

 Institute of Biomedical Engineering SYLLABUS Biomedical Instrumentation Course Fall Semester								
Course Code	Course Name	Course Type	Weekly Hours			Credits	ECTS	Campus / Weekly Time & Classroom Schedule
			T	A	L			
BM 564	Biomedical Instrumentation and Measurement	Elective	3	0	1	3	9	Monday 14:00-17:00
Prerequisite		Prerequisite to						
Course Lecturers	Ahmet Ademoglu					Office Hours Schedule		
E-mail	ademoglu@boun.edu.tr					Office / Room No		A1-05
Phone	0216 516 3447					Phone		0216 516 3447
Teaching Assistant	Hüden Neşe					Office / Room No		A1-05
E-mail	huden.nese@boun.edu.tr							
Course Objectives	Understanding the basic concepts of circuit theory and its application to bioinstrumentation. Studying the origins of biological signals and systems used for their measurement including biopotentials amplifiers, sensors and transducers. Studying the electrical hazards and patient safety.							
Textbooks/References	PRINCIPLES OF BIOMEDICAL INSTRUMENTATION, A.G. Webb, 2018, Cambridge.							
	MEDICAL PHYSICS AND BIOMEDICAL ENGINEERING, B H Brown, R H Smallwood, D C Barber, P V Lawford and D R Hose, 1999, IOP Publishing Ltd.							
	MEDICAL INSTRUMENTATION: APPLICATION & DESIGN, J.G. Webster . 4th ed. 2010 John Wiley & Sons.							
	BIOMEDICAL INSTRUMENTATION : Theory & Applications, R.S. Khandpur, 2003, Mc Graw Hill.							
Learning Outcomes	1 Measurement of biological parameters							
	2 Design of bioelectrical amplifiers and sensors							
	3 Recording of bioelectrical signals							
	4 Biomedical device design principles							
Teaching Methods	Lecturing, assignments, tutorials and lab assignments.							
WEEK	Subject studied for that week							
Week 1	Introduction							
Week 2	Amplifiers							
Week 3	Sensors							
Week 4	Biopotentials							
Week 5	Electrodes							
Week 6	Biopotential Amplifiers							
Week 7	Blood Pressure and Sound							
Week 8	Measurement of Flow and Volume of Blood							
Week 9	Chemical Biosensors							
Week 10	Measurement of Respiratory System							
Week 11	Electrical Safety							
Week 12	Audiometry							
Week 13	Cardiac Pacemakers							
Week 14	Final Exams							
Assessment Methods and Criteria	Evaluation Tool		Quantity	Date		Weight in %		
	Final Exam		1			30		
	Semester Evaluation					70		
	Attendance, active tutorials, Lab work		1			10		
	In-term exams		2			25		
	Homework Assignments		6			35		
*** ECTS Credit Calculation ***						Language of Instruction:		English
Evaluation Tool	Hour	Quantity	Student Workload Hours	Evaluation Tool	Hour	Quantity	Student Workload Hours	
Theoretical hours	3	13.0	39	In Term Exam	10	2	20.0	
Pre-class self study	4	13.0	52	Final Exam	20	1	20.0	
Post-class self study	4	13.0	52	Lab work & H	5	6	30.0	
GENERAL TOTAL HOURS:							213.0	
Recommended ECTS Credit (Total Hours / 25) :							9	