Class explores principles and practices of leadership and governance in a variety of health and human services organizations. Theories of leadership and models of governance are studied, and explored through case studies of local health and human services leaders and their governance relationships. Students also conduct self-assessments of present and future leadership practice and potential.

HSMP 571 Health Policy (3 cr.)
Centers on an investigation of the public policy process as it affects the health care field. Specific health care policies and programs are used to explore the characteristics of the health care policy process and the factors involved in the formulation, implementation, and evaluation of health care policies and programs.

HSMP 573 Values & Ethics in Health (3 cr.)
This course addresses issues and questions regarding values and ethics in health, with particular attention to public health practice and health policy and management. It provides students with opportunities to consider issues in health and social services that challenge values and pose ethical issues, and assists students in addressing these issues in the context of both personal and organizational values and beliefs. Specific course content includes, but is not limited to, ethical issues such as reproductive issues, emerging diseases, product liability, pharmaceutical controls, advertising, occupational and environmental issues, and research dilemmas.

HSMP 574 Health Systems Organization (3 cr.)
This course introduces basic concepts and issues in the organization, financing, and delivery of health services. The emphasis is on the systemic aspects of health services production and delivery which address the health needs of populations with respect to death, disease, disability, discomfort, and dissatisfaction. Students will examine the inter-relationships of system structures, subsystems, and processes, as well as their interactions with the larger social, cultural, economic and political environments in which they exist. The focus is on the United States, with international comparisons used to illustrate similarities and differences.

HSMP 575 Advanced Health Policy (3 cr.)
Provides students focusing on health policy analysis or advocacy the opportunity to explore specific areas of health policy in-depth. Taught as a seminar with students required to select two policy areas, develop readings and questions, and lead class discussion facilitated by the instructor. Coursework emphasizes the understanding, identification and development of successful and sustainable health policy including preparation of four brief, structured policy proposals.

HSMP 576 Strategic Management of Health Care Organizations (3 cr.)
This course provides prospective and current health care managers with the tools necessary to successfully manage their departments/organizations in a strategic manner. Course content will build upon the basic methods of strategic planning and management, with special attention paid addressing and managing the problems and challenges specific to the health care industry.

HSMP 577 Health Care Law & Regulation (3 cr.)
Course intended to be an introduction to the American legal system and the laws that affect public health and health care. Initially, course focuses on public legal relationships between governments and individuals, and proceeds to review private legal relationships between individuals or organizations. Reviews the source of laws affecting health care, the basics of constitutional law, the right to privacy, state and federal regulation of health care, and negligence in health care. Wraps up with an introduction to cutting edge health care issues such as health care fraud and abuse compliance and medical record privacy.

HSMP 578 Performance Improvement in Health Services (3 cr.)
Intended to introduce students to the concepts of continual improvement and illustrate applications of these concepts in health care. The basic content will be drawn from the industrial quality improvement literature; this will be elaborated through presentation and analysis of health care case studies. Students will gain an understanding of different approaches to process improvement and quality management and will be prepared to apply this knowledge in the practice setting.

HSMP 579 Health Information Technology & Systems Management (3 cr.)
Advances in information technology are driving fundamental changes throughout health care and transforming the health care industry. Students will gain an understanding how to manage and use health information technology systems. The course will identify the various types of health care information systems, and assess the key issues confronting the management of such systems, including business needs, the relationship between organizational needs and technology capabilities, and the management and control of

IT resources in a variety of health-related organizational settings.

HSMP 580 Health Services Human Resources Management (3 cr.)
Overview of human resources within the context of health care organizations. Focus on the practical application of human resources management principles in the work setting through discussion of situations common in health care environments. Elements of the situation evaluated from the health care employee and health care manager perspectives. Examples of techniques, forms, and tools will be discussed.

HSMP 581 Population Health: Policy & Practice Implications (3 cr.)
This course is designed to introduce graduate students to population health, and will include an examination of the drivers of population health and the role of policy and practice in improving it. Students in this course will develop an understanding of the various meanings of the term "population health" and how the term is used across disciplines. Students will examine how health outcomes in the United States compare to peer countries, and consider three primary drivers: long-term demographic trends (e.g., population aging, immigration, fertility); social and economic policies(including health policy); and characteristics of the healthcare system. Students will learn how to apply a population health perspective to develop effective public policies and practice. The primary focus of this course is on the United States, with international comparisons to highlight similarities and differences.

HSMP 582 Oregon Health Policy: Lessons for State & National Reform (3 cr.)
Reviews Oregon's nationally recognized health reforms and examine the lessons learned for the development and implementation of health policy at the national, state and local levels. Fundamental to the course will be exploring the many issues around employing public policy to address problems around access, cost, financing and quality in health care. This will be a seminar style course with an opportunity for students to meet with and learn from experts. Expected preparation: HSMP 571 Health Policy.

HSMP 583 Economics of Health Systems & Policy (3 cr.)
Health policy has a fundamental transactional nature. Economics provides a broad theoretical framework that seeks to assess and understand transactional relationships. Thus, economics has particular value as a means to diagnose the transactional problems that underpin health system dynamics and provide frameworks for proposed solutions. This course applies economic theory to assess problems in health systems and propose solutions, as well as critique existing policy and develop sound policy alternatives.

HSMP 584 Social Policy & Public Health (3 cr.)
Examines how social policies influence health, with particular attention to health equity and disparities. Students will develop skills necessary to assess the empirical evidence for, and health implications of social policies in the areas of education, agriculture/nutrition, social welfare/income transfer, employment/labor, housing/built environment, transportation, civil rights, and other policy domains.

HSMP 585 Implementation Science in Health Systems (3 cr.)
Students are introduced to the practice of implementation science as a strategic means to improve implementation efforts and as a foundation for designing research to further that end. Common implementation science frameworks, models and strategies are introduced and assessed for their implications for action or measurement at the policy, system, organization and community level. This course is an elective for the Health Management and Policy (HMP) program.

HSMP 586 Introduction to Health Economics (3 cr.)
Focuses on defining and measuring the performance of the health care sector, defining and explaining microeconomic concepts, and evaluating various policy initiatives to improve efficiency, equity, and technological progress in health care. Specific topics include description of the health care industry, production of health, measurement of health care price changes, theory of demand for health care, theory of production and cost, measurement of inputs and outputs, cost-benefit and cost-effectiveness analysis, and structure and functioning of markets. In addition, the role of government in a private economy in dealing with market failure is discussed, especially as it relates to the goal of assuring universal access to health care. Does not require any specific preparation in economics or mathematics, although graphical presentation of economic concepts is emphasized.

HSMP 587 Financial Management of Health Services (3 cr.)
Focuses on the analysis and administration of resources in the health care field. Among the specific topics included in this course are financial statements, budgeting, cash flow, costing, capital decision making, sources of capital and operating funds, depreciation and government reimbursement schemes, and human resources planning and management.

