

Academic Year/course: 2022/23

69702 - Biomechanics and Biomaterials

Syllabus Information

Academic Year: 2022/23

Subject: 69702 - Biomechanics and Biomaterials

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 633 - Master's Degree in Biomedical Engineering

ECTS: 6.0

Year:

Semester: First semester

Subject Type: Compulsory

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. 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.

4.2. Learning tasks

The course includes the following learning tasks:

- A01 Theory sessions (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.

4.3. 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 and legal context.
2. Fundamentals of microstructure and properties.
3. Types of biomaterials and applicability.
4. Applications in implants, prostheses, scaffolds and drug delivery system.

4.4. 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.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=69702>