

Course Number: 28891**Course Name: Bioinstrumentation**

Course Type:
Prerequisite:
Level: Graduate
Group: Applied mechanics

Type & Max Unit: 3
Corequisite:
First Presentation:
Last Edition:

Objectives:

The main goal of this course is to present the measurement principles of medical instrumentation including an overview of measurement characteristics, sensors, bio potentials, electrodes, musculoskeletal system and EMG, assistive devices, medical Imaging, blood pressure, flow measurement and safety.

This course requires a class project that includes developing a set up for measuring a biomedical signal. Students will use Arduino boards for data acquisition.

Topics:

Basic Concepts of Medical Instrumentation

Basic Sensors and Principles

Medical Imaging

The Origin of Bio potentials

Biopotential Electrodes

Musculoskeletal System and EMG

Assistive devices

Blood Pressure and Sound

Measurement of Flow and Volume of Blood

Electrical Safety

References:

Medical Instrumentation, Application and Design, John Webster, 1998

Bioinstrumentation, John Webster, 2004

Arduino Cookbook: Recipes to Begin, Expand, and Enhance Your Projects, O'Reilly Media, Inc., Michael Margolis, 2011