UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Modelling

2425-1-H4102D004-H4102D011M

Aims

The objective of the module is to enable students to acquire and deepen their knowledge about human modelling techniques starting from diagnostic images and 3D scanning systems up to 3D printing of body parts and organs.

Contents

The contents of the module cover the basic concepts related to techniques and tools for: i) acquiring the morphology of the human body and related anatomical districts; ii) acquiring movement and postures; iii) creating and using 3D geometric models of the human body (avatars) and anatomical districts at different levels of detail according to the application domain; iv) behavior simulations; and v) 3D printing of anatomical districts and organs.

Detailed program

LECTURES SESSIONS
The course includes the following topics:

- Systems for the human body acquisition (3D scanners);
- Devices for motion capture;
- Generation of the geometric models of the human body, anatomical districts and organs from medical images (e.g. from TC or MRN) and 3D scanners;
- Numerical simulation and devices for Virtual amd Augmented Reality;
- Technologies and materials for 3D printing for medicine;
- Applicative examples in the medical fields and use of SW tools for 3D acquisition and modelling of the human body.

LABORATORY SESSIONS

Laboratory sessions are programmed in order to guide the student in the direct experimentation and use of SW packages for 3D anatomical districts acquisition and 3D modeling of human body and/or its parts starting from medical images and 3D scanning.

Prerequisites

None.

Teaching form

- Lessons in class using slides and movies.
- Use of dedicated SW tools at the laboratory.

Textbook and teaching resource

Lectures Slides

Semester

I semester

Assessment method

Exam at the end of the course.
The exam shall include:

- Written test with open questions on the topics taught during the lectures to verify the level of the preparation on the course program;
- Eventual colloqium to discuss the written test.

Office hours

Thursday, h. 14.30

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY