

Module IG.3501

Medical Robotics

Person in charge: Maria TROCAN

Prerequisite: IG.2307/IG.2407, IG.2405

Organization: 24hrs lectures, 24 hrs project

Evaluation: Exam, project

ECTS: 5 credits

Context

In the near future, medicine will be closely linked to medical robots. In this class, you will study the design and control of robots and associated technology for medical applications, with a focus on surgery and interventional radiology. No medical background is required for attending this class.

Objectives

Skills

This module provides a solid background in dynamic systems using MATLAB, C and C++ programming. Students will become familiar with feedback control design and linear systems.

Knowledge

This module enables students to develop the following concepts and skills:

- **Concepts**
 - The broad spectrum of medical and healthcare robotics
 - Kinematics of medical robots
 - Robot dynamics and simulation
 - Imaging guided medical robots
 - Tracking and surgical navigation

- **Know-How**
 - Dynamic systems, feedback control, Matlab/C/C++.

Pedagogical Approach

Lectures, practical work, project.

References

Lecture notes.

Stanford Medical Robotics class:

<http://web.stanford.edu/class/me328/>