Roswell Park Cancer Institute
Department of Radiation Medicine

Medical Dosimetry Education Program

Student Handbook

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Introduction
The accredited program in Medical Dosimetry at Roswell Park Cancer Institute (RPCI) in Buffalo, NY (Program) is designed to prepare students for the technical, theoretical, and professional aspects of a career in medical dosimetry. Students acquire the professional skills of dose calculation, treatment plan design, and quality assurance through a combination of classroom and clinical education under the supervision of educated, experienced medical dosimetrists, medical physicists, radiation oncologists, and other allied professionals practicing in the field of Radiation Oncology. It will be necessary for the medical dosimetry student to cooperate with all members of the health care team in identifying and solving problems that relate to radiation oncology. The medical dosimetry student must be able to think critically, communicate effectively, demonstrate judgment and provide self-direction. It is a primary objective of the Program to educate well-qualified, competent Medical Dosimetrists who demonstrate leadership ability.

The Program received initial accreditation by the Joint Review Committee on Education in Radiologic Technology (JRCERT) in 2008, and is currently accredited through January 2020. Graduates are eligible to sit for the certification examination administered by the Medical Dosimetry Certification Board (MDCB).

Mission Statement
The program's mission is to provide students with the necessary knowledge and training so that upon completion of the program they will successfully complete the certification examination in medical dosimetry administered by the Medical Dosimetrist Certification Board (MDCB) and function confidently and effectively in a clinical setting as a Medical Dosimetrist.

Goals/Objectives and Corresponding Assessment Plan:

Goal 1.
Provide didactic course work giving the student the background knowledge to understand the underlying principles of medical dosimetry.

Outcome: students will demonstrate comprehensive knowledge pertaining to medical dosimetry as they progress through the program.

Measurement Tool(s): course examinations and assignments

Benchmark: students must complete all required coursework, including assignments and examinations, with a grade of at least 70%

Goal 2.
Provide clinical training for the student in all aspects of medical dosimetry, working with certified medical dosimetrists, medical physicists, radiation oncologists, and radiation therapists, allowing the student to apply their knowledge in a professional setting.

Outcome: students will display clinical competence in a professional healthcare environment

Measurement Tool(s): clinical rotations and examinations

Benchmark: students must finish all required clinical rotations, including oral examinations, with a "Pass" or "P" grade

Goal 3.
Provide a curriculum that promotes professional values, continuing education, and competency in critical thinking and problem solving skills relating to treatment planning.

Outcome: student treatment plans must be completed accurately and professionally and approved by a certified medical dosimetrtist

Measurement Tool(s): dosimetry labs and assigned treatment plans

Benchmark: students must finish all required dosimetry labs, including oral examinations and assigned treatment plans, with a "Pass" or "P" grade

Goal 4.
Prepare graduates of the program to function as competent medical dosimetrists who will contribute to the field of medical dosimetry and the health care community.

Outcome: graduates will demonstrate competence in the field of medical dosimetry

Measurement Tool(s): graduate performance on the certification examination administered by the Medical Dosimetry Certification Board (MDCB)

Benchmark: at least 75% of graduates taking the MDCB certification examination will pass the exam on the first attempt

Outcome: all graduates will search for employment and secure positions as medical dosimetrists

Measurement Tool(s): end of Program survey and employer evaluation

Benchmark: at least 75% of graduates will successfully acquire employment as medical dosimetrists within six months of graduating

Program Administration
Program Director: the responsibility of the Program Director is to provide overall direction and leadership of the Medical Dosimetry Training Program in order to meet its Goals and Objectives.

