

# MEDICAL PHYSICS, POST-BACCALAUREATE CERTIFICATE

---

## Admission Requirements

Medical physics is a field that applies the principles and methods of physics to the diagnosis and treatment of human diseases, particularly in the area of radiology and radiation therapy. As an essential part of the Department of Radiology and Radiological Science and Department of Radiation Oncology and Molecular Radiation Sciences at Johns Hopkins University School of Medicine, the Medical Physics Program is dedicated to advancing research innovation and education training in line with the Hopkins' tripartite mission (<https://www.hopkinsmedicine.org/about/mission/>).

## Certificate Requirements

### Research and Development

Our cutting-edge research projects offer trainees excellent opportunities to become one of the leaders of the field. Our teams work on various research projects; visit this page for more information (<https://medicalphysics.sites.jhmi.edu/research/>). We focus on solving clinically impactful problems through interdisciplinary studies. And we closely collaborate with investigators in basic science, engineering, and medicine to develop novel solutions and translate discoveries and technical advances into clinical practice. Our research areas (<https://medicalphysics.sites.jhmi.edu/research/>) include the incorporation of imaging into high-value precision medicine including advanced image guidance, anatomically and functionally-based adaptive radiation therapy, brachytherapy and radionuclide therapy, artificial intelligence, and novel therapeutic strategies such as proton therapy. We develop cutting-edge medical imaging techniques and tools that enhance diagnostic accuracy, optimize treatment planning, and improve patient outcomes. We work with our colleagues in the common research service resources in the Department of Radiology (<https://www.hopkinsmedicine.org/radiology/research/labs-centers/>) and the Molecular Radiation Sciences Division (<https://mrs.radonc.jhmi.edu/>)#to study radiobiology mechanisms, such as in FLASH therapy, and develop technologies to advance pre-clinical radiation investigations. We also aim to improve global healthcare and enhance radiotherapy in resource-limited settings.

### Clinical Training Opportunity

In our education program, we provide training and observation opportunities in the routine clinical services of radiology and radiotherapy at various Hopkins locations, where we are responsible for the technical aspects of modern radiology and radiotherapy, including radiopharmaceutical therapy (<https://sgouroslab.jhu.edu/>), quality assurance of diagnostic imaging devices, image-guided radiotherapy, intensity modulated radiotherapy, stereotactic radiosurgery and stereotactic body radiation therapy, adaptive radiotherapy, proton therapy (<https://www.hopkinsmedicine.org/kimmel-cancer-center/washington-dc/proton-therapy-center/>), brachytherapy (<https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/brachytherapy/>), and radionuclide therapy (<https://www.hopkinsmedicine.org/radiation-oncology/treatments/radiopharma/>). Our efforts ensure that our patients receive the highest quality and safest care possible.