

67231 - Biomedical Electronic Technology

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	527 - Master's in Electronic Engineering
ECTS	5.0
Course	1
Period	First semester
Subject Type	Optional
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

The teaching-learning process is based on

- Lectures, in which the theoretical bases are exposed.
- Problem classes, in which representative cases are developed.

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- Laboratory sessions and related homework, where experimental setups are performed and the results are reported.
- Oral presentations by students.

5.2.Learning activities

- 1) **Lectures** (about 20 hours)
- 2) **Problem classes** (about 10 hours)
- 3) **Laboratory sessions** (about 15 hours)
- 4) **Student homework** (about 40 hours, including 4 tutorial hours)
- 5) **Study** (about 38 hours)
- 6) **Evaluation tests** (about 2 hours)

5.3.Program

- **Basic concepts of biomedical electronic instrumentation:**
 - Overview and applications.
 - Electrophysiological fundamentals.
 - Electronic systems for medical diagnosis and therapy.
- **Electrosurgical systems and application to cancer treatment:**
 - Introduction to electrosurgery.
 - Electrosurgical equipment.
 - Radiofrequency tumor treatment.
 - Electroporation tumor treatment.

5.4.Planning and scheduling

Lectures, problem classes and laboratory sessions are held according to the schedule set by the Center, available on its website. The other activities will be planned depending on the number of students and will be announced.

5.5.Bibliography and recommended resources

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1. **Basic materials:** will be uploaded at the start of the academic year in <http://moodle2.unizar.es>

2. Recommended bibliography

- J. G. Webster, *Medical Instrumentation. Application and Design* . John Wiley & Sons, 2010.
- R. S. Khandpur, *Handbook of Biomedical Instrumentation* . McGraw-Hill, 2014.
- J. A. Pearce, *Electrosurgery* . Chapman and Hall, 1986.
- S. Silbernagl, A. Despopoulos, *Color Atlas of Physiology* . Thieme Georg Verlag, 2008.
- S. Silbernagl, F. Lang, *Color Atlas of Pathophysiology* . Thieme Georg Verlag, 2016.
- Specific related works published by the IEEE.