

MICRO-419 **Robotics & the future of manufacturing II**

Bouri Mohamed

Cursus	Sem.	Type
Managmt, dur et tech	MA2	Obl.

Language of teaching	English
Credits	2
Session	Summer
Semester	Spring
Exam	Oral
Workload	60h
Weeks	14
Hours	2 weekly
Project	2 weekly
Number of positions	32

Summary

This course is devoted to exploration projects in concern with robotics and manufacturing. The students with interdisciplinary backgrounds will have to design new products and address new markets around topics such as open robotics, rehabilitation robotics and transport.

Content

- Components of a robotic solution.
- Industry 4.0 for robotics and manufacturing
- May robotics improve the quality of life of people in their daily living ?
- Keynote talks from industrial R&D group leaders and CTOs of companies active in robotics and manufacturing

Keywords

Robotics, manufacturing, industrial applications, medical robotic applications

Learning Prerequisites**Required courses**

Robotics & the future of manufacturing 1 (MCRO 418)

or

Basics of robotics for manipulation (MICRO 450)

Learning Outcomes

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

- Classify and define industrial robotics and manufacturing solutions
- Establish the requirements of a robotic platform
- Design and construct a robotic solution for a desired application
- Compare the technical performance of a robotic solution
- Quantify the technical performance of a robotic solution
- Assess / Evaluate the economic model of a robotic solution that addresses a desired application

Transversal skills

- Assess progress against the plan, and adapt the plan as appropriate.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Communicate effectively with professionals from other disciplines.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Identify the different roles that are involved in well-functioning teams and assume different roles, including leadership roles.
- Resolve conflicts in ways that are productive for the task and the people concerned.

Teaching methods

- **Guest lectures from CEO and CTO of established companies** in the field of robotics and manufacturing (30%)
- **Supervised group projects** with defined objectives (70%).

Expected student activities

- Group project
- Report
- Follow up meetings with the professor
- Oral presentations

Assessment methods

Oral exam.

- Report (20%)
- Oral presentation (30%)
- Delivered work, Q&A (50%)

Details of the oral exam:

Oral exam. **1 day exam 8:15-17:00** between **20.06** and **09.07**, defined later by the SAC.

30 mins / group - 10-15 mins of oral presentation and 15 min of Q&A

Report (20%) **Report of 10 pages max, to submit before June, 13th**

Oral presentation (30%) : **Part of the oral exam -**

Delivered work, Q&A (50%)

- **Deliverables as explained in the report,**
- **Deliverables as developed during the oral presentation and the Q&A**

Resources

Moodle Link

- <https://moodle.epfl.ch/course/view.php?id=16646>