

Medical Dosimetry (DOS) - Graduate Courses

Courses

DOS 511 Cr.2

Imaging and Localization Concepts

The treatment planning simulation process will be reviewed to include methods of accurate patient positioning, immobilization, and tumor localization. Current imaging techniques used to acquire detailed planning data for virtual simulation will be reviewed. Techniques discussed will include, but will not be limited to: CT, MRI, ultrasound, and radionuclide scans. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 513 Cr.2

Anatomy for Medical Dosimetrists

Anatomical structure and function which affects treatment planning processes is addressed along with identification of anatomic structures on radiographs, CT and MRI images. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 514 Cr.3

Physics Fundamentals for Medical Dosimetrists

Fundamental principles of physics important to the production and use of radiation for treatment purposes are reviewed and expanded. Dose measurement utilizing a variety of methods is discussed along with the appropriate instrumentation. Calibration methods for linear accelerators are also discussed. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 516 Cr.1

Fundamentals of Radiation Safety

Radiation safety measures are reviewed and updated according to federal and state mandates. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 518 Cr.1

Professional Issues in Medical Dosimetry

This course introduces the student to professional practices of medical dosimetry including standards, scope of practice, ethics, legal perspectives, professional development, accreditation, operational issues, and continuous quality improvement. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 523 Cr.4

Treatment Planning and Calculations

Treatment planning computers and software applicable to the various techniques used in clinic are discussed. Methods of treatment planning techniques for various diseases using single and multiple field arrangements with photons and electrons are discussed. In addition, advanced treatment planning techniques of conformal radiation therapy including 3D treatment planning, IMRT, IGRT, VMAT, Gating, Protons, and Stereotactic are also discussed. For basic and advanced treatment planning techniques, factors that affect dose distribution and delivery and how to account for those factors in dose calculations are explained. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Spring.

DOS 525 Cr.2

Brachytherapy for Medical Dosimetrists

The use of brachytherapy in radiation therapy is addressed. Characteristics of sources utilized for treatment as well as determination of source activity and dose delivered are included. Methods and instruments utilized to apply brachytherapy treatment planning techniques to clinical treatment situations are discussed. Prerequisite: acceptance into the Master of Science Medical Dosimetry Program. Offered Summer.

DOS 531 Cr.2

Clinical Oncology for Medical Dosimetrists

This course covers various cancers specific to disease sites, treatment, and management of care during treatment. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Spring.

DOS 541 Cr.1

Radiobiology for Medical Dosimetrists

This course reviews the effect of radiation on the human body in the context of radiation treatments. It particularly focuses on factors affecting the therapeutic ratio. Prerequisite: DOS 523; acceptance into the Master of Science in Medical Dosimetry Program. Offered Summer.

DOS 542 Cr.2

Quality Assurance

The methods and importance of periodic quality assurance procedures of radiation oncology equipment and treatment planning equipment are covered in this course. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 543 Cr.2

Seminar in Medical Dosimetry

This course offers students an opportunity to practice answering questions and solving problems as they review course material to prepare for the national medical dosimetry certification board exam. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 711 Cr.3

Research Methods I

This course serves as an introduction of fundamental principles of research methodology and how principles are applied for conducting research in health sciences. Students will be introduced to basic terms and focus on the overall structure of the research process. The course will help students select a research topic and develop questions related to it. Library and literature resources and procedures for using them will be described in detail and AMA style of writing will be understood. This is the first phase of the comprehensive research project. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Spring.

DOS 731 Cr.2

Research Methods II

This course follows Research Methods I and expands on research terminology. Sampling, measuring instruments and statistics are discussed further. Types of research studies are explored as outlines are finalized and drafts are prepared. Prerequisite: DOS 711; acceptance into the Master of Science in Medical Dosimetry Program. Offered Summer.

DOS 741 Cr.1

Protocols and Studies in Radiation Oncology

This course provides a broad overview of cancer clinical trials. Students will discuss improving the approaches to cancer prevention, diagnosis, and treatment. Advantages and disadvantages of clinical trials for patients, the general population, and health care providers are discussed. The role of the medical dosimetrist involved in clinical trials is described in depth. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 750 Cr.1

Professional e-Portfolio

This course prepares students for the development of a professional e-portfolio. Students will discover the basic concepts of designing and creating an e-portfolio, terminology, and components included in a professional e-portfolio. Students will gather artifacts and materials throughout the program to develop a comprehensive e-portfolio project. The course will focus on additional components such as electronic multimedia files, course assessment components, self-reflections, achievements, and other reflective learning enhancements for the comprehensive e-portfolio. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 751 Cr.2

Research Methods III

This course follows Research Methods II and serves as the culminating research course. Students utilize peer review, editing, and various elements of individualized instruction while preparing their final research manuscript for publication. Students are required to submit to the AAMD Student Writing Competition. Prerequisite: DOS 731; acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall.

