



OHSU Medical Physics Graduate Program

Resource Guide

Academic Year 2024-25

A note from the Director and Assistant Director:

Welcome to the Medical Physics Graduate Program administered at Oregon Health & Science University (OHSU).

This resource guide is intended to help you get settled and answer some of the questions you might have as a new graduate student in our program. If, after reading the contents, you have unanswered questions, please feel free to ask me for help. The staff, faculty, and fellow graduate students are available and willing to help solve any issues as they arise.

Additional information on course descriptions, procedures, requirements, and deadlines are provided by the current Medical Physics Program Guidelines, and the [School of Medicine Graduate Studies Academic Regulations of the Graduate Programs](#), as well as the Graduate Student Handbook available here: <https://www.ohsu.edu/school-of-medicine/graduate-studies/student-handbook>

Graduate students in the Medical Physics Graduate Program are responsible for complying with the rules of the University, the School of Medicine, and the Program. Policies, deadlines, and other pertinent items can be found at: <https://www.ohsu.edu/school-of-medicine/graduate-studies/current-students>

In some instances, the requirements of the Program are more restrictive than those of the School of Medicine. In such cases, the departmental and programmatic requirements specified in the Medical Physics Program Guidelines document will apply. Program guidelines can be found at: <https://www.ohsu.edu/school-of-medicine/medical-physics-graduate-program/curriculum>

The program requirements that a medical physics graduate student must satisfy for the degree are those contained in the MP Program Guidelines and Graduate Student Handbook.

The faculty hopes that your time in the OHSU Medical Physics Graduate Program will be rewarding, memorable, and the beginning of a fruitful career in the medical physics field.

We are glad you are here!

-Anna Mench, Ph.D., DABR, Program Director, Medical Physics Graduate Program

-Lindsay DeWeese, Ph.D., DABR, Assistant Program Director, Medical Physics Graduate Program



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OHSU Office of Graduate Studies

This office supports graduate program activities including admissions, progression and degree completion.

Phone: 503-494-6222; E-mail: somgrad@ohsu.edu

Office Staff

Associate Dean of Graduate Studies: Allison Fryer, Ph.D. | fryera@ohsu.edu

Assistant Dean of Graduate Student Affairs: Monica Hinds, Ph.D. | hindsm@ohsu.edu

Assistant Dean of Academic Affairs: Kelsi Nagle-Rowe, M.A. | naglek@ohsu.edu

Program Coordinator for Graduate Studies: Alex Breiding | breiding@ohsu.edu

Data Analyst: Keith Birchfield, M.S. | birchfik@ohsu.edu

Admissions Coordinator: Lorie Gookin | gookinl@ohsu.edu

MP Faculty

Oregon Health & Science University Medical Physics Faculty

Christopher Aguilera, M.S. | aguilera@ohsu.edu

Radiation Therapy Physicist

B.S. General Science, Health Physics Concentration (1988), Oregon State University; M.S. Medical Physics (1989), Georgia Institute of Technology.

Isaac Bailey, M.S. | baileyi@ohsu.edu

Instructor and Diagnostic Imaging Physicist; Associate Program Director, Diagnostic Imaging Physics Residency Program

B.S. Radiation Health Physics (2015), Oregon State University; M.S. Medical Physics (2017) Oregon Medical Physics Program; Completed the Upstate Medical Physics Diagnostic Imaging Residency Program (2019).

Member of: American Association of Physicists in Medicine (AAPM).

Fields of interest: Optimizing the quality of diagnostic imaging and practices.

John Bayouth, Ph.D. | bayouth@ohsu.edu

Professor and Chief Medical Physicist, Department of Radiation Medicine

B.S. Nuclear Engineering (1988), Kansas State University; M.S. Nuclear Engineering (1991), Kansas State University; Ph.D. Radiation Physics (1993), MD Anderson.