Advisory Committee: an Advisory Committee provides oversight for the Medical Dosimetry Training Program. The Advisory Committee consists of the Chairman of the Department of Radiation Medicine, or the physician designee, and several other professionals including representation from radiation oncologists, dosimetrists, physicists, therapists, and administration. The Committee meets at least once per academic year. Specific responsibilities of the Advisory Committee include:

1. Evaluation of the adequacy of the Program to meet its Objectives
2. Evaluate Mission Statement, Goals and Assessment Plan
3. Review all submitted evaluations
4. Monitoring of administrative issues
5. Underlying financial responsibility for the Program
6. Admissions and student performance

Admission
Admission is based on achievements and attributes that include cumulative grade point average, science and mathematics grade point average, communication skills, personal and leadership qualities, work experience, career goals, and caliber of presentation during personal interview. Admission is on a competitive basis; meeting the minimum criteria does not guarantee acceptance into the program.

The following are the minimum admission requirements for the Program:

- Formal application to the program, including: submission of official transcripts, three letters of recommendation, and a personal statement.
- Bachelor's degree in radiation therapy or in a science from an accredited academic program.

Consideration for admission to the Medical Dosimetry Program is not based on race, religion, national origin, veteran status, sex, age, or disability. Students who have disabilities that require accommodation should discuss these with the program director early in the year. Documentation may be required to verify certain disabilities. The program does not currently accept international students.

Student Agreement
Upon admission into the program, students are required to read the student handbook concerning school regulations and sign the student consent form documenting understanding of all policies and procedures governing the program.

Curriculum
The professional study curriculum comprises 12 months of study consisting of radiation therapy courses and practice on treatment machines, along with an introduction and

orientation to radiation oncology and the department. The other portion of study is dosimetry concentrated. Graduation from the Program requires completion of didactic classroom work, lab work and clinical training. The advisory committee will review the curriculum annually to ensure students receive the necessary training and experience that is essential in preparation for the certifying examination. Changes will be made to the curriculum as deemed appropriate. All students accepted into the Program must complete the curriculum in full regardless of background and previous education. Below is a tentative schedule of courses:

Fall (September – December) – Semester I
RPD 100: Introduction to Medical Dosimetry and History of Radiation Oncology
RPD 110 Atomic Physics for Radiation Oncology Professionals
RPD 111: Algebra, Logarithms, and Computers
RPD 112a: Medical Imaging Modalities
RPD 112b: Computer Concepts and Technology
RPD 120: Clinically Oriented Anatomy and Contouring
RPD 122: Radiation Oncology by Disease Site
RPD 123: Radiation Biology
RPD 130: Radiation Medicine Plan Review
RPD 010: Dosimetry Clinical Rotation
RPD 011: Medical Physics Clinical Rotation
RPD 012: Therapy Clinical Rotation
RPD 014: Dosimetry Practicum

Spring (January – April) – Semester II
RPD 200: Medical Dosimetry 2: Concepts and Applications
RPD 210: Radiotherapy Physics & Calculation
RPD 212: Radiation Safety and Compliance
RPD 221: Radiation Oncology Resident Series – Radiation Oncology Considerations by Anatomy
RPD 230: Radiation Medicine Plan Review
RPD 020: Dosimetry Clinical Rotation
RPD 021: Medical Physics Rotation
RPD 023: Dosimetry Lab
RPD 024: Treatment Planning Practicum

Summer (May – August) – Semester III
RPD 300: Medical Dosimetry 3: TP Design and Application
RPD 310: Nuclear Physics and Brachytherapy
RPD 320: Medical Dosimetry 4: IMRT and IGRT
RPD 321: IMRT Lab
RPD 330: Radiation Medicine Plan Review
RPD 331: Special Project 1
RPD 332: Business Applications
RPD 333: Professional Relations and Responsibilities
RPD 024: Treatment Planning Practicum

Class
Students are responsible for obtaining missed class notes and lectures, by contacting the instructor for the class missed. Missed examinations cannot be made-up, unless special arrangements are made with the instructor previously.

Clinical Rotations
Clinical training is provided through a series of clinical rotations and will be graded on a pass/fail basis. All clinical hours must be completed before graduation from the program. All direct patient contact procedures (e.g., simulation, fabrication immobilization devices, and planning) will be closely supervised by certified staff members.

