

EE-715

Optimal control

Faulwasser Timm

Cursus	Sem.	Type
Advanced Manufacturing		Obl.
Electrical Engineering		Obl.

Language of teaching	English
Credits	4
Session	
Exam	Project report
Workload	120h
Hours	46
Courses	33
Exercises	13
Number of positions	

Frequency

Every 2 years

Remark

Every 2 years. Next time: Spring 2018

Summary**Content**

The course will cover the following topics:

NLPs and Optimal Control

- Brief review on static optimization
- Pontryagin's maximum principle and necessary conditions of optimality (NCO)
- Turnpike and dissipativity properties in Optimal Control

Solution methods

- Analytical solution approach (type and sequence of arcs in optimal solutions)
- Indirect and direct solution techniques
- Direct sequential and simultaneous solution techniques

From optimal to sampled-data predictive control

- Stability and convergence properties
- Economic MPC approaches
- Case studies from mechatronics, process systems and climate economics

Assessment methods

Project Report.