

69306 - Modeling the mechanical behaviour of muscular skeletal tissue

Información del Plan Docente

Academic Year	2017/18
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	547 - Master's in Biomedical Engineering
ECTS	3.0
Year	1
Semester	Second 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 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.

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5.2. Learning tasks

There will be the following activities:

- **A01 Lectures** (18 hours). The main course contents are presented and student participation is encouraged.
- **A03 Computer lab sessions** (8 hours). Notes for each lab session where the different activities are planned will be available before the session. In the following days after the session, the student should submit 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** (1 hour). The student will take an exam and submit several reports derived from the computer lab sessions and the practical tasks.
- **Autonomous work**.

Assignments A05, Assessment A08 and autonomous work will account for 48 hours.

5.3. Syllabus

The course will address the following topics:

1. Musculoskeletal system
2. Bone tissue
3. Cartilage tissue
4. Connective tissue: Ligaments and tendons
5. Muscle tissue

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	Cowin, Stephen C. Bone Mechanics Handbook / Cowin Stephen C. - 2nd ed CRC Press
BB	Fung, Y. C. Biomechanics. Mechanical properties of living tissues / Fung Y.C Springer-Verlag, 1993.
BB	Holzapfel, Gerhard A.. Nonlinear solid mechanics : a continuum approach for engineering / Gerhard A. Holzapfel Chichester : Wiley, 2001
BB	Martin, R.B. Skeletal tissue mechanics / Martin R.B., Burr D.B., Sharkey N.A Springer-Verlag New York, 1998.
BC	Carter, D.R . Skeletal function and form / Carter D.R., Beaupré G.S. Cambridge University Press 2001
BC	Nordin, Margareta. Biomecánica básica del sistema musculoesquelético / Margareta Nordin, Víctor H. Frankel ; Ilustraciones de Kajsa Forssen . - [1ª ed. en español, traducción de la 3ª ed. en inglés] Madrid :

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