Fields of interest: Quantifying and minimizing normal tissue toxicities during and following radiation therapy

Lindsay DeWeese, Ph.D. | sinclail@ohsu.edu

Associate Professor and Section Chief of Imaging Physics, Department of Diagnostic Radiology; Assistant Director, Medical Physics Graduate Program; Director, Diagnostic Imaging Physics Residency Program

B.S. Nuclear Engineering (2007), University of Florida; M.S. Nuclear Engineering (2009), University of Florida; Ph.D. Medical Physics (2013), University of Florida.

Member of: American Association of Physicists in Medicine (AAPM); Diplomate of the American Board of Radiology (DABR®); Society of Directors of Academic Medical Physics Programs (SDAMPP).

Fields of interest: Computed Tomography Dosimetry, Enhancing clinical impact of emerging imaging technology, dose monitoring in fluoroscopy, quality improvement initiatives utilizing dose monitoring software in CT.

Ana Dieguez LeBlanc, M.S. | dieguezg@ohsu.edu

Instructor and Radiation Therapy Physicist

B.S in Physics (2017) Universidad del Valle de Guatemala; M.S in Medical Physics (2021), Louisiana State University

Member of: American Association of Physicist in Medicine (AAPM); American College of Radiology (ACR)- Medical Physics Committee; American Society of Radiation Oncology (ASTRO); Organization for Women in Science for the Developing World (OSWD)

Fields of interest: clinical medical physics, structural shielding, stereotactic radiosurgery, computed tomography (SIM)

Joe Foy, Ph.D. | foyj@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.S. Nuclear Engineering and Radiological Sciences (2014), University of Michigan; M.S. Nuclear Engineering and Radiological Sciences (2015), University of Michigan; Ph.D. Medical Physics (2020), University of Chicago.

Member of: American Association of Physicists in Medicine (AAPM); Society of Photo-Optical Instrumentation Engineers (SPIE); Radiological Society of North America (RSNA).

Fields of interest: Radiomics, machine learning, convolutional neural networks, clinical workflow enhancement, small field dosimetry, brachytherapy.

Malcolm Heard, Ph.D. | heardma@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.S. Physics (2001), Southern University and A&M College; M.S. Medical Physics (2005), University of Texas Graduate School of Biomedical Sciences; Ph.D. Medical Physics (2009), University of Texas Graduate School of Biomedical Sciences

Member of: American Association of Physicist in Medicine; Radiosurgery Society; National Society of Black Physicists.



Fields of Interest: Three-Dimensional Dosimetry, Stereotactic Radiosurgery, Stereotactic Body Radiation Therapy

Stephanie Junell, Ph.D. | junells@ohsu.edu

Associate Professor and Radiation Therapy Physicist

B.S. Radiation Health Physics (2006), Oregon State University, M.S. Medical Physics (2008), University of Wisconsin, Ph.D. Medical Physics (2013), University of Wisconsin.

Member of: American Association of Physicists in Medicine (AAPM); American Society for Radiation Oncology (ASTRO).

Fields of Interest: Radiation dosimetry and instrumentation, quality assurance program development, Monte Carlo methods, patient specific dosimetry, biological treatment optimization

Monica Kishore, M.S. | kishore@ohsu.edu

Assistant Professor and Radiation Therapy Physicist; Director, Therapy Physics Residency Program

B.S. Physics (2009), Haverford College, M.S. Medical Physics (2011), Duke University. Completed Radiation Therapy Physics Residency at Oregon Health & Science University in 2013.

Member of: American Association of Physicists in Medicine (AAPM); American Society of Therapeutic Radiology and Oncology (ASTRO); Diplomate, American Board of Radiology (DABR®); Society of Directors of Academic Medical Physics Programs (SDAMPP).

Milky Kohno, Ph.D. | kohno@ohsu.edu

Assistant Professor

B.A. Psychology (2006), University of California, Berkeley; Ph.D. Neuroscience (2013), University of California, Berkeley.

Fields of interest: Broadening and extending the knowledge of the neural circuitry that mediates neuropsychiatric diseases.

Erika Kollitz, Ph.D. | kollitz@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.Sc. Physics and Biochemistry (2016), Worcester Polytechnic Institute; Ph.D. Physics (2022), Ludwig-Maximilian University of Munich.

