

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Radiation Physics
Course number	AMSR2303
Faculty	
Department	
Course type	Major Needs
Course level	2
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - the principles physics of x-ray radiation
2 - familiarized with the production, properties and interaction of x-ray with the matter
3 - the basic principle of electromangetic radiation
4 - be familiar with modes of radioactivity
5 - principle of raidation protection

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none"> * Interaction of radiation with matter * X-ray Production * the student will be familiar with a mode of radioactivity, physical half life * the student will be professionals with how to get artifical radioactive substance * the student will be good with the units of raidation and how to calcuate it
Professional Skills	<ul style="list-style-type: none"> * Radiation Unit * X-ray Properties

Course Contents

- 1 - Basic principle of modern physics
- 2 - MASS & ENERGY
- 3 - Electromagnetic Radiation
- 4 - Quantum Theory: X-ray Photons
- 5 - X-ray production
- 6 - X-ray Interaction and principles of imaging
- 7 - The basic elements of x-ray imaging,
- 8 - Diagnostic x-ray sources and imaging systems
- 9 - modes of radioactive decay
- 10 - production of radioactive substance
- 11 - production of radioactive substance
- 12 - units of radiation
- 13 - radiation protection devices

Teaching and Learning Methods

- 1 - Lecturer-power point notes
- 2 - videos
- 3 - seminars

Teaching and Learning Methods for the Disabled Students

- 1 - electronic lectures

Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
homeworks and presentation and attendance	during the semester	30
midterm exam	the seventh week	30
final exam	at the end of the semester	40

Books and References

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|-------------------|---|
| Recommended books | 1. Jens Als-Nielsen, Des McMorro Elements of Modern X-ray Physics, 2nd Edition, 2011UK.
James E. Martin, Physics for Radiation Protection: A Handbook, Second Edition; 2006
WILEY-VCH Verlag GmbH & Co.KGaA |
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Knowledge and Skills Matrix

Main Course Contents	Study Week	Knowledge and Understanding	Intellectual Skills	Professional Skills	General Skill
Introduction to Radiation	1				
Ionizing Radiation Types	2				
Interaction of Radiation with Matter	3				
Wave model and particle model	4				
Inverse Square Law	5				
ELECTRODYNAMICS	6				
Laws of Magnetism	7				
ELECTROMAGNETIC SPECTRUM	8				
Velocity & Amplitude	9				
Frequency and wavelength	10				
Radiologically Important Photons	11				
Quantum Theory: X-ray Photons	12-13				
PHYSICS OF RADIOBIOLOGY	14-15				