

Course Syllabus

BMT 367

1. Course number and name: BMT 367/ Hospital Safety
2. Credits and contact hours: (1 + 1) credit hours, (1 +2) contact hours
3. Instructor's name: **Abdullah BenOmran**
4. Text book, title, author, and year:
 - **Books or notes:**
 - Medical Instrumentation: Application and Design, John G. Webster.
 - An Introduction to Radiation Protection, Alan Martin, Sam Harbison.
 - **Other supplemental materials:**
 - Lecture notes available on LMS system
5. Specific course information
 - a. brief description of the content of the course:

This course covers safety issues within healthcare facilities. It mainly focuses on electrical safety for medical devices. This is covered on the level of medical device design and on the level of power distribution system. Other safety issues such as radiation protection and medical waste management are covered as well. In the practical, students are trained to use the electrical safety analyzer to perform safety tests such as leakage current, ground resistance, insulation resistance, patient leakage current ...etc.
 - b. prerequisites or co-requisites:

Pre-requisites: BMT 211

Co-requisites: NA
 - c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: **Required**
6. Specific goals for the course
 - a. specific outcomes of instruction:

Upon completing BMT367, students should have the following capabilities:

Understand the effect and danger of electricity on human body and understand methods of protection from electrical shock.

Understand effects of ionizing radiation on human body and understand methods of protection from radiation.

Understand the dangerous of medical wastes and understand methods for treating medical wastes.

Use safety analyzer to perform electrical safety tests.

- b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

	Course outcome	abet (a-k)
1	Ability to use the knowledge of mathematics, chemistry, physics, and biological sciences, engineering, and technology to recognize common hazards in hospitals and the effects of these hazards on human body and to understand the principles of measuring these hazards.	b
2	Ability to perform safety tests for medical equipment using the safety analyzer, including leakage current, ground resistance, insulation resistance, case leakage current .. etc.	c
3	a knowledge of the hazards present in hospital environment including electrical, radiation, and waste hazards and how to deal with these hazards in order to contain or eliminate them.	j
	Using the learning management system	k

7. Brief list of topics to be covered

Topics
Introduction of the course, review of basic circuit laws: ohm law, parallel and series resistance, current divider law, and voltage divider law.
Electrical Safety: Tissue response to electrical current, Electrical shock, Leakage current and leakage current limitation, Different human body impedance, Protection: Power distribution, Equipment design, Grounding system, Isolated patient connections, Isolated power-Distribution system, Ground-Fault circuit Interrupters (GFCI)

Radiation safety: Ionizing and non-ionizing radiation, Effects caused by different doses of radiation on humans, Major sources of radiation exposure, Dose limits

Medical waste: Infectious waste, Hazardous waste, Radioactive waste, Waste collection, Disposal technology, Incineration, Autoclaves, Mechanical/Chemical Disinfection, Microwaving

Special topics related to safety: Micro-biological contamination control in hospitals, Needlesticks, Electrocautery Smoke, Safe use of Ethylene Oxide in Hospitals, Monitoring Aldehydes, Trace Anesthetic Gas, Respiratory protection in Hospitals

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
a.	First Midterm	7	15%
b.	Second Midterm	10	10%
c.	Quizzes, LMS, In-class participation		5%
d.	Practical		30%
e.	Final		40%