

## Syllabus

1. Introduction to soft and collaborative robotics: areas of use and state of the art;
2. Hardware solutions for a collaborative system: soft covers and variable impedance actuators;
3. Soft robots: modeling and control;
4. Continuous and snake-like robots;
5. SOFA simulator;
6. Bioinspired robots;
7. Microrobots and magnetic actuation.
8. Teleoperation: introduction and definition of the different existing schemes (unilateral and bilateral), methods of representation and control of a teleoperated system, passivity and stability, tank theory;
9. Haptic interfaces: definition and control schemes;
10. Shared and semi-autonomous control: impedance control in collaborative robots;
11. Supervised autonomy: control architectures and interfaces;
12. Learning techniques applied to shared control.