HSMP 588 Program Evaluation & Management in Health Services (3 cr.)
Introduces the theory and practice of program evaluation in the health services system. Includes multiple methods and uses of evaluation from the perspectives of managers, health professionals, and health services researchers, with an emphasis on the utilization of evaluation findings in program planning and management in health services. Course learning

will be synthesized through a community-based learning experience involving working with a community partner to develop an evaluation framework and methodology for an existing or proposed health program.

HSMP 589 Research Design in Health Services (3 cr.)
Provides an introduction to traditional methods of designing and conducting health services research. It is intended that at the completion of the course students will understand multiple approaches to health services research, be able to be both participants in and consumers of the research process, and will be competent in conducting critical appraisals of the health services literature and in writing research proposals.

HSMP 602 Independent Study (1-4 cr.)
Independent Study credit to be arranged.

HSMP 603 Dissertation (1-9 cr.)
Credits to be arranged.

HSMP 605 Reading and Conference (1-9 cr.)
Reading and Conference credit to be arranged.

HSMP 607 Doctoral Seminar (1-9 cr.)
Doctoral seminar in health systems and policy.

HSMP 610 Selected Studies (3 cr.)
Topics vary by term

HSMP 641 Organizational Behavior in Health Service Organizations (3 cr.)
This course provides an overview of organizational theory and behavior in health services organizations. The emphasis is on developing an understanding of the factors and forces that influence the structures, behaviors and operations of various organizations that deliver health and related services. This understanding will be developed through consideration of organizations, their environments, and the roles of individuals working in management.

HSMP 642 Organizational Theory & Health Systems (3 cr.)
Students in this course will develop an understanding of the organizational theory domain and enhance their ability to frame research within that domain in the context of health systems. The course emphasizes both substance and skill development, drawing on insights from the fields of economics, anthropology, political science and systems science to explore the structure and functions of organizations, the interaction of organizations and their environment, and the behavior of individuals within organizations. Understanding organizational theory, research, actions and outcomes is fundamental.

HSMP 660 Contemporary Research in Health Systems & Policy (3 cr.)
Doctoral seminar covering current topics in health systems and policy research providing doctoral students in the Health Systems and Policy Ph.D. program an opportunity to develop multi-disciplinary perspectives on current issues in their area of research.

HSMP 671 Health Policy (3 cr.)
Centers on an investigation of the public policy process as it affects the health care field. Specific health care policies and programs are used to explore the characteristics of the health care policy process and the factors involved in the formulation, implementation, and evaluation of health care policies and programs.

HSMP 673 Values & Ethics in Health (3 cr.)
This course addresses issues and questions regarding values and ethics in health, with particular attention to public health practice and health policy and management. It provides students with opportunities to consider issues in health and social services that challenge values and pose ethical issues, and assists students in addressing these issues in the context of both personal and organizational values and beliefs. Specific course content includes, but is not limited to, ethical issues such as reproductive issues, emerging diseases, product liability, pharmaceutical controls, advertising, occupational and environmental issues, and research dilemmas.

HSMP 674 Health Systems Organization (3 cr.)
This course introduces basic concepts and issues in the organization, financing, and delivery of health services. The emphasis is on the systemic aspects of health services production and delivery which address the health needs of populations with respect to death, disease, disability, discomfort, and dissatisfaction. Students will examine the inter-relationships of system structures, subsystems, and processes, as well as their interactions with the larger social, cultural, economic and political environments in which they exist. The focus is on the United States, with international comparisons used to illustrate similarities and differences.

HSMP 675 Advanced Health Policy (3 cr.)
Provides students focusing on health policy analysis or advocacy the opportunity to explore specific areas of health policy in-depth. Taught as a seminar with students required to select two policy areas, develop readings and questions, and lead class discussion facilitated by the instructor. Coursework emphasizes the understanding, identification and development of successful and sustainable health policy including preparation of four brief, structured policy proposals.

HSMP 677 Health Care Law & Regulation (3 cr.)
Course intended to be an introduction to the American legal system and the laws that affect public health and health care. Initially, course focuses on public legal relationships between governments and individuals, and proceeds to review private legal relationships between individuals or organizations. Reviews the source of laws affecting health care, the basics of constitutional law, the right to privacy, state and federal regulation of health care, and negligence in health care. Wraps up with an introduction to cutting edge health care issues such as health care fraud and abuse compliance and medical record privacy.

HSMP 681 Population Health: Policy & Practice Implications (3 cr.)
This course is designed to introduce graduate students to population health, and will include an examination of the drivers of population health and the role of policy and practice in improving it. Students in this course will develop an understanding of the various meanings of the term "population health" and how the term is used across disciplines. Students will examine how health outcomes in the United States compare to peer countries, and consider three primary drivers: long-term demographic trends (e.g., population aging, immigration, fertility); social and economic policies (including health policy); and characteristics of the healthcare system. Students will learn how to apply a population health perspective to develop effective public policies and practice. The primary focus of this course is on the United States, with international comparisons to highlight similarities and differences.

HSMP 682 Oregon Health Policy: Lessons for State & National Reform (3 cr.)
Reviews Oregon's nationally recognized health reforms and examine the lessons learned for the development and implementation of health policy at the national, state and local levels. Fundamental to the course will be exploring the many issues around employing public policy to address problems around access, cost, financing and quality in health care. This will be a seminar style course with an opportunity for students to meet with and learn from experts. Expected preparation: HSMP 671 Health Policy.

HSMP 683 Economics of Health Systems & Policy (3 cr.)
Health policy has a fundamental transactional nature. Economics provides a broad theoretical framework that seeks to assess and understand transactional relationships. Thus, economics has particular value as a means to diagnose the transactional problems that underpin health system dynamics and provide frameworks for proposed solutions. This course applies economic theory to assess problems in health systems and propose solutions, as well as critique existing policy and develop sound policy alternatives.

HSMP 684 Social Policy & Public Health (3 cr.)
Examines how social policies influence health, with particular attention to health equity and disparities. Students will develop skills necessary to assess the empirical evidence for, and health implications of social policies in the areas of education, agriculture/nutrition, social welfare/income transfer, employment/labor, housing/built environment, transportation, civil rights, and other policy domains.

HSMP 685 Implementation Science in Health Systems (3 cr.)
Students are introduced to the practice of implementation science as a strategic means to improve implementation efforts and as a foundation for designing research to further that end. Common implementation science frameworks, models and strategies are introduced and assessed for their implications for action or measurement at the policy, system, organization and community level. This course is an elective for the Health Management and Policy (HMP) program.

HSMP 686 Introduction to Health Economics (3 cr.)
Focuses on defining and measuring the performance of the health care sector, defining and explaining microeconomic concepts, and evaluating various policy initiatives to improve efficiency, equity, and technological progress in health care. Specific topics include description of the health care industry, production of health, measurement of health care price changes, theory of demand for health care, theory of production and cost, measurement of inputs and outputs, cost-benefit and cost-effectiveness analysis, and structure and functioning of markets. In addition, the role of government in a private economy in dealing with market failure is discussed, especially as it relates to the goal of assuring universal access to health care. Does not require any specific preparation in economics or mathematics, although graphical presentation of economic concepts is emphasized.

