

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	547 - Master's in Biomedical Engineering
ECTS	6.0
Year	1
Semester	First semester
Subject Type	Compulsory
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 where the main contents are presented and discussed; lab sessions, practical tasks based on real application, and specific research activities.

Students are expected to participate actively in the class throughout the semester.

5.2.Learning tasks

The course includes the following learning tasks:

- **A01 Lectures** (48 hours). The main course contents are presented and student participation is encouraged.
- **A03 Laboratory sessions** (8 hours). Sessions take place in the laboratory or in the computer room. Notes for each lab session where the different activities are planned will be available before the session, which should be read before the session. The student should present a report of the corresponding lab session.
- **A05 Assignments**. Different activities/tasks are proposed related to the main contents of the course.
- **A06 Tutorials**. Students may ask any questions they might have about unclear contents of the course.
- **A08 Assessment**. The student will take an exam of Biomechanics and another of Biomaterials. Moreover, several reports derived from the computer lab sessions and the practical tasks will be evaluated.

5.3.Syllabus

The course will address the following topics:

Section I. Biomechanics

1. Fundamentals of Mechanics
2. Fundamentals of Continuum Mechanics
3. Biomechanics of musculoskeletal system
4. Mechanics of hard tissues
5. Mechanics of soft tissues

Section II. Biomaterials

1. Concepts of biocompatibility
2. Types of biomaterials and properties
3. Application to implant prosthesis, scaffolds and drug delivery systems
4. Legal context

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

- **BB** Biomaterials / edited by Joyce Y. Wong, Joseph D. Bronzino Boca Raton [Florida] : CRC Press, cop. 2007
 - **BB** Chen, Qizhi. Biomaterials : a basic introduction / Qizhi Chen, George Thouas Boca Raton, (Florida) : CRC Press, Taylor & Francis Group, cop. 2015
 - **BB** Fung, Yuan Cheng. Biomechanics: Motion, Flow, Stress and Growth / Fung Y.C.. Springer Verlag, 1990
 - **BB** Fung, Yuan Cheng. Biomechanics. Mechanical properties of living tissues / Fung Y.C.. Springer-Verlag, 1993
 - **BB** Joint replacement technology / edited by Peter A. Revell . - 1st pub. Cambridge (England) : Woodhead, 2008
 - **BB** Knudson, Duane. Fundamentals of Biomechanics / Duane Knudson. - 2th Edition Springer Verlag, 2007
 - **BB** Park, J. Biomaterials: An introduction / J. Park, R.S. Lakes. Springer 2007
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- Website of the course available in add.unizar.es