

Radiologic Physics

Statement of Purpose:

A firm knowledge of radiologic physics is essential for radiology residents to prepare for a lifetime career in this ever-changing technological field. Radiologic physics training is provided as part of the residency experience so that residents may:

1. Understand the physical principles of the procedures and technologies for which radiologists have prime responsibility.
2. Have a clear understanding of the operation, capabilities and limitations of the diagnostic technologies used in their specialty.
3. Communicate effectively with technologists, physicians, administrators, service engineers, vendor representatives, quality control personnel and medical physicists regarding equipment selection, technique parameters and regulatory compliance.
4. Understand the ethical, regulatory and legal concern for patient and employee safety.
5. Become familiar with the federal Mammography Quality Standards Act (MQSA) and the requirements and duties of the designated MQSA physician for an FDA approved Mammography site.
6. Have the required knowledge base to serve as an institutional resource on matters relating to radiation, radiation emergencies and terrorism, and imaging safety (e.g. Radiation Safety Officer).
7. Become an authorized user on a radioactive materials license and thus administer radioisotopes for diagnostic purposes.
8. Pass the physics portion of the American Board of Radiology (ABR) certification examination.

One of the roles of a radiology residency program is to prepare residents for certification in Diagnostic Radiology by the American Board of Radiology (ABR). The certification process requires passing examinations, which covers diagnostic physics and equipment including basic physics, x-ray (film/screen and digital acquisition), mammography, CT, ultrasound, nuclear medicine/PET, MRI, PACS, RIS, Digital Image Processing, radiation and imaging safety, image quality, and quality control.

The ABR Board of Trustees requires a written statement from the applicant's program director attesting that the applicant will have satisfactorily completed the required special training and achieved adequate professional qualifications for the examination in Diagnostic Radiology by the appointed time, and is prepared to take that examination. The Board encourages residency program directors to utilize in-training examinations to assess the progress of residents in training, to identify individual and/or programmatic strengths and weaknesses and in general to improve graduate radiological education.

Faculty Expectations of Radiology Residents

1. Attendance: Residents are expected to regularly attend all physics classes and labs during their first year. The radiology faculty is committed to physics education and will do everything possible within the constraints of patient care to avoid scheduling conflicts with physics classes and labs. Attendance will be monitored, shared with clinical faculty, and used as part of resident evaluations. Attendance will be given special scrutiny for students with sub-standard scores on internal and standardized exams. The faculty understands that because of the nature of a residency, there will be occasional clinical and personal conflicts that will make it impossible for a resident to attend class. It is anticipated, however, that except for special circumstances the frequency of such occurrences should be approximately

the same for all residents. Residents who do not pass the physics portions of ABR exams will have an individual remediation plan.

2. Participation in medical physics clinical support services: As part of the residency training experience, residents are expected to become familiar with clinical support services provided by medical physicists. They will be given the opportunity to participate in such activities as shielding calculations, fetal dose calculations, radiological equipment selection, technical specifications, and the purchase process.
3. In-training Physics Examinations: Periodic examinations will be given to allow both the resident and faculty to evaluate performance. Residents are expected to score 70% or higher on each physics examination. Missed exams or exams for which a minimum score of 70% was not achieved must be (re-)taken and must receive a minimum score of 70% within four weeks of the original exam date, unless alternate arrangements are made with the residency program director as a result of extenuating circumstances. It is up to the individual resident to contact the appropriate physics faculty and schedule make-up exams. Failure to achieve at least a score of 70% on all internal physics examinations will be used by the program director as an indication the resident is not prepared to take the ABR certification exam.
4. RAPHEX Examination: Each resident is required to take the RAPHEX exam during the first year and encouraged to take the exam in subsequent years. Failure to score at or above the 25th percentile level for both the general and diagnostic portion of the RAPHEX exam may be used by the program director as an indication the resident is not prepared to take the ABR certification exam.