HSMP 689 Research Design in Health Services (3 cr.)
Provides an introduction to traditional methods of designing and conducting health services research. It is intended that at the completion of the course students will understand multiple approaches to health services research, be able to be both participants in and consumers of the research process, and will be competent in conducting critical appraisals of the health services literature and in writing research proposals.

LING 516 Discourse Analysis (4 cr.)
See Portland State University Bulletin for details.

PA 525 Grantwriting for Nonprofit Organizations (3 cr.)
See Portland State University Bulletin for details.

PA 549 Cross-cultural Communication in the Public Sector (3 cr.)
See Portland State University Bulletin for details.

PA 554 Policy Analysis Research (3 cr.)
See Portland State University Bulletin for details.

PA 556 Public Contract Management (3 cr.)
See Portland State University Bulletin for details.

PA 558 Managing Public Projects & Programs: From Local to Global (3 cr.)
See Portland State University Bulletin for details.

PA 575 Foundations of Collaborative Governance (3 cr.)
See Portland State University Bulletin for details.

PAP 616 Policy Process (3 cr.)
See Portland State University Bulletin for details.

PHE 502 Independent Study (1-8 cr.)
Independent study

PHE 502IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

PHE 504 Cooperative Education/Internship (1-6 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

PHE 504FE Cooperative Education/Internship (1-6 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

PHE 504PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

PHE 505 Reading and Conference (1-6 cr.)
Reading and conference

PHE 510 Selected Topics (1-4 cr.)
Topics vary by term

PHE 510IP Integrative Project (1 cr.)
A key culminating step for each MPH student is the Integrative Project, in which a high-quality written product is produced. The written product provides students with the opportunity to demonstrate their academic learning and public health practice skills through the synthesis of foundational and program competencies and application of those competencies to complex public health issues.

PHE 510PE Practice Experience (1-4 cr.)
The Practice Experience involves the student working in an organization in public, private, or community settings engaged in public health activities. It is an opportunity for the student to apply knowledge and skills from their MPH degree coursework to important public health problems in real-life settings. Students should produce at least two products from their Practice Experience that demonstrate the attainment of at least 3 foundational and 2 program competencies. Group projects are approvable, if the roles and contributions of the individual students involved are clearly distinguishable. Each individual student will create their own work products and portfolio.

PHE 511 Foundations of Public Health (3 cr.)
Provides students with an understanding of the field of public health. It provides knowledge about public health principles, concepts, values, tools, and applications. Key topics in the class include the mission of public health, the politics of public health, determinants of health in the United States, major models and strategies for health promotion, and community perspectives on public health interventions.

PHE 512 Principles of Health Behavior (3 cr.)

Presents the biological, psychological, behavioral, sociocultural, and environmental factors that function in the promotion of health and prevention of disease. Theories developed to explain health and illness behaviors at intrapersonal, interpersonal, and group/community levels are introduced. Ethical issues involved in health-related behavior change are examined. Satisfies the core M.P.H. requirement. Expected preparation: graduate standing.

PHE 513 Introduction to Public Health (3 cr.)
Public health has been defined as the "art and science of preventing disease, prolonging life and promoting health through the organized efforts of society" (Acheson, 1988, WHO). This survey course intended to provide graduate students with foundational knowledge of public health and will take a population science approach to public health practice.

PHE 516 Families and Aging (4 cr.)
Family ties of middle aged and older adults are explored using a life course perspective. The diversity of family structure and experience is emphasized with attention to gender, race, class, and ethnicity. Life transitions are highlighted as are informal and formal services available to support older adults and their families.

PHE 517 Community Organizing (3 cr.)
Emphasizes the role of community organizing to engage diverse communities to advance the conditions in which people can be healthy. It further examines the role of health educators, grassroots activists, and others in stimulating social, political, and economic approaches to promote community health. Also addresses the advancement of theoretical knowledge and practical skills of community organizing.

PHE 519 Introduction to the Etiology of Disease (3 cr.)
The biological and molecular bases of public health: the immune system, genomics, environmental exposures. The evidence-based role of biology in ecological models of population health, its integration in disease prevention and control policies and programs. Effects of behavior on biology. Legal, social, ethical issues will be considered.

PHE 520 Qualitative Research Design (3 cr.)
Presents the philosophical and theoretical bases supporting the development of alternate research paradigms in human inquiry. Essential characteristics of three major alternate paradigms (interpretivist, constructivist, and critical theory) are introduced. Validity, reliability, and related concepts are examined from the perspective of each paradigm. Alternate strategies for inquiry are presented and ethical considerations related to qualitative forms of inquiry are addressed.

PHE 521 Quantitative Research Design & Analysis (3 cr.)
Introduction to quantitative research design and statistical analysis. Emphasis on development of a research proposal. Topics include descriptive research, experimental and quasi-experimental research, univariate statistical procedures, and methods for planning and writing a research report.

PHE 522 Health & Social Inequalities (3 cr.)
Introduction to historical and theoretical foundations for social epidemiology; investigates the conceptualization and measurement of different social determinants of health using a lifecourse approach; explores how the "embodiment" of social forces influence disease processes; and examines different actions (i.e., behavioral, clinical, social, legislative and political) used to eliminate health inequities within our local, national and international communities.

PHE 523 Business and Aging (4 cr.)
Economic and business implications of population aging, including an exploration of demographic changes, the economic reality faced by today's older adults in work and retirement, and older adults as consumers.

PHE 527 Food Systems & Public Health (3 cr.)
Examines public health effects of industrial and alternative food systems. Designed as an introductory course for students interested in exploring issues at the intersections of public health, equity, and the environment. Key course themes include: food consumption patterns, health inequities, food insecurity and hunger, healthy food environments, food animal production.

PHE 528 Stress, Food and Health (4 cr.)
This survey course is designed to provide students with basic information concerning the interaction of biological, psychological, behavioral, social and cultural processes that function in the intersection of food, eating behaviors, and short- and long-term health outcomes. A particular emphasis will be placed on the impact of stress and social determinants on these relationships. In this course we will explore the complicated determinants of eating and physical activity behaviors and identify key leverage points for effective interventions for promoting healthy eating.

PHE 532 Developmental Origins of Health & Human Disease Epidemiology (3 cr.)
Covers the history of the Developmental Origins of Health and Disease (DOHaD) framework, the trends that drive and result from DOHaD processes. It will explain epigenetics and other mechanisms which through priming influence lifelong health.

PHE 534 Social Epidemiology Methods & Theory (3 cr.)

Surveys social epidemiology practice including measurement, study design, analysis and translation for researching behavioral, social, economic, and cultural determinants of population distributions of health outcomes. The course emphasizes the application of social epidemiology methods tightly coupled to theory salient to community health practice & policy.