DOS 771 Cr.2-5

Clinical Internship I

Students gain clinical experience with patient set-ups and imaging studies, radiation safety in the clinical environment, anatomical contouring, and computers and networking for treatment planning. Students will begin basic calculations and treatment planning techniques. Repeatable for credit - maximum five. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 772 Cr.1-5

Clinical Internship II

Students continue to gain clinical experience at an affiliated clinical internship site by concentrating on more advanced treatment planning and brachytherapy procedures while continuing to learn the various concepts of radiation oncology. Repeatable for credit - maximum five. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 773 Cr.2-5

Clinical Internship III

Students continue to improve their treatment planning skills, concentrating on advanced planning methods and quality assurance techniques. Repeatable for credit - maximum five. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 781 Cr.3

CMD Seminar I

This seminar course is the first in a series of three designed exclusively for students in the master's degree completion program (Track C) who are currently certified medical dosimetrists. The course provides the student with directed study and review of professional didactic course content. The course also provides the opportunity for practice examinations and group study support (online). Examinations will be given to test mastery of this didactic content. Students will have the opportunity to apply this didactic content in their fieldwork placements. Content covered in this course includes: Advanced Imaging, Simulation for Medical Dosimetrists, Anatomy for Medical Dosimetrists, Physics Fundamentals, and Computers & Networking in Radiation Oncology. Prerequisite: acceptance into Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 782 Cr.3

CMD Seminar II

This seminar course is the second in a series of three designed exclusively for students in the master's degree completion program (Track C) who are currently certified medical dosimetrists. The course provides the student with directed study and review of professional didactic course content. The course also provides the opportunity for practice examinations and group study support (online). Examinations will be given to test mastery of this didactic content. Students will have the opportunity to apply this didactic course in their fieldwork placements. Content covered in this course includes: Professional courses reviewed include Radiation Safety, Professional Issues, Dose Calculations, Teletherapy Treatment Planning, and Conformal Treatment Planning. Prerequisite: DOS 781; acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 783 Cr.3

CMD Seminar III

This seminar course is the third in a series of three designed exclusively for students in the master's degree completion program (Track C) who are currently certified medical dosimetrists. The course provides the student with directed study and review of professional didactic course content. The course also provides the opportunity for practice examinations and group study support (online). Examinations will be given to test mastery of this didactic content. Students will have the opportunity to apply this didactic content in their fieldwork placements. Content covered in this course includes: Brachytherapy, Clinical Oncology, Radiobiology, and Quality Assurance. Prerequisite: DOS 782; acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 791 Cr.4

Fieldwork I

This level one fieldwork experience is an opportunity to demonstrate the practice of medical dosimetry in the clinical environment at a basic level. Students will integrate the didactic curriculum learned for the successful completion of the MDCB exam. The focus of case studies will include imaging, patient setups, and anatomical contouring. Supervision is provided by medical physicist and radiation oncologists. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 792 Cr.4

Fieldwork II

This level two fieldwork experience is an opportunity to demonstrate the practice of medical dosimetry in the clinical environment at an intermediate level. Students integrate the didactic curriculum learned for the successful completion of the MDCB exam. The focus of case studies include imaging, patient setups, anatomical contouring, dose calculations, and brachytherapy. Supervision is provided by medical physicist and radiation oncologists. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.

DOS 793 Cr.4

Fieldwork III

This level three fieldwork experience is an opportunity to demonstrate the practice of medical dosimetry in the clinical environment at an advanced level. Students integrate the didactic curriculum learned for the successful completion of the MDCB exam. The focus of case studies include imaging, patient setups, anatomical contouring, dose calculations, radiobiological principles, and quality assurance. Supervision is provided by medical physicist and radiation oncologists. Prerequisite: acceptance into the Master of Science in Medical Dosimetry Program. Offered Fall, Spring, Summer.