67231 - Biomedical Electronic Technology

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	527 - Master's in Electronic Engineering
ECTS	5.0
Year	1
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as:

- Lectures, in which the theoretical contents are explained.
- Practice sessions, in which representative problems and cases are solved.
- Laboratory sessions and related homework, where experimental setups are performed and the results are reported.

- Student oral presentations.

5.2.Learning tasks

The course includes the following learning tasks:

- **Lectures** (about 20 hours)
- **Practice sessions** (about 10 hours)
- **Laboratory sessions** (about 15 hours)
- **Autonomous work** (about 40 hours, including 4 tutorial hours)
- **Study** (about 38 hours)
- **Evaluation tests** (about 2 hours)

5.3.Syllabus

The course will address the following topics:

Section 1. Basic concepts of biomedical electronic instrumentation

1. Overview and applications.
2. Electrophysiological fundamentals.
3. Electronic systems for medical diagnosis and therapy.

Section 2. Electrosurgical systems and application to cancer treatment

1. Introduction to electrosurgery.
2. Electrosurgical equipment.
3. Radiofrequency tumor treatment.
4. Electroporation tumor treatment.

5.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

5.5.Bibliography and recommended resources

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.