PHE 540 Mass Media & Health (3 cr.)
Examine the use and effectiveness of mass media to both report the news about health and to promote changes of action in health-related areas. Students will be required to critique media health messages regarding their objectivity and the extent to which they are comprehensive.

PHE 541 Media Advocacy & Public Health (3 cr.)
Provides students with an understanding of the role of media advocacy in advancing public health policies to promote health. The course uses lectures, group exercises, and case studies to illustrate basic concepts and skills related to media advocacy. Topics covered include: gaining access to the news, framing issues from a public health perspective, and the use of paid advertising to advance policy. Content areas include tobacco, violence, handguns, suicide, alcohol, and other public health issues.

PHE 545 Men's Health (4 cr.)
The focus of this course is current men's health issues. Students have opportunities to critically explore a broad array of men's health concerns across the life span from a multidisciplinary perspective. Men's health issues may include such topics as reproductive health, violence, aging, heart disease, depression, and sexuality. The class is taught in an interactive format through group discussion, presentations, and the participation of group speakers. The course focuses on the consideration and critique of current influences on men's health including the effect of the health care system, male socialization, the impact of the social and cultural factors, and the influence of evolving technology.

PHE 546 Urban & Community Health (3 cr.)
Examines the social factors associated with urban health and quality of life, such as social class, gender inequalities, and racism. Emphasis will be placed upon community development and collective responses to the maintenance of health rather than upon individualized health promotion and disease prevention strategies.

PHE 550 Program Planning (4 cr.)
Addresses practical applications of health promotion theories. Presents examples of planning, implementation, and evaluation of health promotion programs in a variety of settings as guides for the development of health promotion programs

PHE 551 Women and Holistic Health (4 cr.)
Exploring the intersection of three fields --allopathic medicine, women's health, and complementary therapies-- the course examines the emerging field of integrative medicine, highlighting the contributions that women care givers and healers have made to its development. An overview of common women's health concerns provides the opportunity to compare and contrast essential elements of holistic treatment approaches with those of allopathic medicine.

PHE 553 Women's Reproductive Health (4 cr.)
Critical review of current public health and socio-political issues in women's reproductive health. Both national and international topics are discussed. Students apply health knowledge in identifying and seeking solutions to the issues which concern health care providers, consumers, and policy makers.

PHE 556 Health Aspects of Aging (4 cr.)
Examination of health-related changes that occur with aging. Review of current scientific literature with an investigation of physiological mechanisms responsible for changes in functional capacity throughout life. Explores the role of physical activity and nutrition in healthy aging.

PHE 557 National Long Term Care Policy (3 cr.)
This course examines the need for long-term care services and the risk factors associated with utilization of them as well as familiarizing students with the financing and delivery mechanisms in long-term care, both public and private. The policy issues in current long-term care initiatives are explored.

PHE 558 Perspectives on Aging (3 cr.)
An introduction to the field of gerontology is presented from the perspectives offered by multiple disciplines, including sociology, psychology, biology, economics, political science, and demography. Stereotypes of aging and theoretical frameworks for understanding aging are examined, as are normal age-related changes, the impact of social, political, and economic conditions on the process of aging, and the myriad consequences of a growing population of elders.

PHE 559 Economics of Aging (3 cr.)
Objectives are (1) understand the roots of income inequality between the aged and non-aged; (2) review the economic and policy factors that influence the decision to retire; (3) understand the political economy of old age income support in the U.S. and abroad; (4) explore the history, operation, and policy questions of our major public pension system, social security; and (5) discuss private pensions in relationship to U.S. income maintenance policy.

PHE 562 Global Aging (3 cr.)
The rapid, unprecedented aging of the world's populations is resulting in myriad changes that will affect societies, cultures, economies, families, and individuals and their daily lives. Students will learn about broad global trends related to the aging of the world as well as aging in particular countries and regions.

PHE 566 Mind/Body Health: Disease Prevention (4 cr.)
An investigation of the integral relationship between body and mind and how that relationship manifests itself in health, illness, and promotes healing. Philosophical and scientific foundations of mind/body health are explored. Mind/body research and its application within allopathic medicine is examined as is research and practice in complementary fields of medicine and health care.

PHE 601 Research (1-12 cr.)
Research credit to be arranged.

PHE 602 Independent Study (1-6 cr.)
Credit to be arranged.

PHE 603 Dissertation (1-12 cr.)
Credits to be arranged.

PHE 610 Selected Topics (1-4 cr.)
Special topics

PHE 612 Principles of Health Behavior (3 cr.)
Presents the biological, psychological, behavioral, sociocultural, and environmental factors that function in the promotion of health and prevention of disease. Theories developed to explain health and illness behaviors at intrapersonal, interpersonal, and group/community levels are introduced. Ethical issues involved in health-related behavior change are examined. Satisfies the core M.P.H. requirement. Expected preparation: graduate standing.

PHE 619 Mentored Teaching (4 cr.)
Each student will be paired with a Community Health faculty member to shadow one term of teaching of either an UG or an MPH level Community Health class.

PHE 622 Health & Social Inequalities (3 cr.)
Introduction to historical and theoretical foundations for social epidemiology; investigates the conceptualization and measurement of different social determinants of health using a lifecourse approach; explores how the "embodiment" of social forces influence disease processes; and examines different actions (i.e., behavioral, clinical, social, legislative and political) used to eliminate health inequities within our local, national and international communities.

PHE 623 Doctoral Seminar in Health Research (1 cr.)
Research seminar required for first- and second-year doctoral students in the community health PhD program. Students learn about critical evaluation of health research, hypothesis generation, the publication and review process, grant application process, and development an independent research program.

PHE 624 Philosophy through Power Calculations: Writing Methods Sections for Research Proposals (3 cr.)
Approaches to community health research are explored, including the scientific method, ethics in research, theories, conceptual models and hypothesis generation, causal inference, the elements of research design, measurement (reliability, validity), developing data collection instruments, internal and external validity, and experimental methods.

PHE 625 Advanced Methods Toolkit: Design, Sampling, Scale Development, & More (3 cr.)
A course in applied, non-experimental research designs used in epidemiological research. Emphasis in this course is on quasi-experimental designs, program evaluation, sampling methods, longitudinal designs, and secondary data sources. Students will learn about research design, critical evaluation of research methods, and research proposal concepts.

PHE 626 Teaching & Learning in Health Promotion & Social Work (3 cr.)
This course focuses on pedagogical theory and practice in professional settings. Students develop skills to design, evaluate, and implement effective curriculum and instruction across settings: academic classrooms, community contexts, and research projects. Topics include educational theory, course design, learning and teaching strategies, assessment, and scholarship of teaching and learning.

