

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 | 4 |
| Session | Summer |
| Semester | Spring |
| Exam | Written |
| Workload | 120h |
| Weeks | 14 |
| Hours | 4 weekly |
| Lecture | 2 weekly |
| Exercises | 1 weekly |
| Practical work | 1 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 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, exercises and project with real drones

Expected student activities

Attending classes and asking critical questions; performing exercises and answering possible quizzes within a week; form groups to assemble, program, and characterize mini-drone; write and present drone project report.

Assessment methods

Project assessment and written exam

Supervision

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|--------------|-----|
| Office hours | No |
| Assistants | Yes |
| Forum | Yes |

Resources

Moodle Link

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