Absences
Attendance is expected at every class. Absences are recorded. Students are allowed five (5) absences per semester.

Leave of Absence
Students may request leave of absence under extenuating circumstances. The Dosimetry Program Advisory Committee will review each case, and the student will be advised as to what remedial action will be required on his/her behalf. If the leave is due to an extended illness or any other health related situation, documentation is required by a physician in writing.

Bereavement Leave
Students are entitled to one-week leave upon the death of a spouse, parent, child, or sibling.

Holidays
Students receive all hospital legal holidays off. See the current list of RPCI legal holidays for dates.

Textbooks
Students are responsible for purchasing all assigned textbooks.

Directed Reading and Assignments
Students will be directed to outside readings by class instructors. The frequency and amount is determined by the instructors. All assignments are to be turned in as specified by the course instructor. Assignments not turned in at the determined due date will result in a "0" for that assignment.

Oral Examinations
Oral examinations will be given at the discretion of the instructors in addition to any tests administered as a method to evaluate the student's progress throughout the program.

Grading System
Students receive grades at the end of each semester and a final transcript is kept on file. Students must maintain at least a 70% grade in all courses to receive credit. The grading scale is as follows:

A	93-100	B	85-92
C	77-84	D	70-76

The breakdown of the grade consists, typically, of a combination of assignments and several exams throughout the semester. More details regarding the breakdown for specific classes will be provided by the respective instructors. Students are monitored and counseled periodically. If special help or tutoring is needed, it will be arranged at that time.

Student Advisors
Students will be assigned an advisor during their first semester. The advisor will assist with any academic issues/problems and also advise the student in the field of medical dosimetry. One scheduled appointment per semester with the advisor will be mandated and documented. The advisor will also be available throughout the year, as needed. There are several advisors available, all of whom are certified medical dosimetrists (CMDs).

Access to Student Records
The student has the right to inspect any of his or her own school records. No one but the student or appropriate Program personnel may inspect a student's records.

Student records may be released by the student by signing and dating a release of information form to give consent to release his/her records to other persons or agencies. On this form the student must indicate:

1. The records to be released.
2. The reasons for releasing the records.
3. To whom the records are to be released.

Tuition
The tuition cost is $12,000 of which a non-refundable deposit of $500 will be due upon acceptance into the program. This will be deducted from the first semester tuition of $4,000, with the balance due on the first day of classes, unless arrangements have been made with the Program Director. Failure to do so will forfeit your position. A check or money order should be made payable to "**Health Research, Incorporated**," and be mailed/submitted to:

Matthew Podgorsak
Roswell Park Cancer Institute
Department of Radiation Medicine
Elm & Carlton Streets
Buffalo, NY 14263

You will be required to pay $4,000 for each of the remaining two (2) semesters, due on the first day each semester starts. Tuition is non-refundable.

Scholarships
Currently there are no scholarships or financial aid available to students through Roswell Park Cancer Institute.

Dress Policy
Students are not required to wear white uniforms, but should dress business casually. Students **are required** to wear lab coats at all times when in clinical areas. Roswell Park Cancer Institute does not provide lab coats and maintenance of lab coats is the responsibility of the student. Students are required to maintain high standards of personal hygiene, including clean hair, nails, clothes, polished shoes, etc. Nametags / IDs must be worn at all times.

Personal Phone Calls and Mail
Students should not use Roswell Park Cancer Institute's address for personal mail and should restrict personal phone calls.

Student Employment
Although not suggested, there is no objection to student employment outside of Roswell Park Cancer Institute if the student is able to effectively meet class and clinic schedules and performance standards of the program. Students cannot be employed in the Department of Radiation Medicine at Roswell Park Cancer Institute during regular scheduled clinical hours.

Parking
Students are required to park in designated parking areas at all times; street parking is available, the ramp is open to students but requires payment of a daily fee, and other lots within two to three blocks are offered at a price per day rate. Faculty lots are not accessible to students.