PHE 632 Developmental Origins of Health & Human Disease Epidemiology (3 cr.)
Covers the history of the Developmental Origins of Health and Disease (DOHaD) framework, the trends that drive and result from DOHaD processes. It will explain epigenetics and other mechanisms which through priming influence lifelong health.

PHE 634 Social Epidemiology Methods & Theory (3 cr.)
Surveys social epidemiology practice including measurement, study design, analysis and translation for researching behavioral, social, economic, and cultural determinants of population distributions of health outcomes. The course emphasizes the application of social epidemiology methods tightly coupled to theory salient to community health practice & policy.

PHE 657 National Long Term Care Policy (3 cr.)
This course examines the need for long-term care services and the risk factors associated with utilization of them as well as familiarizing students with the financing and delivery mechanisms in long-term care, both public and private. The policy issues in current long-term care initiatives are explored.

PHE 658 Perspectives on Aging (3 cr.)
An introduction to the field of gerontology is presented from the perspectives offered by multiple disciplines, including sociology, psychology, biology, economics, political science, and demography. Stereotypes of aging and theoretical frameworks for understanding aging are examined, as are normal age-related changes, the impact of social, political, and economic conditions on the process of aging, and the myriad consequences of a growing population of elders.

PHE 659 Economics of Aging (3 cr.)
Objectives are (1) understand the roots of income inequality between the aged and non-aged; (2) review the economic and policy factors that influence the decision to retire; (3) understand the political economy of old age income support in the U.S. and abroad; (4) explore the history, operation, and policy questions of our major public pension system, social security; and (5) discuss private pensions in relationship to U.S. income maintenance policy.

PSY 510 Selected Topics (1-4 cr.)
See Portland State University Bulletin for details.

PSY 550 Occupational Health Psychology (4 cr.)
See Portland State University Bulletin for details.

PSY 610 Hierarchical Linear Modeling for Longitudinal Data Analysis (4 cr.)
See Portland State University Bulletin for details.

PSY 621 Univariate Quantitative Methods (5 cr.)
See Portland State University Bulletin for details.

PSY 623 Structural Equation Modeling (4 cr.)
See Portland State University Bulletin for details.

PSY 625 Categorical Data Analysis (4 cr.)
See Portland State University Bulletin for details.

PSY 626 Multilevel Regression (4 cr.)
See Portland State University Bulletin for details.

SOC 637 Qualitative Data Analysis (4 cr.)
See Portland State University Bulletin for details.

SOC 638 Integrating Qualitative & Quantitative Methods (4 cr.)
See Portland State University Bulletin for details.

SOC 695 Advanced Quantitative Methods (4 cr.)
See Portland State University Bulletin for details.

STAT 567 Applied Probability I (3 cr.)
See Portland State University Bulletin for details.

STAT 568 Applied Probability II (3 cr.)
See Portland State University Bulletin for details.

STAT 580 Nonparametric Methods (3 cr.)
See Portland State University Bulletin for details.

SW 525 Poverty: Policies & Programs (3 cr.)
See Portland State University Bulletin for details.

SW 553 Research for Racial Justice (3 cr.)
See Portland State University Bulletin for details.

SYSC 510 Seminar: Special Topics (1-6 cr.)
See Portland State University Bulletin for details.

SYSC 513 Holistic Strategies for Problem Solving (4 cr.)
See Portland State University Bulletin for details.

SYSC 514 System Dynamics (4 cr.)
See Portland State University Bulletin for details.

SYSC 518 System Sustainability & Organizational Resilience (4 cr.)
See Portland State University Bulletin for details.

SYSC 540 Introduction to Network Science (4 cr.)
See Portland State University Bulletin for details.

SYSC 625 Agent Based Simulation (4 cr.)
See Portland State University Bulletin for details.

SYSC 651 Discrete Multivariate Modeling (4 cr.)
See Portland State University Bulletin for details.

USP 615 Economic Analysis of Public Policy (4 cr.)
See Portland State University Bulletin for details.

USP 634 Data Analysis I (4 cr.)
See Portland State University Bulletin for details.

USP 654 Data Analysis II (4 cr.)
See Portland State University Bulletin for details.

USP 683 Qualitative Analysis (4 cr.)

See Portland State University Bulletin for details.

Universitywide

IPE 401 Foundations of Patient Safety & Interprofessional Practice (0.25-0.5 cr.)
The Foundations of Patient Safety and Interprofessional Practice series (IPE 401, 501, 601 & 701) introduces early healthcare learners to the four core competencies of interprofessional education: Competency 1: Values/ ethics for interprofessional practice, Competency 2: Roles and responsibilities for collaborative practice, Competency 3: Interprofessional communication practice (CC), Competency 4: Interprofessional teamwork and team-based practice. Learners collaborate to learn the foundations of patient safety and how working together can improve patient care outcomes.

IPE 410 Narrative Competence (1 cr.)
Students will develop narrative competence, defined as the ability to recognize, absorb, interpret and be moved to action by the stories of illness. Students will master the concepts of attention, representation, affiliation and reflection as they relate to team based and collaborative practice. Students will develop skills of close reading and generous listening.

IPE 412 Rural Health Equity: Community, Collaboration and Action (1-3 cr.)
In this course, students will work independently and collaboratively with other students, faculty and community members to explore health and healthcare topics pertinent to rural communities. Emphasis will be placed on understanding the concept of rural health equity and the rural mortality penalty; the value, strengths and challenges of community engagement and team-based care in addressing rural population health issues; active engagement with individuals of other professions to maintain a climate of mutual respect and shared values; and reflecting on the balance between professional and personal identity in the context of living within a small community.

Students will learn and apply these concepts through selected readings and videos, guided discussions, guest speakers, and through work on a community-based project. Students will be introduced to principles of Community-Engaged Research (CEnR) by working collaboratively on a scholarly project with a community organization that allows students to apply what they learn from course materials and discussions. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach. Course activities are designed for minimal impact on students' concurrent clinical schedule.

IPE 422 Rural Health Equity: Community, Collaboration and Action 2 (0.5 cr.)
This course is designed for students who have already completed the 1 credit course. Students will continue their collaborative community-based scholarly project work with other students, faculty and community members. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach

Emphasis will be placed on deepening student understanding of the barriers, challenges and benefits of community-engaged scholarly projects in addressing rural health concerns, using a team-based, interprofessional approach.

IPE 423 Climate Change and Human Health (2 cr.)
Climate change is likely to be the largest threat to human health and well-being in the 21st century and indications are that people everywhere are already suffering from health problems that can be directly linked to changes in the environment, in food and water, and in society. This Course for health professionals introduces students to the science of climate change and its health implications across a broad range of concerns including but not limited to: heat waves, air pollution, natural disasters, and displacement. Students will explore the issues with a health care lens to understand what populations are most at risk, how to discuss these issues with patients, and what personal and clinical practice choices can improve health outcomes. Solutions to the climate crisis will be examined in the context of the many health co-benefits that arise from behaviors that limit greenhouse gas emissions and improve environmental health.

