

EE-611

Linear system theory

Müllhaupt Philippe

| Cursus | Sem. | Type |
|---|------|------|
| Electrical Engineering | | Opt. |
| Robotics, Control and Intelligent Systems | | Opt. |

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|----------------------------|-----------|
| Language of teaching | English |
| Credits | 4 |
| Session | |
| Exam | Multiple |
| Workload | 120h |
| Hours | 56 |
| Courses | 28 |
| Exercises | 28 |
| Number of positions | |

Frequency

Every 2 years

Remark

Next time: Fall 2026

Summary

The course covers control theory and design for linear time-invariant systems : (i) Mathematical descriptions of systems (ii) Multivariables realizations; (iii) Stability ; (iv) Controllability and Observability; (v) Minimal realizations and coprime fractions; (vi) Pole placement and model matching.

Content

The course contents include the following main chapters:

- Mathematical description of linear systems
- State-space solutions and realizations
- Stability
- Controllability and observability
- Minimal realizations and coprime fractions
- State feedback and state estimation

Keywords

Linear dynamic models, Linear systems, Stability, State feedback, State estimation.

Learning Prerequisites**Recommended courses**

- Linear Algebra
- Differential Equations
- Automatic Control

Assessment methods

Implementing a computational scheme and writing a report

Resources

Moodle Link

- <https://go.epfl.ch/EE-611>