MICRO-502

Aerial robotics

Floreano Dario

Cursus	Sem.	Type
Microtechnics	MA2, MA4	Opt.
Robotics, Control and Intelligent Systems		Opt.
Robotics	MA2, MA4	Opt.

Language of teaching	English
Credits	5
Session	Summer
Semester	Spring
Exam	Written
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	2 weekly
Exercises	1 weekly
Project	2 weekly
Number of positions	

Summary

The course provides an introduction to the design, control, and applications of aerial robots. Students will be able to translate theoretical concepts into practice by means of hands-on exercises with simulated and real drones.

Learning Prerequisites

Required courses

Mobile Robots

Learning Outcomes

By the end of the course, the student must be able to:

- Identify drone types
- Describe aerodynamic foundations of drones
- Compare different design types
- Analyze costs and benefits of specific design for specific mission
- Assess / Evaluate control methods for specific missions
- Implement control algorithm on drone
- Set objectives and design an action plan to reach those objectives.
- Describe applications and regulations
- Conduct an experiment with simulated and real drones

Transversal skills

- Set objectives and design an action plan to reach those objectives.
- Assess progress against the plan, and adapt the plan as appropriate.
- Make an oral presentation.

Teaching methods

Lectures, software exercises, and project with simulated and real drones

Expected student activities

Attending classes and asking critical questions; performing exercises and answering possible quizzes within a week; program a simulated drone to complete a mission; form groups to assemble, program, and characterize physical mini-drone for a mission; prepare a powerpoint presentation of the method used for the mission of the physical drone and assess its performance; demonstrate the drone performance in the mission.

Assessment methods

Project assessment and written exam

Supervision

Office hours	No
Assistant.e.s	Yes
Forum	Yes

Resources

Moodle Link

- https://go.epfl.ch/MICRO-502