IPE 425 Relational Leadership (1 cr.)
This IPE course will draw upon the existing Relational Leadership Institute (RLI) curriculum to deliver essential competencies of Relational Leadership to enhance individual leadership practice, improve relational dynamics and communication on teams, foster interdependence in teamwork, and catalyze clinical/health systems transformation efforts. The collaborative combines large group didactics, small group work, and opportunities for individual and group reflection, in addition to application in clinical and innovation settings. The course competencies of enhancing emotional intelligence and self-awareness, fostering teamwork through cultivating psychological safer groups and surfacing conflict, coaching others through strength-based approaches, and collaborative advocacy to accelerate change intend to complement executive leadership skills traditionally seen in health systems transformation. The goals of the course are for participants to

unlearn dominant models of leadership that may impair interdependent teamwork, complement traditional technical styles of leadership with Relational Leadership in systems change, learn and practice skills within the course, and apply these skills within teams, organizations, and/or health systems for effective change.

IPE 501 Foundations of Patient Safety & Interprofessional Practice (0.25-0.5 cr.)
The Foundations of Patient Safety and Interprofessional Practice series (IPE 401, 501, 601 & 701) introduces early healthcare learners to the four core competencies of interprofessional education: Competency 1: Values/ ethics for interprofessional practice, Competency 2: Roles and responsibilities for collaborative practice, Competency 3: Interprofessional communication practice (CC), Competency 4: Interprofessional teamwork and team-based practice. Learners collaborate to learn the foundations of patient safety and how working together can improve patient care outcomes.

IPE 510 Narrative Competence (1 cr.)
Students will develop narrative competence, defined as the ability to recognize, absorb, interpret and be moved to action by the stories of illness. Students will master the concepts of attention, representation, affiliation and reflection as they relate to team based and collaborative practice. Students will develop skills of close reading and generous listening.

IPE 511 Interprofessional Pain Management (2 cr.)
This course will build on the basic concepts of pain management, a commonly encountered clinical experience. Pain management can be challenging and requires interprofessional expertise and collaboration. Case-based learning will provide robust opportunities to understand roles and perspectives of various professionals engaged in the delivery of evidence-based pain management.

IPE 512 Rural Health Equity: Community, Collaboration and Action (1-3 cr.)
In this course, students will work independently and collaboratively with other students, faculty and community members to explore health and healthcare topics pertinent to rural communities. Emphasis will be placed on understanding the concept of rural health equity and the rural mortality penalty; the value, strengths and challenges of community engagement and team-based care in addressing rural population health issues; active engagement with individuals of other professions to maintain a climate of mutual respect and shared values; and reflecting on the balance between professional and personal identity in the context of living within a small community.

Students will learn and apply these concepts through selected readings and videos, guided discussions, guest speakers, and through work on a community-based project. Students will be introduced to principles of Community-Engaged Research (CEnR) by working collaboratively on a scholarly project with a community organization that allows students to apply what they learn from course materials and discussions. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach. Course activities are designed for minimal impact on students' concurrent clinical schedule.

IPE 522 Rural Health Equity: Community, Collaboration and Action 2 (0.5 cr.)
This course is designed for students who have already completed the 1 credit course. Students will continue their collaborative community-based scholarly project work with other students, faculty and community members. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach.

Emphasis will be placed on deepening student understanding of the barriers, challenges and benefits of community-engaged scholarly projects in addressing rural health concerns, using a team-based, interprofessional approach.

IPE 523 Climate Change and Human Health (2 cr.)
Climate change is likely to be the largest threat to human health and well-being in the 21st century and indications are that people everywhere are already suffering from health problems that can be directly linked to changes in the environment, in food and water, and in society. This Course for health professionals introduces students to the science of climate change and its health implications across a broad range of concerns including but not limited to: heat waves, air pollution, natural disasters, and displacement. Students will explore the issues with a health care lens to understand what populations are most at risk, how to discuss these issues with patients, and what personal and clinical practice choices can improve health outcomes. Solutions to the climate crisis will be examined in the context of the many health co-benefits that arise from behaviors that limit greenhouse gas emissions and improve environmental health.

IPE 525 Relational Leadership (1 cr.)
This IPE course will draw upon the existing Relational Leadership Institute (RLI) curriculum to deliver essential competencies of Relational Leadership to enhance individual leadership practice, improve relational dynamics and communication on teams, foster interdependence in teamwork, and catalyze clinical/health systems transformation efforts. The collaborative combines large group didactics, small group work, and opportunities for

individual and group reflection, in addition to application in clinical and innovation settings. The course competencies of enhancing emotional intelligence and self-awareness, fostering teamwork through cultivating psychological safer groups and surfacing conflict, coaching others through strength-based approaches, and collaborative advocacy to accelerate change intend to complement executive leadership skills traditionally seen in health systems transformation. The goals of the course are for participants to understand the importance of Relational Leadership in systems change, learn and practice skills within the course, and apply these skills within teams, organizations, and/or health systems for effective change.

IPE 601 Foundations of Patient Safety & Interprofessional Practice (0.25-0.5 cr.)
The Foundations of Patient Safety and Interprofessional Practice series (IPE 401, 501, 601 & 701) introduces early healthcare learners to the four core competencies of interprofessional education: Competency 1: Values/ ethics for interprofessional practice, Competency 2: Roles and responsibilities for collaborative practice, Competency 3: Interprofessional communication practice (CC), Competency 4: Interprofessional teamwork and team-based practice. Learners collaborate to learn the foundations of patient safety and how working together can improve patient care outcomes.

IPE 610 Narrative Competence (1 cr.)
Students will develop narrative competence, defined as the ability to recognize, absorb, interpret and be moved to action by the stories of illness. Students will master the concepts of attention, representation, affiliation and reflection as they relate to team based and collaborative practice. Students will develop skills of close reading and generous listening.

IPE 611 Interprofessional Pain Management (2 cr.)
This course will build on the basic concepts of pain management, a commonly encountered clinical experience. Pain management can be challenging and requires interprofessional expertise and collaboration. Case-based learning will provide robust opportunities to understand roles and perspectives of various professionals engaged in the delivery of evidence-based pain management.

IPE 623 Climate Change and Human Health (2 cr.)
Climate change is likely to be the largest threat to human health and well-being in the 21st century and indications are that people everywhere are already suffering from health problems that can be directly linked to changes in the environment, in food and water, and in society. This Course for health professionals introduces students to the science of climate change and its health implications across a broad range of concerns including but not limited to: heat waves, air pollution, natural disasters, and displacement. Students will explore the issues with a health care lens to understand what populations are most at risk, how to discuss these issues with patients, and what personal and clinical practice choices can improve health outcomes. Solutions to the climate crisis will be examined in the context of the many health co-benefits that arise from behaviors that limit greenhouse gas emissions and improve environmental health.

