DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COURSE SYLLABUS

EE 370: Biomedical Engineering Primer

COURSE TITLE	*CODE & NUMBER*	*SUBJECT AREA*	**Contact Hours**			**Credit Units**
			Th.	***Pr.***	***Tr.***	
Biomedical Engineering Primer	**EE370**	Engineering	3	1	0	4
Pre-requisites:	BIO321, EE306					
Course Role in Curriculum *(Required/Elective):*	Required course					
Catalogue Description: History of biomedical engineering through the evolution of modern health care system, roles of the biomedical engineer, recent advances in biomedical engineering, its professional status, and the biomedical engineering societies. Moral and ethical issues and patient safety. Bioelectric phenomena and biomedical sensors. Introduction to biosignal processing. Introduction to medical imaging systems.						

***Textbooks*:** *(Author, Title, Pub., year)*
John Enderle & Joseph Bronzino, Introduction to Biomedical Engineering, 3rd ed., Academic Press, New York, 2012.
Rüdiger Kramme, Klaus-Peter Hoffmann, Robert S. Pozos (Eds.), Springer Handbook of Medical Technology, Springer-Verlag, Berlin, 2011.

***Supplemental Materials*:** Slides, notes, and problem sets

***Course Learning Outcomes*:**

By the completion of the course the students should be able to:

1. Describe the different fields of activities in which biomedical engineers may work to solve societal problems.
2. Identify some of the professional societies and the professional status of biomedical engineering.
3. Identify the modern moral dilemmas in professional ethics.
4. Identify different types of potential hazards and how to proactively address patients safety in modern hospitals.
5. Describe how to utilize biomedical sensors.
6. Describe the characteristics of biosignals and their basic methodologies.
7. Describe the basics of medical imaging systems.

***Topics to be Covered*:**	***Duration in Weeks***
1. History of biomedical engineering	2
2. Professional ethics	1

3.	Patient safety	2
4.	Biomedical sensors	3
5.	Biosignal processing	3
6.	Medical Imaging Systems	3

Key Student Outcomes addressed by the course: (Put a ✓ sign)

(1)	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	
(2)	An ability to apply the engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
(3)	An ability to communicate effectively with a range of audiences	✓
(4)	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	✓
(5)	An ability to function effectively on a team whose members together provide leadership, creates a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	✓
(6)	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	✓
(7)	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

Instructor or course coordinator: Dr. Majid Nour
Last updated: Spring 2020