

Description of GBE 308 BIOSIGNALS AND SYSTEMS

Course Name: BIOSIGNALS AND SYSTEMS

Course Code: GBE 308

Type of Course: Lecture

Level of Course: Undergraduate (First Cycle)

Year of Study: 3

Semester/Trimester: Spring

ECTS Credits: 5

FU Credits: 3

Name(s) of Lecturer(s): Nizamettin AYDIN (naydin@yildiz.edu.tr)

Course Coordinator: Nizamettin AYDIN

Objectives of the Course: Electrical basis of biological systems and modeling and processing signals

Course Description: Basics of electrical systems, RLC circuits. Approaches such as the Transfer Function and the Fourier and the Laplace transforms are important tools for bioengineers that often considered borrowed from electrical engineering. Basic engineering concepts that underlie biological systems, medical devices, biocontrol, and biosignal analysis, EEG, EKG, MRI, Lung.

Learning Outcomes: -

Mode of Delivery: Face-to-Face

Prerequisites: PHYS 103 or Chairman's Consent

Co-requisites: None

Course Contents: **Week Topics**
(Weekly Lecture Plan)

- 1 Introduction
- 2 Basics of electrical systems
- 3 RLC circuits
- 4 Mathematical Approaches
- 5 Mathematical Approaches
- 6 Basic engineering concepts that underlie biological systems
- 7 Basic engineering concepts that underlie biological systems
- 8 Medical devices
- 9 Medical devices
- 10 Biocontrol
- 11 Biocontrol
- 12 Biosignal analysis
- 13 Biosignal analysis
- 14 Biosignal analysis

Recommended Reading: Circuits, Signals, and Systems for Bioengineers: A MATLAB-Based Introduction
John Semmlow

**Planned Learning
Activities and Teaching**

Methods: Lectures, Presentation

Assessment Methods: **Method** **Quantity (%)**

Quiz	10	10
Homework	10	10
Midterm Exam(s)	2	40
Final Exam	1	40

Language of Instruction: English

Work Placement(s): N/A