IPE 625 Relational Leadership (1 cr.)
This IPE course will draw upon the existing Relational Leadership Institute (RLI) curriculum to deliver essential competencies of Relational Leadership to enhance individual leadership practice, improve relational dynamics and communication on teams, foster interdependence in teamwork, and catalyze clinical/health systems transformation efforts. The collaborative combines large group didactics, small group work, and opportunities for individual and group reflection, in addition to application in clinical and innovation settings. The course competencies of enhancing emotional intelligence and self-awareness, fostering teamwork through cultivating psychological safer groups and surfacing conflict, coaching others through strength-based approaches, and collaborative advocacy to accelerate change intend to complement executive leadership skills traditionally seen in health systems transformation. The goals of the course are for participants to understand the importance of Relational Leadership in systems change, learn and practice skills within the course, and apply these skills within teams, organizations, and/or health systems for effective change.

IPE 701 Foundations of Patient Safety & Interprofessional Practice (0.25-0.5 cr.)
The Foundations of Patient Safety and Interprofessional Practice series (IPE 401, 501, 601 & 701) introduces early healthcare learners to the four core competencies of interprofessional education: Competency 1: Values/ ethics for interprofessional practice, Competency 2: Roles and responsibilities for collaborative practice, Competency 3: Interprofessional communication practice (CC), Competency 4: Interprofessional teamwork and team-based practice. Learners collaborate to learn the foundations of patient safety and how working together can improve patient care outcomes.

IPE 710 Narrative Competence (1 cr.)
Students will develop narrative competence, defined as the ability to recognize, absorb, interpret and be moved to action by the stories of illness. Students will master the concepts of attention, representation, affiliation and reflection as they relate to team based and collaborative practice. Students will develop skills of close reading and generous listening.

IPE 711 Interprofessional Pain Management (2 cr.)
This course will build on the basic concepts of pain management, a commonly encountered clinical experience. Pain management can be challenging and requires inter-professional expertise and collaboration. Case-based learning will provide robust opportunities to understand roles and perspectives of various professionals engaged in the delivery of evidence-based pain management.

IPE 712 Rural Health Equity: Community, Collaboration and Action (1-3 cr.)
In this course, students will work independently and collaboratively with other students, faculty and community members to explore health and healthcare topics pertinent to rural communities. Emphasis will be placed on understanding the concept of rural health equity and the rural mortality penalty; the value, strengths and challenges of community engagement and team-based care in addressing rural population health issues; active engagement with individuals of other professions to maintain a climate of mutual respect and shared values; and reflecting on the balance between professional and personal identity in the context of living within a small community.

Students will learn and apply these concepts through selected readings and videos, guided discussions, guest speakers, and through work on a community-based project. Students will be introduced to principles of Community-Engaged Research (CEnR) by working collaboratively on a scholarly project with a community organization that allows students to apply what they learn from course materials and discussions. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach. Course activities are designed for minimal impact on students' concurrent clinical schedule.

IPE 722 Rural Health Equity: Community, Collaboration and Action 2 (0.5 cr.)
This course is designed for students who have already completed the 1 credit course. Students will continue their collaborative community-based scholarly project work with other students, faculty and community members. Projects are pre-identified by course leadership in partnership with the community, and may involve aspects of research, quality improvement and/or community outreach.

Emphasis will be placed on deepening student understanding of the barriers, challenges and benefits of community-engaged scholarly projects in addressing rural health concerns, using a team-based, interprofessional approach.

IPE 723 Climate Change and Human Health (2 cr.)
Climate change is likely to be the largest threat to human health and well-being in the 21st century and indications are that people everywhere are already suffering from health problems that can be directly linked to changes in the environment, in food and water, and in society. This Course for health professionals introduces students to the science of climate change and its health implications across a broad range of concerns including but not limited to: heat waves, air pollution, natural disasters, and displacement. Students will explore the issues with a health care lens to understand what populations are most at risk, how to discuss these issues with patients, and what personal and clinical practice choices can improve health outcomes. Solutions to the climate crisis will be examined in the context of the many health co-benefits that arise from behaviors that limit greenhouse gas emissions and improve environmental health.

IPE 725 Relational Leadership (1 cr.)
This IPE course will draw upon the existing Relational Leadership Institute (RLI) curriculum to deliver essential competencies of Relational Leadership to enhance individual leadership practice, improve relational dynamics and communication on teams, foster interdependence in teamwork, and catalyze clinical/health systems transformation efforts. The collaborative combines large group didactics, small group work, and opportunities for individual and group reflection, in addition to application in clinical and innovation settings. The course competencies of enhancing emotional intelligence and self-awareness, fostering teamwork through cultivating psychological safer groups and surfacing conflict, coaching others through strength-based approaches, and collaborative advocacy to accelerate change intend to complement executive leadership skills traditionally seen in health systems transformation. The goals of the course are for participants to understand the importance of Relational Leadership in systems change, learn and practice skills within the course, and apply these skills within teams, organizations, and/or health systems for effective change.

UNI 402 Conversations in Global Health (1 cr.)
Conversations in Global Health is a Pass/No Pass course that strives to engage OHSU students in all health professional schools and enhance their understanding about how to:

1) address a wide range of contemporary, population-based, global health issues and current events facing our world.
2) consider strategies that seek to improve the human condition.

Students will be introduced to a variety of social, political, historic, economic, ethical, cultural, and environmental factors that influence disease, equitable access to health care, and well-being, whether in a global or local context.

Conversations in Global Health is an online asynchronous course that features a multidisciplinary list of speakers.

UNI 405 Introduction to Medical Spanish (1 cr.)
This course aims to introduce students to essential medical Spanish terminology and phrases and increase their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their medical Spanish in class, using videos depicting common medical complaints, and in culturally themed "Cafecitos" where they can learn about different customs and practice their newly acquired skills in a clinical setting.

UNI 502 Conversations in Global Health (1 cr.)
Conversations in Global Health is a Pass/No Pass course that strives to engage OHSU students in all health professional schools and enhance their understanding about how to:

1) address a wide range of contemporary, population-based, global health issues and current events facing our world.
2) consider strategies that seek to improve the human condition.

Students will be introduced to a variety of social, political, historic, economic, ethical, cultural, and environmental factors that influence disease, equitable access to health care, and well-being, whether in a global or local context. Conversations in Global Health is an online asynchronous course that features a multidisciplinary list of speakers.

UNI 504 Qualitative Methods for Health Professionals (2 cr.)
This UNI course is designed for students from across health and science disciplines to obtain hands-on experience in qualitative research methods. The 2 credit course is designed to promote collaboration across disciplines through an introduction to qualitative approaches, such as interviews, focus groups, and observational procedures, which can be applied across research disciplines as a sole methodology or as part of a mixed-methods design. Students will work in interprofessional teams to plan for and engage in basic data collection and analysis, with a focus on study design, sampling and selection, budgeting for qualitative tasks, data management, coding, content analysis and reporting. Attention will be paid to the specific issues of ethics and confidentiality in qualitative research, as well as the unique challenges of rigor and reproducibility as they apply to qualitative methods. At the end of the course, students will be able to select an appropriate qualitative method, implement it with their target population, analyze the results, and present it clearly.

