

Course Unit Title	Introduction to Biomedical Engineering	
Course Unit Code	BME101	
Type of Course Unit	Compulsory	
Level of Course Unit	1 st Year, Bachelor of Science	
National Credits	3	
Number of ECTS Credits Allocated	5	
Theoretical (hour/week)	4	
Practice (hour/week)	-	
Laboratory (hour/week)	-	
Year of Study	1	
Semester when the course unit is delivered	1	
Course Coordinator	Ali Işın	
Name of Lecturer (s)	Abdulkader Helwan	
Name of Assistant (s)	Fatma Zor	
Mode of Delivery	Face to Face	
Language of Instruction	English	
Prerequisites	-	
Recommended Optional Programme Components		
Course description:		
This course is designed for biomedical engineering undergraduate students. The purpose of the course is to provide biomedical engineering background on technical aspects. Brief introduction to the field of biomedical engineering is given; biomedical devices, medical instrumentation and medical imaging systems are introduced to familiarize the students for the upcoming years of study. Students are provided with overviews of the major physical techniques that engineers have used to explore in biomedical engineering level.		
Objectives of the Course:		
The main goals of BME 101 are to introduce you to the engineering profession, the application of engineering science to biomedical problems and your study of biomedical engineering		
Learning Outcomes		
At the end of the course the student should be able to		Assessment
1	Develop a thorough understanding on basics of biomedical engineering.	1
2	Develop a thorough understanding on the different career fields of biomedical engineering.	1
3	Develop a thorough understanding on basics of common medical devices that are used in hospital environment.	1, 2
4	Develop a thorough understanding on basics of some medical instrumentation.	1,2
5	Develop a thorough understanding on basics of some medical imaging systems.	1,2
Assessment Methods: 1. Written Exam, 2. Project/Report.		
Course's Contribution to Program		
		CL

1	Apply knowledge of mathematics, natural science with relevant to life science and multidisciplinary context of engineering science.	3
2	Analyse, design and conduct experiments, as well as to analyse and interpret data.	4
3	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	3
4	Function on multidisciplinary teams.	4
5	Control in design work, by using simulation, modelling and tests and integration in a problem solving oriented way.	4
6	Display an understanding of professional and ethical responsibility.	4
7	Communicate effectively aware of the non-technical effects of engineering.	2
8	Search technical literature and other information sources.	3
9	Recognize of the need for, and an ability to engage in life-long learning.	3
10	Exhibit a knowledge of contemporary issues.	3
11	Use the techniques, skills and modern engineering tools necessary for engineering practice to develop marketable products for the global market.	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate, 4: High, 5: Very High)

Course Contents

Week	Chapter	Topics	Assessment
1		Introduction to biomedical engineering	
2		Brief history of biomedical engineering	
3		Biomedical engineering career fields	
4		Introduction to human body	
5		General introduction to common medical devices in hospital environment	
6		Introduction to biomedical instrumentation (Sensors, transducers).	
7			Midterm Exam
8		Introduction to biological signals (ECG, EEG)	
9		Introduction to medical imaging systems	
10		Principles of X-Ray Devices	
11		Principles of Computerized Tomography	
12		Principles of MRI Systems	
13		Recent developments in biomedical engineering research	
14		Project Presentations	
15			Final Exam.

Recommended Sources

Textbook:

J.J Carr, J.M. Brown: Introduction to Biomedical Equipment Technology, Prentice Hall, 2nd Ed. 2011

Assessment			
Attendance	5%	Less than 25% class attendance results in NA grade	
Project	15%		
Midterm Exam	35%	Written Exam	
Final Exam	45%	Written Exam	
Total	100%		
Assessment Criteria			
Final grades are determined according to the Near East University Academic Regulations for Undergraduate Studies			
Course Policies			
<ol style="list-style-type: none"> 1. Attendance to the course is mandatory. 2. Late assignments will not be accepted unless an agreement is reached with the lecturer. 3. Students may use calculators during the exam. 4. Cheating and plagiarism will not be tolerated. Cheating will be penalized according to the Near East University General Student Discipline Regulations 			
ECTS allocated based on Student Workload			
Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including Exam weeks)	15	4	60
Labs and Tutorials	-	-	-
Assignment	-	-	-
Project/Presentation/Report	1	6	6
E-learning activities	-	-	-
Quizzes	-	-	-
Midterm Examination	1	10	10
Final Examination	1	20	20
Self-Study	15	4	60
Total Workload			156
Total Workload/30(h)			5.2
ECTS Credit of the Course			5