

## Course Descriptions

### ***DOS101 - Medical Dosimetry Orientation***

**Contact Hours: 12**

This course provides the student with an overview of the profession of Medical Dosimetry and dosimetrists' role in a radiation therapy department.

Pre-requisite: Admission to Program

### ***DOS201 - Dosimetry***

**Contact Hours: 36**

This course provides an introduction to basic concepts in medical dosimetry, including linear accelerators, calculations, workflow, dose tolerances, and radiation measurements.

Pre-requisite: DOS101

### ***DOS111 - Computers and Computer Networking***

**Contact Hours: 5**

This course summarizes the use of computers and networking in radiation oncology.

Pre-Requisite: DOS201

Co-Requisite: DOS521

### ***DOS211 - Radiation Treatment Planning***

**Contact Hours: 34**

This course provides an introduction to advanced concepts in medical dosimetry, including anatomy, imaging, treatment planning, motion management, and radiation biology. This course includes site specific labs instructed by Cleveland Clinic Medical Dosimetry Program Clinical Preceptors. This course is delivered in a blended format.

Pre-requisite: Admission to the program

### ***DOS221 - Pathophysiology and Oncology Management***

**Contact Hours: 24**

This course presents an in-depth study of multidisciplinary treatment of the cancer patient from the clinician's viewpoint. Students are required to master concepts specific to site-specific disease including histopathology, etiologic and epidemiology factors, detection and diagnosis, tumor stage and grade, routes of metastases, dose fractionation and prognostic factors. This course is designed to approach each cancer type by anatomic system, addressing treatment factors with increasing degrees of complexity. This course is delivered in a blended format.

Pre-requisite: Successful completion of second term

***DOS301 - Radiation Physics***

***Contact Hours: 34***

This course covers the basics of ionizing and non-ionizing radiation, atomic and nuclear structure, basic nuclear and atomic physics, radioactive decay, interaction of radiation with matter, and radiation detection and dosimetry. Brachytherapy, Special Procedures, Quality Assurance, Stereotactic Radiotherapy, and Particle Therapy are discussed. This course is delivered in a blended format.

*Pre-requisite:* Admission to the Program

***DOS401 – Research***

***Contact Hours: 17***

This course will provide students with hands-on experience of how to conduct research with the following objectives: (1) understanding ethical and legal consideration when conducting research; (2) learning how to conduct a literature search by using searching tools such as Google Scholar and PubMed; (3) learning how to identify research topics after conducting a literature review; (4) learning how to collect data, analyze data, and present research findings. This course is delivered in a blended format.

*Pre-requisite:* Successful completion of second term

***DOS501 - Board Review***

***Contact Hours: 18***

This course is an in-depth review of all aspects of medical dosimetry to prepare students for the profession's certification examination.

*Pre-requisite:* Successful completion of third term

*Co-requisite:* DOS541

***DOS511 - Clinicals Phase 1***

***Contact Hours: 161***

This course consists of training in medical dosimetry concepts and techniques. All activities are supervised by Cleveland Clinic Medical Dosimetry Training Program Clinical Preceptors and members of the Professional Staff of Cleveland Clinic's Radiation Oncology Department. This includes an introduction to Cleveland Clinic's radiation Treatment Planning System. Topics covered include contouring, beam placement, calculation point placement, beam weighting, energy selection, prescription dose, tissue heterogeneity, and image fusion.

*Pre-requisite:* Admission to the Program

***DOS521 - Clinicals Phase 2***

***Contact Hours: 350***

This course consists of training in medical dosimetry concepts and techniques. All activities are supervised by Cleveland Clinic Medical Dosimetry Training Program Clinical Preceptors and members of the Professional Staff of Cleveland Clinic's Radiation Oncology Department. Topics covered include complex 3D conformal treatment planning and Dose Volume Histogram evaluation.

Pre-requisite: DOS511

**DOS531 - Clinicals Phase 3**

**Contact Hours: 616**

This course consists of training in medical dosimetry concepts and techniques. All activities are supervised by Cleveland Clinic Medical Dosimetry Training Program Clinical Preceptors and members of the Professional Staff of Cleveland Clinic's Radiation Oncology Department. Topics covered include basic inverse optimization techniques applied to step and shoot IMRT and VMAT.

Pre-requisite: DOS521

**DOS541 - Clinicals Phase 4**

**Contact Hours: 350**

This course consists of training in medical dosimetry concepts and techniques. All activities are supervised by Cleveland Clinic Medical Dosimetry Training Program Clinical Preceptors and members of the Professional Staff of Cleveland Clinic's Radiation Oncology Department. Topics covered include advanced optimization techniques applied to complex radiation therapy treatments. SRS, SBRT and Brachytherapy are covered.

Pre-requisite: DOS531