Fields of interest: Adaptive radiotherapy and medical physics education.

Anna Mench, Ph.D. | mench@ohsu.edu

Program Director, Medical Physics Graduate Program; Assistant Professor and Diagnostic Imaging Physicist

B.Sc. Physics (2007), University of Guelph; M.Sc. Medical Physics (2012) University of Florida; Ph.D. Medical Physics (2014) University of Florida.

Member of: American Association of Physicists in Medicine (AAPM); Diplomate, American Board of Radiology (DABR®), Society of Nuclear Medicine and Molecular Imaging (SNMMI)

Fields of interest: Radiation Biology. Clinical optimization strategies using dose tracking systems for CT and Fluoroscopy. Theranostics. Radiation education and communication.



Brandon Merz, M.S. | merzbr@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.S. Physics (2006), University of Hawaii, Manoa; M.S. Therapy Medical Physics (2008), University of Toledo, Health Science Campus.

Fields of interest: Applied mathematics, digital communications.

Martin Pike, Ph.D. | pikema@ohsu.edu

Associate Professor, Advanced Imaging Research Center

B.A. Chemistry (1978), Williams College; Ph.D. Chemistry (1985), State University of New York at Stony Brook.

Fields of interest: Biological magnetic resonance research in animal disease models, combining with immunohistochemical, biochemical, and *in vitro* cellular measurements.

Andrei Pugachev, Ph.D. | pugachev@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.S. Physics (1995), Moscow Institute for Physics and Technology; M.S. Theoretical Physics (1997), Moscow Institute for Physics and Technology, Landau Institute for Theoretical Physics; Ph.D. Applied Physics (2002), Stanford University.

Member of: American Association of Physicists in Medicine (AAPM); Society of Nuclear Medicine & Molecular Imaging; Diplomate of the American Board of Radiology (DABR®).

Fields of interest: Physics of radiation therapy (both external beam and radionuclide-based), PET imaging, investigation and validation of novel radiolabeled compounds.

Amanda Swanson, M.S. | swansoam@ohsu.edu

Instructor and Radiation Therapy Physicist

B.A. Physics/Chemistry (2018), Reed College; M.S. Medical Physics (2020), Oregon Health and Science University. Completed the Ohio State University Wexner Medical Center Radiation Oncology Physics Residency Program (2022).

Member of: American Association of Physicists in Medicine (AAPM).

Fields of interest: Education, effective risk assessment strategies, and out-of-field dosimetry for photon and proton radiotherapy.

Byron Wilson, Ph.D. | wilsonby@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.S. Biological Physics (2013), University of Toronto; Ph.D. Medical Physics (2018), University of British Columbia.

Fields of interest: VMAT optimization, Stereotactic radiosurgery, standardization and optimization in radiation therapy.

Celeste Winters, Ph.D. | learyc@ohsu.edu

Assistant Professor and Diagnostic Imaging Physicist



B.S. Physics (2014), University of California, Santa Cruz; M.S. Medical Physics (2016), Oregon Health and Science University; Ph.D. Medical Physics (2020), Oregon Health and Science University.

Fields of interest: Photon counting CT, nuclear medicine, and mathematical programming.

Cory Wyatt, Ph.D. | wyatco@ohsu.edu

Assistant Professor and Diagnostic Imaging Physicist

B.S. Bioengineering (2006), University of Washington, Seattle; Ph.D. Biomedical Engineering (2010), Duke University.

Fields of interest: The development of magnetic resonance fingerprinting (MRF) techniques for the quantification of tissue changes

Junan Zhang, Ph.D. | zhang@ohsu.edu

Assistant Professor and Radiation Therapy Physicist

B.A. Electrical Engineering (1998), Tsinghua University, Beijing; M.S. Electrical Engineering (2002), University of California, San Diego; Ph.D. Electrical Engineering (2005), University of California, San Diego; Post Doc Radiation Physics (2007), Duke University Medical Center; Residency Radiation Physics (2009), Duke University Medical Center.

