UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Prosthesis and Rehabilitation

2223-3-H4102D018-H4102D056M

Aims

To understand the epidemiology, risk factors and preventive healthcare related to major arthroplasty (shoulder, hip and knee) and their clinical 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 exercises.

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 real 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

Prerequisites

Basic knowledge of anatomy

Teaching form

Frontal lectures, case description and discussion. Examples of use of devices and software solutions for motion analysis.

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.

Office hours

Thursday 2pm - 4pm, it is recommended to send a meeting request (daniele.regazzoni@unimib.it, daniele.regazzoni@unibg.it)

Sustainable Development Goals