UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Prosthesis and Rehabilitation

2021-3-H4102D018-H4102D056M

Aims

"To understand the epidemiology, risk factors and preventive healthcare related to major arthroplasty (shoulder, hip and knee) and their relevance. To understand the technical peculiarities of different kind of standard and custom prostheses and of their strengths and weaknesses.

To provide knowledge about methods and tools to assess patient's condition and recovery performances by means of motion tracking system in rehabilitation, including gait analysis and rehabilitation.

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Contents

The course aims at providing the students with the basic knowledge about major prostheses relevance, functioning, and customization opportunities (e.g. by means of Additive Manufacturing). Recent digital techniques to assess rehabilitation will be explained and cases will be shown and discussed.

Detailed program

"Introduction on history of prosthesis

Basis of biomechanical function and tribology of a prosthesis

Design of standard and customized prostheses

Hints of patient's centered prosthesis design and manufacturing

Need and relevance of patient assessment in motor rehabilitation

Motion data acquisition with existing technologies (e.g. optical markerless)

Data elaboration to evaluate performance and monitor rehabilitation progress

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Prerequisites

Basic knowledge of anatomy

Teaching form

Frontal lectures, case description and discussion. Examples of use of devices and software solutions for motion analysis. During the COVID-19 restrictions the lessons will be recorded and available online, with some live events that will be planned and communicated via email or on e-learning.

Textbook and teaching resource

Course Handout (slides)

Semester

first semester

Assessment method

The exam consist in a written test with open questions. Students will have to demonstrate their capability in discriminating different kind of prosthesis and in associating them to patient’s condition. Pros and cons of existing technical solution and future challenges and opportunities, concerning both prosthesis and virtual rehabilitation, will be part of the competences student will be asked. During the Covid-19 restrictions, the exam will be exclusively oral through a dedicated platform. A public link will be communicated to the students for the access of virtual public. If necessary, modifications will be immediately communicated to the students via email.

Office hours