Member of: American Association of Physicists in Medicine (AAPM); Diplomate, American Board of Radiology (DABR®).

Fields of interest: improving image quality and reduction of dose in 3D and 4D CBCT, improving spatial resolution of IMRT and RapidArc quality assurance.

Facilities

OHSU Radiation Medicine

Radiation Oncology at OHSU consists of the main campus (Sam Jackson Park Road hospital – all new in 2007), and two satellite facilities. Under the OHSU umbrella, students have access to:

- 4 external-beam treatment rooms in KPV treating on average 80-100 patients per day
 - 2 Elekta Versa HD
 - 1 Varian TrueBeam (Linac-based SRS)
 - 1 Tomotherapy HD
 - HDR Brachytherapy with Elekta/Oncentra system
 - Intracavitary/interstitial
 - Eye Plaque Brachytherapy
- Multiple treatment planning systems with WACOM contouring tablets
- Oregon's first intraoperative radiation therapy program
 - Intrabeam (intraoperative low-energy photon therapy)
 - **Partner Sites** Cyberknife, GammaKnife, Proton Therapy



Technology

- Varian TrueBeam
- Elekta Versa HD
- Tomo Therapy HD
- Elekta Synergy
- Nucletron/Elekta Flexitron afterloader
- Active Breath Hold Device
- Siemens SOMATON X.ceed (CT Simulator)
- GE Optima CT850 (CT Simulator)
- GE PET/CT Simulator
- BrainLab ExacTrac
- Mosaik

Planning Systems

- Eclipse
- Oncentra
- Brainlab Elements
- Tomotherapy
- MIM/Velocity

Treatment Modalities

- 3D Conformal, IMRT/VMAT and Image Guided Radiotherapy (IGRT)
- Respiratory Motion Management
- HDR Brachytherapy (GYN)
- LDR Brachytherapy (Eye plaque)
- Linac-based SRT (brain, lung, liver, spine, pancreas)
- Total Body Irradiation
- Total Skin Electron Irradiation

OHSU Diagnostic Radiology

The Department of Diagnostic Radiology at OHSU consists of the main campus (Marquam Hill campus hospital and the Center for Health and Healing buildings 1 and 2), and seven satellite facilities. Within these facilities, students have access to the following equipment:

- 15 general radiographic rooms (all DR)
 - with 12 utilizing wireless DR
- 6 radiographic & fluoroscopic rooms
- 8 interventional suites
 - including 2 bi-plane rooms and 5 utilizing flat-panel detectors (FPDs)
- 5 cardiac catheterization angiography suites
- 12 portable x-ray units
 - including 5 with wireless DR detectors
- 31 portable fluoroscopic units



- including 4 with FPDs
- 8 diagnostic CT scanners (16-320 slice);
 - 5 with iterative reconstruction technology
 - 2 with iterative model based (IMR) technology
 - *This fleet includes a Toshiba Aquilion ONE Prime 320 slice CT, a Philips Brilliance iCT 256 slice CT, and a Siemens Somatom Force Dual Energy CT scanner.*
- 2 mobile head CT scanners
- 8 MRI scanners
 - three 3.0 Tesla magnets, three 1.5 Tesla magnets
- 24 diagnostic ultrasound units
- 3 full-field digital mammography units
 - three digital breast tomosynthesis (DBT) units and one stereotactic breast biopsy (SBB) unit
- 2 PET/CT units
- 1 PET/MR unit
- 5 SPECT/CT units
- 2 C-arm interventional radiology units used for animal research at the Dotter Research Institute

Student Resources at OHSU

There are many resources available to you as a student at OHSU. The Student Central homepage is located at <https://o2.ohsu.edu/student-central/>. On this website you will find links to Sakai, the Student Information System, Box, Registrar, Financial Aid, the Library, and the ITG help desk. Additional student resources are described in the Graduate Student Handbook under Student Support: <https://www.ohsu.edu/school-of-medicine/graduate-studies/student-handbook>.

MATLAB Software

OHSU provides a free student download of MATLAB. Find more information here: <https://o2.ohsu.edu/school-of-medicine/researchers/matlab.cfm>.