UNI 505 Introduction to Medical Spanish (1 cr.)
This course aims to introduce students to essential medical Spanish terminology and phrases and increase their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their medical Spanish in class, using videos depicting common medical complaints, and in culturally themed "Cafecitos" where they can learn about different customs and practice their newly acquired skills in a clinical setting.

UNI 511 Data Equity for Health Professionals (2 cr.)
This is an introductory course on complex topics related to data equity, which guide one to conduct health research with inclusivity, equity and justice in mind. Topics include the concepts of data equity and data justice; eugenics in statistical history; and data equity framework in health research including study design, data collection, visualization, analysis and interpretation, communication and dissemination. Additional topics will include biases and impacts of using social variables in clinical algorithms and prediction models, and potential approaches to address the biases. This course will illustrate concepts through examples and case studies, promote critical thinking in data equity, and facilitate collaboration and discussion among students. Additional topics will be added as necessary. This course welcomes students from various disciplines, particularly those with quantitative data analysis foci.

UNI 546A Clarifying Racism - Institutional Racism (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on issues of institutional racism in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on institutional racism. Students will develop communication techniques for reflecting about issues of institutional racism. This may include writing, speaking, listening and other applicable skills.

UNI 546B Clarifying Racism - Foundational Concepts of Bias (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on foundational concepts attributed to bias in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on foundational concepts attributed to bias. Students will develop communication techniques for reflecting about

foundational concepts attributed to bias. This may include writing, speaking, listening and other applicable skills.

UNI 546C Clarifying Racism - Unequal Treatment (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on racism in unequal treatment in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on unequal treatment related to race and racism. Students will develop communication techniques for reflecting about issues of unequal treatment related to race and racism. This may include writing, speaking, listening and other applicable skills.

UNI 602 Conversations in Global Health (1 cr.)
Conversations in Global Health is a Pass/No Pass course that strives to engage OHSU students in all health professional schools and enhance their understanding about how to:

1) address a wide range of contemporary, population-based, global health issues and current events facing our world.
2) consider strategies that seek to improve the human condition.

Students will be introduced to a variety of social, political, historic, economic, ethical, cultural, and environmental factors that influence disease, equitable access to health care, and well-being, whether in a global or local context. Conversations in Global Health is an online asynchronous course that features a multidisciplinary list of speakers.

UNI 605 Introduction to Medical Spanish (1 cr.)
This course aims to introduce students to essential medical Spanish terminology and phrases and increase their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their medical Spanish in class, using videos depicting common medical complaints, and in culturally themed "Cafecitos" where they can learn about different customs and practice their newly acquired skills in a clinical setting.

UNI 611 Data Equity for Health Professionals (2 cr.)
This is an introductory course on complex topics related to data equity, which guide one to conduct health research with inclusivity, equity and justice in mind. Topics include the concepts of data equity and data justice; eugenics in statistical history; and data equity framework in health research including study design, data collection, visualization, analysis and interpretation, communication and dissemination. Additional topics will include biases and impacts of using social variables in clinical algorithms and prediction models, and potential approaches to address the biases. This course will illustrate concepts through examples and case studies, promote critical thinking in data equity, and facilitate collaboration and discussion among students. Additional topics will be added as necessary. This course welcomes students from various disciplines, particularly those with quantitative data analysis foci.

UNI 646A Clarifying Racism - Institutional Racism (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on issues of institutional racism in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on institutional racism. Students will develop communication techniques for reflecting about issues of institutional racism. This may include writing, speaking, listening and other applicable skills.

UNI 646B Clarifying Racism - Foundational Concepts of Bias (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on foundational concepts attributed to bias in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on foundational concepts attributed to bias. Students will develop communication techniques for reflecting about foundational concepts attributed to bias. This may include writing, speaking, listening and other applicable skills.

UNI 646C Clarifying Racism - Unequal Treatment (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on racism in unequal treatment in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on unequal treatment related to race and racism. Students will develop communication techniques for reflecting about issues of unequal treatment related to race and racism. This may include writing, speaking, listening and other applicable skills.

UNI 702 Conversations in Global Health (1 cr.)
Conversations in Global Health is a Pass/No Pass course that strives to engage OHSU students in all health professional

schools and enhance their understanding about how to:

1) address a wide range of contemporary, population-based, global health issues and current events facing our world.
2) consider strategies that seek to improve the human condition.

Students will be introduced to a variety of social, political, historic, economic, ethical, cultural, and environmental factors that influence disease, equitable access to health care, and well-being, whether in a global or local context. Conversations in Global Health is an online asynchronous course that features a multidisciplinary list of speakers.

UNI 705 Introduction to Medical Spanish (1 cr.)
This course aims to introduce students to essential medical Spanish terminology and phrases and increase their exposure to health-related customs practiced in different Latin-American countries. This case-based course will provide students the opportunity to develop their medical Spanish in class, using videos depicting common medical complaints, and in culturally themed "Cafecitos" where they can learn about different customs and practice their newly acquired skills in a clinical setting.

UNI 711 Data Equity for Health Professionals (2 cr.)
This is an introductory course on complex topics related to data equity, which guide one to conduct health research with inclusivity, equity and justice in mind. Topics include the concepts of data equity and data justice; eugenics in statistical history; and data equity framework in health research including study design, data collection, visualization, analysis and interpretation, communication and dissemination. Additional topics will include biases and impacts of using social variables in clinical algorithms and prediction models, and potential approaches to address the biases. This course will illustrate concepts through examples and case studies, promote critical thinking in data equity, and facilitate collaboration and discussion among students. Additional topics will be added as necessary. This course welcomes students from various disciplines, particularly those with quantitative data analysis foci.

UNI 746A Clarifying Racism - Institutional Racism (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on issues of institutional racism in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on institutional racism. Students will develop communication techniques for reflecting about issues of institutional racism. This may include writing, speaking, listening and other applicable skills.

UNI 746B Clarifying Racism - Foundational Concepts of Bias (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on foundational concepts attributed to bias in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on foundational concepts attributed to bias. Students will develop communication techniques for reflecting about foundational concepts attributed to bias. This may include writing, speaking, listening and other applicable skills.

UNI 746C Clarifying Racism - Unequal Treatment (1 cr.)
The purpose of this course is to prepare graduate-level health professions students with critical thinking skills and inclusive communication practices with regard to racism and diversity issues in healthcare. This course will provide students with evidence-based knowledge on racism in unequal treatment in health care settings, with a focus on best practices for providing healthcare for diverse individuals and groups. The course will cover a variety of readings on unequal treatment related to race and racism. Students will develop communication techniques for reflecting about issues of unequal treatment related to race and racism. This may include writing, speaking, listening and other applicable skills.