Twin Cities Campus

Medical Physics Ph.D.

Radiation Oncology Administration, Radiology

Medical School

Link to a list of faculty for this program.

Contact Information:
Therapeutic Radiology, Dept of MMC 494 Mayo 8494A 420 Delaware St SE Minneapolis, MN 55455
Email: alaei001@umn.edu
Website: https://www.radiationoncology.umn.edu/medical-physics-graduate-program

- Program Type: Doctorate
- Requirements for this program are current for Fall 2017
- Length of program in credits: 48
- This program does not require summer semesters for timely completion.
- no
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The program is made up of faculty members with primary appointments in departments that include radiation oncology, radiology, physics, engineering, computer science, physiology, dentistry, and biochemistry. In addition to providing clinical experience in areas such as radiation oncology, radiation oncology, radiation safety and quality assurance, the program is active in research and provides graduate level training in medical physics. The goal of the program is to prepare students (1) for further education, teaching, and research in medical physics, (2) to qualify to enter a medical physics residency program in radiation oncology or diagnostic radiology, and (3) to provide the mathematical and technical knowledge needed to succeed in the increasingly complex field of medical physics.

Accreditation

This program is accredited by Commission on Accreditation of Medical Physics Education Programs, Inc. (CAMPEP)

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

A degree in physics or engineering or other physical science. Equivalent of an undergraduate physics minor-at least 2 semesters of calculus based physics and at least 3 upper level physics courses.

Other requirements to be completed before admission:
All students should have some familiarity with physical chemistry, intermediate physics, intermediate mathematics, biostatistics, computer programming, biology, physiology, and biochemistry. This may be demonstrated by coursework completed at the undergraduate level or as part of the graduate program; by reading or practical experience; or by informal competency examinations.

Special Application Requirements:
Three letters of recommendation are required. The General Test of the GRE is required. The computer based GRE exam is provided year -round by the Educational Testing Service. A list of test sites can be found at: http://www.ets.org/gre. Our institution code is R6874 with no department code. If the GRE was taken more than two years prior to application, the applicant will need to retake the examination. We have no absolute GRE cutoff score, but the score is taken into consideration among many individual factors in the evaluation of each application. Applicants are considered for admission in both semesters.

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
  - Paper Based - Total Score: 550
- IELTS

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- Total Score: 6.5
- MELAB
  - Final score: 80

Key to test abbreviations(TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

48 credits are required in the major.
0 credits are required outside the major.
24 thesis credits are required.

This program may not be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 1 semesters must be completed before filing a Degree Program Form.

Ph.D. students take preliminary written exams at the end of the first year of study or as soon as possible after completing the core course sequence in topics in physics for medicine and biology. An oral preliminary exam focuses on the plan for thesis research and the student's grasp of related information and is taken by the fall of the third year of full-time registration or its equivalent. Additionally, 24 thesis credits are required.

Required Courses

MPHY 5170 - Radiation Therapy Physics I (3.0 cr)
PHYS 5401 *{Inactive}*(4.0 cr)
MPHY 5138 - Research Seminar (1.0 - 5.0 cr)
MPHY 5173 - Radiation Therapy Physics II (3.0 cr)
PHYS 5402 *{Inactive}*(4.0 cr)
PHAR 5201 - Applied Medical Terminology (2.0 cr)
MPHY 5171 - Medical and Health Physics of Imaging I (3.0 cr)
MPHY 5172 - Radiation Biology (3.0 cr)
MPHY 5174 - Medical and Health Physics of Imaging II (3.0 cr)
MPHY 5177 - Radiation Therapy Physics Lab: Radiation Physics Basics (3.0 cr)
MPHY 8149 - Advanced Topics in Radiation Therapy Physics (2.0 cr)
MPHY 5139 - Seminar and Journal Club (1.0 cr)

Medical Physics Electives

Electives will be based on focus of program objectives with advisor.
MPHY 8148 - Advanced Digital Imaging Science (3.0 cr)
or MPHY 8147 - Advanced Physics of Magnetic Resonance Imaging (MRI) (3.0 cr)
or Other electives as advised.

ADDITIONAL REQUIREMENTS (NOT FOR CREDIT)

In the fall semester of their first year, students must take the University ethics training:
Responsible Conduct of Research (RCR), Parts 1 (a 3-hour session offered about 4 times/year)
and 2.

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