Professional Liability Coverage
Liability coverage sponsored by RPCI is extended to all students in the training program, while under its supervision. However, there is no health insurance available to the student.

Radiation Safety
Roswell Park Cancer Institute's radiation safety officer will ensure the safety of the students through the implementation of published policies and procedures that are in compliance with Nuclear Regulatory Commission regulations and New York state laws. All students are required to attend the Institute's radiation safety training class and pass the corresponding examination.

Personnel monitoring is required by regulation when it is possible that an individual may be exposed during a calendar quarter to a dose of 125 mrem whole body; 1250 mrem to the extremities; or 375 mrem to the lens of the eye. The amount of exposure indicated on a dosimeter is evaluated quarterly by comparing it to ALARA limits set by the State. The ALARA Level 1 for New York State is 125 mrem per quarter. This would add up to the 500 mrem per year (10% of the 5 rem annual limit). At RPCI the quarterly limit is set even more stringent. The ALARA Level 1 limit at RPCI is 100 mrem per quarter for any whole body dose equivalent received.. Anyone exceeding the ALARA Level 1 will be interviewed to find the cause of the ALARA I dose equivalent. A plan for corrective action will be determined and implemented by the Radiation Safety Dept.

Student Pregnancy

In the event of suspected or confirmed pregnancy, the student may voluntarily report the pregnancy to the Program Director. This is in the student's best interest, because of the increased sensitivity to radiation of the fetus, particularly in the period from 10 to 40 days post conception. Pregnancy will not affect a student's enrollment in courses without a clinical component. However, in order to fulfill requirements in clinical education and keep radiation exposures as low as reasonably achievable during the entire pregnancy, the student will be offered the following alternatives:

- Withdrawal from the program immediately. The student may resume studies after the birth of her child, on consultation with the Program Director.
- Withdrawal from all clinical course work, and continue with the didactic portion of the program for the duration of the pregnancy. The student will then satisfy clinical education requirements after the birth of her child.
- Continue with full knowledge of the exposure hazard to the fetus. In this circumstance, the student will indicate in writing to the Program Director and Radiation Safety Officer her intention to continue. Her clinical placement on certain machines may vary at this time.

At any time, the student has the option to provide a written rescindment of her declaration of pregnancy and from that point on, she will not be required to comply with dose equivalent limits associated with pregnancy.

Conduct and Ethics

Each student is expected to conduct oneself at all times in a dignified manner, which conforms to the ethics of the profession, the Department of Radiation Medicine, and Roswell Park Cancer Institute. Each student is expected to conform to the professional code of ethics as outlined in the student handbook.

Code of Ethics

The Program has adopted the code of ethics from the American Association of Medical Dosimetrists (AAMD). This code of ethics may be viewed on the AAMD web site as well: http://www.medicaldosimetry.org/article.asp?id=42. The purpose of the AAMD Code of Ethics is to establish an ideal professional conduct to which members of the Medical Dosimetry profession should aspire. The Code of Ethics expresses the moral

values of the AAMD. While, by itself, the AAMD cannot create or reform moral character, it may at least inform a conscience. Such a code also signals the organization's moral commitment to those who depend upon its members for services. In any profession, the test of moral seriousness depends upon personal compliance with ethical standards.

As Medical Dosimetrists, our primary objective is to use our training, experience, skills, and talents for the benefit of society. To this end, we recognize our professional relationships with and obligations to the:

1. Patient: although never directly responsible for prescribing medical procedures, the health and welfare (even life) of many patients may directly depend upon the skill and dedications with which Medical Dosimetrists carry out their work.
2. Employer: as professionals, Medical Dosimetrists have the obligation to act as faithful agents for their employers or clients and to devote their skills and talents to further the legitimate aims of their employers. In turn, they have the right to expect rue professional consideration from their employers or clients.
3. Fellow Medical Dosimetrists: Medical Dosimetrists should contribute to the advancement of their profession and should avoid all practices which detract from the stature of Medical Dosimetry.

