69306 - Modeling the mechanical behaviour of muscular skeletal tissue

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	547 - Master's in Biomedical Engineering
ECTS	3.0
Course	1
Period	Second 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 methodology is structured in three levels: theoretical classes where the main subject contents are presented and discussed, student participation is encouraged; also computer lab sessions and development of practical tasks based on a real application or specific research activity are proposed.

5.2.Learning activities

There will be the following activities:

A01 Theoretical classes with the active involvement of the student (18 hours). The main course contents are presented.

A03 Computer lab sessions (8 hours). Different lab sessions are carried out. Notes for each lab session where the different activities are planned will be available before the session,. In the following days after the lab session, the student should present a report of the corresponding lab session.

A05 Development of practical tasks. Different activities/tasks are proposed related with the main contents of the course

A06 Tutorship. Students may solve any questions they might have about unclear contents of the course

A08 Assessment. The student will take an exam and several reports derived from the computer lab sessions and derived from the development of practical tasks will be evaluated (1hour)

Activities A05, A08 and student personal study-time will account with 48 hours.

5.3.Program

1. Musculoskeletal system

2. Bone tissue

3. Cartilage tissue

4. Connective tissue: Ligaments and tendons

5. Muscle tissue

5.4.Planning and scheduling

The course calendar is defined by the Escuela de Ingeniería y Arquitectura calendar.

5.5.Bibliography and recomended 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.

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BB Timoshenko, Stephen P.. Elementos de resistencia de materiales / por S. Timoshenko y D. H. Young . - [2a. ed., 1a. reimp.] México : Uteha, 1991

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, Victor H. Frankel ; Ilustraciones de Kajsa Forssen . - [1ª ed. en español, traducción de la 3ª ed. en inglés] Madrid : McGraw-Hill.Interamericana, D.L. 2004