69709 - Motion capture and characterisation

Syllabus Information

Academic Year: 2022/23
Subject: 69709 - Motion capture and characterisation
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 633 - Master's Degree in Biomedical Engineering
ECTS: 3.0
Year:
Semester: Second semester
Subject Type: Optional
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 using motion capture hardware and software, 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 Lectures** (21 hours). The main course contents of the course are presented. They take place in the classroom These classes are developed using a slideshow presentation program. Student participation is encouraged.
- **A03 Lab sessions** (7 hours). Lab sessions will use human motion capture systems that are available in the
- Department of Design and Manufacturing Engineering at the Escuela de Ingeniería y Arquitectura (EINA).
- **A05 Assignment.** The practical task will be done between two or three students. With this task, the students have to show that they have assimilated the course contents of the course . Students should present a report of their practical task and defend it before teachers.
- **A06 Tutorials.** Students may ask any questions they might have about unclear contents of the course.
- **A08 Assesment**. The student will take an exam and a report derived from the development of practical tasks.

4.3. Syllabus

The course will address the following topics:

1. Introduction to human motion capture
2. Mechanical basics
3. Human motion capture systems
4. Optical human motion capture systems
5. Human motion capture systems based on inertial sensors
6. Biomechanical model and reconstruction of the movement
7. Dynamic
8. Simulation and 3D animation software of human motion
9. Musculoskeletal models
10. Applications

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 t o the EINA website.

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=69709