UNIVERSIDAD PONTIFICIA ICAI ICADE COMILLAS MADRID

ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA

DEA-OPT-439 Biomedical Signal Processing

SEMESTER: Spring

CREDITS: 6 ECTS (4 hrs. per week)

LANGUAGE: English

DEGREES: GITI, GITT (Spring)

Course overview

This course focuses on Biomedical signal. Provides a comprehensive introduction to the principles and techniques of biomedical signal processing. It covers a wide range of topics, from the fundamental nature of biomedical signals to advanced analysis methods.

Prerequisites

Knowledge of signal processing, basic programming (python of matlab).

Course contents

Theory:

1. Fundamental biomedical signals and their nature
2. Propagation of biomedical signals in living tissues
3. Detection of events in biomedical signals: Correlation and filtering methods
4. Techniques for filtering artifacts in the time and frequency domains
5. Time-Frequency analysis of biomedical signals: Spectrograms, Wavelets, and other techniques
6. Supervised and unsupervised classification of biomedical signal patters
7. Introduction to image processing

Laboratory:

In general, each unit described previously has one associated lab practice

Textbook

- No textbook defined for this course.

Grading

- Exams during the course: 40% to 70%
- Exercises, Lab projects, Quizzes: 20% to 60%
- Lab reports: 10% to 50%