

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/>