

# MEDICAL DOSIMETRY

Accredited by:

Joint Review Committee on Education in Radiologic Technology  
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Chicago, IL, 60606-3182

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## IS MEDICAL DOSIMETRY THE RIGHT CHOICE FOR YOU?

**What is medical dosimetry?** The field of medical dosimetry involves the calculation of dose and design of radiation field arrangements for the treatment of cancer patients. Dosimetrists use their knowledge of physics, anatomy, and radiobiology to develop an optimal arrangement of radiation portals to spare normal and radiosensitive tissues while applying a prescribed dose to the targeted disease volume.

**What is the role of the medical dosimetrist?** Dosimetrists are knowledgeable about radiation oncology treatment machines and equipment. In collaboration with medical physicists and radiation oncologists, they have the expertise to calculate radiation dosages and generate radiation dose distribution.

Dosimetrists work with advanced treatment planning software using interactive 3-D graphics to develop an optimal plan of radia-

tion treatment for each individual cancer patient. The dosimetrist is an integral part of the radiation oncology team and, through regular treatment chart review and patient dose measurement, helps to ensure that each patient receives the properly prescribed treatment.

**Where do medical dosimetrists work?** Medical dosimetrists work in cancer treatment centers, community hospitals, free-standing clinics, medical schools, and in the medical industry.

**Is there a demand for medical dosimetrists in the medical field?** According to the U.S. Department of Labor, there are over 800 job openings each year and the field will increase by 22% over the next decade.

**What is the salary range for medical dosimetrists?** A recent nationwide professional

survey shows the median salary of medical dosimetrists with 0-4 years experience to be \$75,000 without Board Certification and \$85,000 with Board Certification. In New York, the starting salary range for recent graduates of our program is \$72,000—\$85,000. Senior people in the field often earn over \$110,000.

**What else should I know?** Since dosimetry relies heavily on physics and knowledge of human anatomy and physiology, a strong background in math and science is necessary.

The Medical Dosimetrist Certification Board administers the certification exam.

For more information, contact the Medical Dosimetrist Certification Board or the Association of Medical Dosimetrists, at the websites listed below.



*“While a simultaneous glut and shortage of medical physicists may be a paradox of academic interest, its effect on patients is real. Radiation oncologists are often limited in the sophistication of treatments they can prescribe due to unavailable medical physics expertise.”*

- Ivan A. Brezovich,  
Ph.D., Dept. of Rad.  
Onc., University of  
Alabama at Birmingham

## DOSIMETRY PROGRAM

### What is the Admissions Policy for the Medical Dosimetry program ?

Minimum 1 semester of college calculus with a grade of C+ or better (or AP calculus—college credit); minimum 1 semester of college physics with a grade of C+ or better (or AP Physics—college credit); overall GPA of 2.5 in college-level coursework; HAN 395 mid-semester grade of 80% or higher; science GPA of 2.5 or above Preference is given to those applicants who have the following: completion of Physics sequence Physics 131/132 or Physics 125/126/127, or equivalent, with grades of C+ or better; completion of calculus MAT 125 or MAT 131 with a grade of C+ or better.

### What are the requirements for acceptance to the post-baccalaureate year ?

Health Science students apply to the post-baccalaureate year dosimetry program during the fall semester of the senior year. After completing the senior year, graduates are prepared to enter programs for clinical training. Graduates who complete the post-baccalaureate year program are prepared for entry-level medical dosimetry positions. In preparation for the post-baccalaureate year, seniors in the major must successfully complete the following courses during the spring semester:

- **Radiographic Anatomy & Pathology:** Provides basic radiographic anatomy from both the projection and cross sectional point of view. Introduces to basic disease processes, including the nature and causes of disease and injury. Examines these processes on medical images acquired through radiography, computed tomography, angiography, magnetic resonance, scintigraphy, emission com-

puted tomography and ultrasonography. Restricted to students approved for appropriate senior year track in the Health Science major.

