The Hashemite University
Faculty of Allied Health Sciences
Department of Medical Imaging
Course Syllabus

Course information	
Course Title	Radiotherapy
Course Code	110508355
Prerequisites	110102161
Credit Hours	3 (2+3) hours

Course Description
This course introduces the student to both basic physical principles of radiation therapy and physical aspects of treatment planning using photon beams, electron beams and brachytherapy sources. For the modern clinical radiation therapy, additional information will be discussed such as Intensity Modulated Radiation Therapy and Stereotactic Radio-surgery.
Course Objectives By the end of this course, student is expected to:
1- Describe major quantities and concepts that are useful formeasuring dose distribution directly in patients treated with radiation 2- Discuss Several methods are available for calculating absorbed dose in a patient 3- Identify isodose curves and dose profile 4- Discuss several aspects of treatment planning, includingwedge filters, combination of radiation fields, tumor volume, acquisition of patient data, correction for contour curvature, and tissue inhomogeneities and patient positioning.

Recommended Textbook	
Title	The Physics of Radiation Therapy
Author	Faiz M. Khan
Publisher	Lippincott Williams and Wilkins
Year	2010,
Edition	4th Ed
Book website	
Other References	
Title	1- Clinical Radiotherapy Physics , Basics Physics and Dosimetry, ,
Author	Jayaraman and L.H. Lanzl
Publisher	CRC Press
Year	1996
Edition	Vol. 1
Title	Radiation Therapy Physics
Author	Alferd R. Smith
Publisher	Springer-Verlag
Year	1995
Edition	3rd Ed.

websites	
Website	

Course Contents

Chapter 1. Physical Concepts and Radiotherapy
- ❖ Radiation
- ❖ Type of ionizing radiation
- ❖ Radiation units
- ❖ Interaction of Radiation with matter
- ❖ Radiation therapy
- ❖ Uses of radiotherapy
- ❖ Types of radiotherapy

Chapter 2. Dose Distribution and Scatter Analysis
- ❖ Phantoms
- ❖ Depth Dose Distribution
- ❖ Percentage Depth Dose
- ❖ Tissue-Air Ratio

Chapter 3. A System of DosimetricCalculationd
- ❖ Dose calculation Parameters
- ❖ Practical applications

Chapter 4. Treatment Planning I
- ❖ Isodose chart
- ❖ Parameters of isodose curves
- ❖ Wedge filters
- ❖ Combination of Radiation fields
- ❖ Isocentric techniques
- ❖ Tumor dose specification for external photon beams

Chapter 5 Treatment planning II
- ❖ Acquisition of Patient data
- ❖ Treatment simulation
- ❖ Correction for contour irregularities and tissue inhomogeneities

Chapter 6 Treatment planning III
- ❖ Field blocks
- ❖ Field shaping
- ❖ Skin dose
- ❖ Field separation

Chapter 7 Electron Beam Therapy
- ❖ Electron interactions
- ❖ Determination of absorbed dose
- ❖ Characteristics of clinical electron beams
- ❖ Electron arc therapy
- ❖ Total skin irradiation

Assessment	
First Exam	**25**
Second Exam	**25**
Final Exam	**40**
Lab + In course assessment	**10**