

## Course Syllabus

### Second Semester – 2013/2014

#### General Information

Course name	Course code	Credits	Contact hours
Physics of Medical Equipment	BMTS244	2 lecture+1 lab	2 lecture+ 2 lab

#### Instructors/ Coordinators

	Instructor	Coordinator
<b>Name</b>	Mr. Kamel Smida	Dr. Eid Abdelmunem
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<b>Ext</b>	2841	2813

#### Text Book

<b>Title</b>	Physics for the Health Sciences
<b>Author/Year</b>	Carl R.Nave & Brenda C.Nave / 1985

#### Supplemental materials

Recommended Textbooks and Reference Material	
<b>Title</b>	Medical Physics and Biomedical engineering
<b>Author/Year</b>	B.H Brown, R. H. Smallwood & D. Hose / 1999
Electronic Materials (e.g. Web Sites, Social Media, Blackboard, etc.)	
<b>Web sites</b>	<a href="http://www.dundee.ac.uk/medphys/RadTools/">http://www.dundee.ac.uk/medphys/RadTools/</a>
	<a href="http://www.martindalecenter.com/Calculators3A_2_Phy.html">http://www.martindalecenter.com/Calculators3A_2_Phy.html</a>

#### Specific Course Information

<b>a. Brief description of the content of the course (Catalog Description)</b>
The objective of this is course to provide an understanding of basics of physics, its relation with the biomedical phenomena, applications of the physics principles into biological systems. It includes units and dimensions of different physiological parameters, mechanic of particles, optics, sound and ultrasound. It contains also, fluids static and dynamic, gas laws, optics. It contains also isotopes, nature and properties of ionizing radiation, dose calculation, and electromagnetic radiation in medical instruments.
<b>b. Prerequisites (P) or Co-requisites (C)</b>
(P) Human Anatomy and Physiology - CAMS231
<b>c. Course type (Mandatory or Elective)</b>
Mandatory

### Specific Goals

#### a. Specific outcomes of instruction.

By the end of this course, the student should be able to:

- Recognize the importance of measurements in physics. (a)
- Describe biological effects of radiation. (a)
- Apply some nuclear physics principles in the laboratory scale. (b)
- Interpret nuclear medicine images. (b)
- Practice radiation detection measurements and its medical applications. (c)
- Experiment different types of ionizing radiation. (c)

#### b. Student outcomes addressed by the course.

a	b	c	d	e	f	g	h	i	j	k
✓	✓	✓								

### Brief list of topics to be covered

Topics	No. of Weeks	Contact hours
Measurements of Physics : standard units, accuracy and precision, units conversion	1	4
Basic physics of Ionizing radiation,	3	12
Nuclear physics	2	8
The biological effects of radiation, radiation detection and its medical applications	3	12
Light and modern physics : Laser beam and its application, the photoelectric effect, X rays	2	8
Non Ionizing radiation.	2	8
Nuclear Medicine Imaging.	2	8