- **Introduction to Pathology:** Pathology is the branch of medicine devoted to the study and understanding of disease. This course will introduce the student to the concept of disease. The types of growth, causative factors and biological behavior of neoplastic diseases are discussed. Staging procedures are introduced. Restricted to students approved for appropriate senior year track in the Health Science major.
- **Principles and Practice of Radiation Therapy: Introduces** practice and technical aspects of radiation therapy, including techniques specific to anatomical sites and treatment outcome statistics and options available to cancer patients. Includes cancer statistics; epidemiology; etiology; patient education and assessment; a review of the emotional and physical needs of cancer patients; and pharmacology and drug administration. Restricted to students approved for appropriate senior year track in the Health Science major.
- **Introduction to Treatment Planning:** Provides a detailed exploration of treatment planning in the field of radiation therapy. Includes, but is not limited to, in-depth instruction in planning algorithms, data transfer, dose computation, plan evaluation and implementation, and Quality Assurance (QA). Reviews and discusses a variety of treatment planning systems and treatment machines. Restricted to students approved for appropriate senior year track in the Health Science major.
- **Fundamentals of Medical Dosimetry and Contouring:** Covers a variety of Radiation Therapy disease sites that are fundamental to the planning competencies required during the clinical year. Includes radio-geographical cross-sectional anatomy using Computerized Tomography (CT), Positron Emission Tomography (PET) and Magnetic Resonance Imaging (MRI) imaging; full-body anatomical contouring; tolerance doses for critical organs; patient treatment setup; immobilization devices; beam modifiers; Dose Volume Histograms and electron planning including but not limited to 3 Dimensional (3D) planning vs. Intensity Modulated Radiation Therapy (IMRT) of all competency sites. Discussions include Radiation Therapy Oncology Group (RTOG) protocols of all competency sites. Restricted to students approved for appropriate senior year track in the Health Science major.
- **Radiation Oncology Medical Physics II:** Provides students interested in a career in medical dosimetry with an introduction to medical physics for radiation oncology. This is the second course in a two-part series that provides the basis for further study of the applications of radiation oncology physics to radiation treatment planning and radiation dose calculations. Covers topics such as radiation dose distribution, patient dose calculations, treatment planning, electron beam therapy, brachytherapy, modern treatment delivery, and radiation protection. Restricted to students approved for appropriate senior year track in the Health Science program.

To declare Health Science as your major, you are required to attend an Advising Workshop. To schedule an appointment, please email Jennifer Jimenez at [jennifer.wiener@stonybrook.edu](mailto:jennifer.wiener@stonybrook.edu)

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 HSC, Level 2, Room 453  
 Phone: 631.444.2407  
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**OR VISIT OUR WEBSITE AT:**

<http://healthtechnology.stonybrookmedicine.edu/programs/hs>

**HOW TO BECOME A HEALTH SCIENCE STUDENT**

Students can declare the Health Science major at any time during their academic career. All major courses are taken during the senior year. In order to begin your senior year courses in the major, you must have:

- \* a G.P.A. of at least 2.0 and have successfully completed 91 credits and have met all D.E.C/S.B.C requirements except TECH SBC requirement which will be satisfied during the senior year
- \* at least 16 credits in sciences, which must include HAN 200 and HAN 202 sequence, or equivalent sequence (ask advisor for information)
- \* 21 credits of related electives, which must include HAN 251 and HAN 312
- \* 10 upper division credits.

Successful completion of the following courses during the fall semester of your senior year is required:

- Health Care Issues**
- Professional Ethics**
- Communication Skills**
- Professional Writing**
- Health Informatics**

If you are interested in applying to the Medical Dosimetry concentration, an additional course must be taken:

**HAN 395: Radiation Physics in Medicine**



**FACTS ABOUT THE POST-BACCALAUREATE YEAR**

- Tuition will be due two weeks prior to the 1st day of the post-baccalaureate program.
  - Health Assessment Forms must be submitted one month prior to the start of your program.
  - The student is responsible for transportation during the post-baccalaureate year.
  - Clinical sites are located anywhere from Manhattan to eastern Long Island.
  - Financial Aid does not cover tuition for the post-bacc program. You may take out a career loan from various financial institutions.
  - Students may incur additional costs (materials, books, drug tests, background checks, etc.) during the post-baccalaureate program.
  - Campus housing may not be available.
  - \$50 application fee
- Tuition Costs—  
\$7500.00
- Number of Seats—  
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**FOR INFORMATION REGARDING RADIATION SAFETY , PROFESSIONAL INFORMATION, AND JOB LISTING PLEASE VISIT THE FOLLOWING WEBSITES:**

**Professional Organizations**

- Radiation Safety  
[www.radtechstudy.org](http://www.radtechstudy.org)
- Medical Dosimetrist Certification Board  
[www.mdcb.org](http://www.mdcb.org)
- American Association of Medical Dosimetrists  
[www.medicaldosimetry.org](http://www.medicaldosimetry.org)

**Occupational and Employment Information**

- [www.dol.gov](http://www.dol.gov)
- [www.rtfjobs.com](http://www.rtfjobs.com)
- [www.comphealth.com](http://www.comphealth.com)
- [www.salary.com](http://www.salary.com)
- [www.salary.monster.com](http://www.salary.monster.com)
- [www.labor.state.ny.us](http://www.labor.state.ny.us)