

Vocational School of Health Services / Radiotherapy
2024 - 2025 Academic Year
BASICS of RADIOTHERAPY
Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
BASICS of RADIOTHERAPY	RAD2126820	Fall Semester	2+10	7	18
Prerequisites Courses					
Recommended Elective Courses	MEDICAL IMAGING DEVICES				
Language of Instruction	Turkish				
Course Level	Short Cycle (Associate's Degree)				
Course Type	Required				
Course Coordinator	Lect. Mehmet Siddik CEBE				
Name of Lecturer(s)	Lect. Mehmet Siddik CEBE, Assist.Prof. Mustafa ÇAĞLAR				
Assistant(s)					
Aim	Basic information about radiation and biological interactions of tumor and normal tissues in radiotherapy applications				
Course Content	This course contains; The importance of radiobiology and the role of radiotherapy in the treatment of cancer,Radiation-related damage and DNA damage response,Cell death after irradiation, why, how and when cells die?,Growth kinetics in the cell, subunits, normal tissues and tumor,The effect of radiation on cell cycle, radiosensitivity,Linear-quadratic model,Fractionation,Hypo / hyper fractionation,Dose distribution and scatter analysis,Classical radiotherapy; A. Patient data acquisition B. Isodose distributions,Classical radiotherapy; A. Inhomogeneity correction B. Treatment verification,Modern radiotherapy; A. Three dimensional conformal radiotherapy B. Density adjusted radiotherapy,Stereotactic radiotherapy and radiotherapy,Stereotactic body radiotherap.				
Course Learning Outcomes				Teaching Methods	Assessment Methods
Explains the effects of radiation types used in radiation therapy comparatively.			10, 16, 9	A, G	
1. Describe the biological effects of radiation			10, 16, 9	A, G	
2. Summarize classical radiation therapy			10, 16, 9	A, G	
4. summarize stereotactic radiosurgery methods.			10, 16, 9	A, G	
Teaching Methods	10: Discussion Method, 16: Question - Answer Technique, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam, G: Quiz				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	The importance of radiobiology and the role of radiotherapy in the treatment of cancer	Mebis Lectures			
2	Radiation-related damage and DNA damage response	Mebis Lectures			
3	Cell death after irradiation, why, how and when cells die?	Mebis Lectures			
4	Growth kinetics in the cell, subunits, normal tissues and tumor	Mebis Lectures			
5	The effect of radiation on cell cycle, radiosensitivity	Mebis Lectures			
6	Linear-quadratic model	Mebis Lectures			
7	Fractionation	Mebis Lectures			
8	Hypo / hyper fractionation	Mebis Lectures			
9	Dose distribution and scatter analysis	Mebis Lectures			
10	Classical radiotherapy; A. Patient data acquisition B. Isodose distributions	Mebis Lectures			
11	Classical radiotherapy; A. Inhomogeneity correction B. Treatment verification	Mebis Lectures			
12	Modern radiotherapy; A. Three dimensional conformal radiotherapy B. Density adjusted radiotherapy	Mebis Lectures			
13	Stereotactic radiotherapy and radiotherapy	Mebis Lectures			
14	Stereotactic body radiotherap	Mebis Lectures			
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources	
Course notes will be given to the students-Basic Clinical Radiobiology, 4.baskı Ed. Michael Joiner ve Albert van der Kogel	
-Radiobiology for the Radiologist, 6.baskı Eric J. Hall, Amato J. Giaccia	
-Basic Radiotherapy Physics and Biology, David S. Chang, Foster D. Lasley, Indra J. Das, Marc S. Mendonca, Joseph R. Dynlacht	
-The Physics of Radiation Therapy 5.baskı, Faiz M. Khan, John P. Gibbons.	