Graduate Curriculum

Degree Requirements

Global Oncology University will begin offering MS and PhD degrees in Medical Physics. The core Medical Physics curriculum is identical in both degrees. The PhD degree has additional requirements with an available en-route MS degree. Requirements specific to each degree are detailed below.

Master of Science Degree

The MS Degree in Medical Physics qualifies students for all medical physics specialties and prepares them for clinical residency programs, junior positions in clinical or industrial medical physics, and future board certification exams. Students will take classes online and complete practical clinical components in locally accredited partner institutions in different countries/regions. The clinical component provides the students with training either in radiation therapy or in diagnostic imaging.
A cumulative grade point average of 3.0 in all work is required for graduation. Students must graduate within five years of matriculation, per University regulations. Any courses taken beyond this time limit must be retaken or re-certified by exam.
The MS Degree in Medical Physics requires 31 credit hours of didactic courses, at least 2 credit hours of clinical training (counting as laboratory courses), one credit of seminar, and a thesis of publishable quality that includes a minimum of 6 credit hours of thesis research. Elective courses may be taken to meet particular educational needs, especially for the student's research.

Required Didactic and Laboratory or Clinical Courses

Table 1: Summary of core (required) didactic and laboratory/clinical courses for the MS degree

Course No.	Course Title	Core or Elective	Credit Hours†	Current Instructor	Semester/Term in which course is offered
RADI.5010	Radiation Safety and Control – I	Core	3.0		Fall
RADI.5090	Nuclear Instrumentation	Core	3.0		Fall
RADI.5330	External Dosimetry and Shielding	Core	3.0		Fall
RADI.5620	Radiation Biology	Core	3.0		Spring
RADI.5650	Introduction to Radiation Therapy Physics	Core	3.0		Spring
RADI.5980	Introduction to Medical Imaging	Core	3.0		Spring
RADI.6980	Advanced Medical Imaging Physics	Core	3.0		Fall
RADI.6050	Radiation Interactions and Transport	Core	3.0		Fall
RADI.6060	Monte Carlo Simulation of Radiation Transport	Core	3.0		Spring
RADI.6650	Advanced Radiation Therapy Physics	Core	3.0		Spring
RADI.6760	Graduate Medical Physics Internship	Core	1.0-3.0		Fall/Spring/Summer
RADI.6860	Advanced Medical Physics Internship	Core	1.0-3.0		Fall/Spring/Summer
BMBT.5200	Ethical Issues in Biomedical Research	Core	1.0		Fall/Spring

The definition of 1 credit hour is governed by University policy, as follows:
1. In didactic courses, 1 credit hour is equivalent to one hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester. In laboratories, including clinical internships, 1 credit hour is at least an equivalent amount of work as required in paragraph 1 above. See further explanation below.

A course in bioethics is required for graduation. Students may complete the online courses on ethics and professionalism offered by the Radiological Society of North America (RSNA). A printed

certificate from RSNA serves as proof of completion. Entering students may petition to waive some course requirements if they have taken similar courses in their prior education (e.g., transferring from other accredited programs).

Seminars and Colloquia

All Medical Physics students are required to take PHYS.7200 Medical Physics Seminar. Students can sign up for 1 credit hour in the semester when they give a full presentation (45 minutes + question time). This typically occurs with their thesis proposal. The Medical Physics Seminar is a combination of free-style research discussion and formal presentation. In addition, all graduate students are required to take Physics Colloquium. MS students typically take this course for 0 credit hours. The Physics Colloquium invites external speakers to present contemporary research topics.

Required MS Thesis Research

A thesis, whose quality is sufficient for publication in the AAPM annual meeting or in an appropriate peer-reviewed scientific journal, is required. Students must take at least 6 credit hours of thesis research. The MS thesis is considered complete upon (1) the student's delivery of a public seminar (usually within the frame of PHYS.7200), (2) the student's passing an oral examination on the thesis by members of the Thesis Committee and other interested faculty (thesis defense), and (3) the final written version having been approved and signed by all members of the student's Thesis Committee. The Thesis Committee may require that at least one paper reporting on part or the entire thesis be submitted for publication in a refereed scientific journal prior to final approval of the thesis.

Thesis requirements

Course No.	Course Title	Core or Elective	Credit Hours	Current Instructor	Semester/Term in which course is offered
RADI.7430 PHYS.7430	Thesis Research	Core	3+3	Varies	Fall/Spring

Although the minimum credit requirements are satisfied with the above list of courses, students are encouraged to take electives particular to their research area from the following courses selected from Physics, Radiological Sciences, Physical Therapy, Electrical Engineering, and Chemical Engineering.

Summary of recommended elective courses

Course No.	Course Title	Core or Elective	Credit Hours	Current Instructor	Semester/Term in which course is offered
RADI.5020	Radiation Safety and Control – II	Elective	4.0	Phys Faculty	Spring
RADI.5340	Internal Radiation Dosimetry & Bioassay	Elective	3.0	Phys Faculty	Fall
RADI.5410	Radiochemistry	Elective	3.0	Phys Faculty	Spring
RADI.5750	Prep for Certification in Radiological Sciences	Elective	3.0	Phys Faculty	Spring
RADI.5810	Math Methods in Radiological Sciences	Elective	3.0	Phys Faculty	Fall
RADI.5820	Numerical Methods in Radiological Sciences	Elective	3.0	Phys Faculty	Spring
PHYS.5130	Mechanics	Elective	3.0	Phys Faculty	Fall
PHYS.5210	Statistical Physics and Thermodynamics	Elective	3.0	Phys Faculty	Fall
PHYS.5350/60	Introductory Quantum Mechanics I-II	Elective	3+3	Phys Faculty	Fall/Spring
PHYS.5530/40	Electromagnetism I-II	Elective	3+3	Phys Faculty	Fall/Spring
PHYS.5610/6620	Nuclear Physics I-II	Elective	3+3	Phys Faculty	Fall/Spring
PHYS.5630	Computational Methods in Physics	Elective	3+3	Phys Faculty	Fall
PHYS.6050/60	Mathematical Methods of Physics I-II	Elective	3+3	Phys Faculty	Fall/Spring
PHYS.6110	Classical Mechanics	Elective	3.0	Phys Faculty	Spring
PHYS.6150/60	Quantum Mechanics I-II	Elective	3+3	Phys Faculty	Fall/Spring
PHYS.6570/80	Electromagnetic Theory I-II	Elective	3.0	Phys Faculty	Fall/Spring
DPTH.6510	Sectional Human Anatomy	Elective	3.0	PT Faculty	Summer
DPTH.6590L	Sectional Human Anatomy Laboratory	Elective	1.0	PT Faculty	Summer
EECE.5100	Digital Signal Processing	Elective	3.0	EE Faculty	Fall
EECE.5110	Medical Diagnostic Imaging	Elective	3.0	EE Faculty	Spring
EECE.5600	Biomedical Instrumentation	Elective	3.0	EE Faculty	Spring
EECE.6150	Medical Image Reconstruction	Elective	3.0	EE Faculty	Fall
BMBT.5130	Biomedical Analytics and Informatics	Elective	3.0	EE Faculty	Fall
CHEN.5500	Biomedical Application of Nanotechnology	Elective	3.0	Chem Eng Fac	Spring

Doctor of Philosophy Degree in Physics, Medical Physics Option

(Coming soon)