Health Insurance

OHSU's Student Health Insurance plan is with Pacific Source. All students are required to enroll in the health insurance plan unless they can prove comparable coverage elsewhere. Students who do waive out of the insurance must do so annually. Waiver forms can be found on the Student Health & Wellness (SHW) website. Any additional questions about waiving out of the insurance should be directed to Human Resources: 503-494-7617 option 4. For more information on health insurance requirements and your healthcare needs, please visit the SHW website: <https://www.ohsu.edu/education/student-health-and-wellness-center>



March Wellness & Fitness Center

The March Wellness and Fitness Center is a fitness facility located on the second floor of the Center for Health & Healing (CHH1). As part of being a student at OHSU, you get free access to this fitness facility. If you would like to enroll, just stop by the front desk of March Wellness.

RLSB Graduate Student Lounge

The OHSU Graduate Student Lounge is located on the 4th floor of RLSB. The lounge contains access to refrigerators, microwaves, dining spaces, and lounge furniture.

Academic Calendar

The current academic year can be found on the Office of the Registrar's website located here:

<https://www.ohsu.edu/education/academic-calendar>

Using Information Technology

Please review the Student Technology, Security and Privacy page on O2 in Student Central:

<http://o2.ohsu.edu/studenttech>. This site contains detailed information on wireless internet access, mobile device management, OHSU email, cloud storage, removable storage devices, and other Help & How-To resources.

OHSU Employees as Students

[Policy No. 03-30-145](#) (updated 8/18/2021) states that OHSU employees pursuing a degree or certificate within OHSU, and OHSU students seeking employment from OHSU shall notify their academic program director to ensure the activity does not impact their employment schedule and/or educational activities and to minimize potential conflicts of interest. An internal approval process must be followed when an OHSU employee becomes a student, or an OHSU student accepts a position as an OHSU employee in a primary or secondary assignment.

If you are interested in becoming an OHSU employee, please review the aforementioned policy and [procedure](#) available under the Human Resources section on the OHSU policy page:

<https://www.ohsu.edu/about/policies>. Please contact your Program Director to initiate the form. Please submit the completed form to both the Academic Program Director and employment supervisor. The form will be reviewed by both parties for potential conflict of interest, and approved forms will then be submitted to the Office of the Provost for final review.



Medical Physics Graduate Program

Process to MS Degree – OHSU Required Steps

Any of the steps below can be completed before the listed deadline

At the beginning of year two...

Establish a research mentor & complete the Mentor Assignment Form

By the end of Fall term, complete the Request for Master Thesis Advisory Committee Form

Process for both forms:

- Complete forms via Smartsheet
- <https://www.ohsu.edu/school-of-medicine/graduate-studies/forms-policies-and-resources>
- Your committee must have 1 faculty member that is not from the same department as the other members.
- Chair of committee must have prior thesis advisory committee experience

By the beginning of Y2 Winter term...

Hold first TAC meeting with your committee which should include an overview of background research, description of project and project timeline. Fill out this form 5 days before meeting & submit to your mentor: TAC Meeting Summary form

One term before graduation (Winter)...

Complete the "Apply to Graduate" form in Student Self-Service (SIS)

At least 4 weeks before your planned defense date...

Complete and submit the "Request for Oral Examination" form

Two weeks before your planned defense date...

Send the completed thesis to your committee members for review. Must be correctly formatted according to Graduate Studies office document "Guidelines for preparation of dissertation and thesis".

In preparation for your Oral Examination/Thesis Defense...

- Begin / continue to work on your thesis defense presentation (PowerPoint, visual aids, script, preparation for questions from the audience, preparation for more general questions about medical physics from your coursework)
- Your thesis defense presentation must be approved by your mentor prior to the defense date
- This presentation should last about 45 minutes with 15 minutes for questions from the public
- The public will then be removed from the room and the private defense portion of the exam will continue for 1 hour
- Paperwork (for the final Oral Examination / Defense) will then be sent to the committee to complete during / after the Oral Examination