Principles of Ethics

The following principles represent goals to which all Medical Dosimetrists should aspire:

1. Medical Dosimetrists are obliged to uphold the honor and dignity of their profession by exhibiting sound moral character and the highest degree of competence in their work.
2. Medical Dosimetrists must be honest and forthright at all times in their dealings with employers, clients, and patients. Remuneration expected should be consistent with the type and quality of service provided.
3. Patient privacy must be respected and confidentiality of patient information must be maintained.
4. Medical Dosimetrists should strive continually to improve their knowledge and skills and participate in programs that lead to the improvement of the Medical Dosimetry profession and the health of the community.
5. Collegiality, openness, and mutual respect shall characterize the relationships among Medical Dosimetrists.
6. Medical Dosimetrists should conduct their affairs in a manner consistent with standards of excellence.

Dismissal

A student may be dismissed from the Program for any of the reasons listed below:

- Failure to respect confidential nature of patient information, records, and conditions
- Irregular attendance or excessive tardiness
- Failure to maintain at least a 70% grade in all courses
- Neglect of duty
- Insubordination, including failure to follow directions and instructions

- Dishonesty or cheating in any form
- Soliciting or accepting tips or gratuities
- Willful destruction of Roswell Park Cancer Institute's property
- Intoxication or having intoxicants on the premises
- Substance abuse
- Habits or state of health endangering students, patients, or co-workers
- Falsification or misinterpretation of any school record, report or personal record
- Poor clinical performance documented over three consecutive months by three different dosimetrists

Disciplinary Policies
Violation of these regulations will result in the following action:

- ***FIRST VIOLATION*** – written documentation of advice and counseling as appropriate by the faculty or clinical instructor and the Program Director.
- ***SECOND VIOLATION*** - the student will receive in writing, a letter stating that he/she has been warned that if the violation is repeated or situation is not corrected, the student will be subject to dismissal from the program.
- ***THIRD VIOLATION*** - the student will receive in writing, a letter stating that he/she has been dismissed from the program.

Appeal Procedure
In the event that a student has academic concerns, he/she has the right to discuss these with the individual instructor. If an acceptable response is not given within one week, the student can approach the Program Director, who will respond with an opinion or decision (if appropriate) within one week. If the response is still not acceptable, the student can discuss the issue with the Chair of the Department of Radiation Medicine, who will respond within one week. If an acceptable response is not achieved in any of these discussions, the student can discuss the issue with the Dean of Academic Affairs in the Graduate Division of RPCI. In the event that a student is dismissed from the Program he/she will be given the opportunity to appeal the decision with the Institute President and CEO. Appeal(s) should be in writing to the President/CEO, who will consider the concerns or the appeal within two weeks of its receipt and whose decision will be final.

JRCERT Standards
The Joint Review Committee in Radiologic Technology (JRCERT) publishes and administers the Standards for an Accredited Educational Program in Medical Dosimetry. The Medical Dosimetry Training Program in the Department of Radiation Medicine at Roswell Park Cancer Institute is committed to meeting and complying with the JRCERT Standards-MD. Students will be made aware of the JRCERT Standards-MD; a copy can be located and viewed in the Program Coordinator's office or on the JRCERT's web site: http://www.jrcert.org/acc_standards.html. Students may also view the Program's self study report, submitted for accreditation, or Guide for Program Analysis-MD. In the near future, the JRCERT will post five-year average credentialing examination pass rate, five-year average job placement rate, and annual program completion rate at www.jrcert.org. Students with concerns regarding the Program's compliance with the JRCERT Standards

should bring their issues to the attention of the Program Director as soon as possible. The Program Director will listen to and review the concern(s) and take appropriate action; including the involvement of the Advisory Committee as needed. The Program will keep a record of all formally submitted complaints and students will receive a follow-up meeting regarding these formal complaints.