

Hydraulic Servo Systems

Hydrauliska servosystem
6 credits

Programme course

TMHP51

Valid from: 2025 Spring semester

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|--|--|-----------------------------------|
| Determined by | Main field of study | |
| Board of Studies for Mechanical Engineering and Design | Electrical Engineering, Mechanical Engineering | |
| Date determined | Course level | Progressive specialisation |
| 2024-08-28 | Second cycle | A1N |
| Revised by | Disciplinary domain | |
| | Technology | |
| Revision date | Subject group | |
| | Mechanical Engineering | |
| Offered first time | Offered for the last time | |
| Autumn semester 1996 | | |
| Department | Replaced by | |
| Institutionen för ekonomisk och industriell utveckling | | |

Course offered for

- Master of Science in Mechanical Engineering
- Master's Programme in Mechanical Engineering

Prerequisites

Fluid power systems, Automatic Control

Intended learning outcomes

After completing the course, the student should be able to:

1. Explain dynamic phenomena that can occur in hydraulic systems and describe the functional principles and characteristics of common components.
2. Formulate and analyze dynamic models for systems and components in the time and frequency domains, as well as systematically design controllers based on system requirements.
3. Use appropriate simulation tools and be able to present analyses and conclusions in writing.
4. Perform relevant measurements and analyze experimental data.

Course content

In this course, the focus is on the dynamic aspects of hydraulic systems. It addresses common phenomena that may occur, valve technology, dynamic modeling of hydraulic systems/components/loads, system analysis in the time and frequency domains, as well as methods for controlling hydraulic systems.

The course is based on lectures where the main content and theory are presented, as well as lessons with exercises. Parts of the course content are also tested through computer simulations and practical laboratory work.

Teaching and working methods

The teaching consists of lectures, lessons and laboratory exercises. Educational study visits are made to different industries.

Examination

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|------|---------------------|-----------|------------|
| UPG2 | Hand-in assignment | 2 credits | U, G |
| TEN3 | Written examination | 3 credits | U, 3, 4, 5 |
| LAB3 | Laboratory work | 1 credits | U, G |

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses

TMHPo6 - Fluid power systems, advanced course

TMMS32 - Modelling and simulation of mechatronic systems

TMPMo6 - Project Course Advanced - Mechatronics

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.