

Course syllabus

Hydraulik och pneumatik Hydraulics and Pneumatics

MMKF30, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED M

Date of Decision: 2023-04-11

General Information

Language of instruction: The course will be given in Swedish

Aim

The course aims to give students insight into the design and analysis of hydraulic and pneumatic systems. It also offers students the opportunity for further independent development of knowledge in the field.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to describe the structure and function of common hydraulic and pneumatic components such as cylinders, valves, pumps and motors.
- be able to identify components in hydraulic and pneumatic circuit diagrams.
- be able to identify and understand the formulas needed to solve a pneumatic or hydraulic problem.

Competences and skills

For a passing grade the student must

- be able to create simple hydraulic and pneumatic circuit diagrams for different applications.
- be able to dimension pneumatic and hydraulic components for different applications.
- be able to use basic skills such as mechanics and fluid mechanics to analyze common hydraulic and pneumatic components, such as, for example, cylinders, valves, pumps and motors.

- be able to analyse simple hydraulic and pneumatic systems.
- be able to build simple hydraulic and pneumatic systems.
- be able to carry out a hydraulic project that solve a given problem by dimensioning and selecting the appropriate hydraulic components and create the hydraulic circuit diagram.
- be able to derive out some of the most important formulas needed to solve a pneumatic or hydraulic problem.

Contents

- a brief overview of the fundamental phenomena and principles of hydraulics and pneumatics.
- study of the components utilized in building/designing hydraulic and pneumatic systems.
- analysis of components and systems.
- two compulsory laboratory exercises: one in hydraulics and one in pneumatics.
- one compulsory simulation exercise in pneumatics.
- one compulsory project task in hydraulics.
- for the practically oriented sections, guest lecturers from industry are utilized, which also shows how systems are being designed in industry.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: To qualify for a final grade the students: - must have completed two laboratory experiments (one in pneumatics and one in hydraulics) - must have completed one simulation exercise in pneumatics with the approved individual assignments - must have completed an individual project task in hydraulics - must have passed the examination with a minimum score in both hydraulics and pneumatics. The final grade in the course is based on the result of the exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Assumed prior knowledge: FMEA30 (Mechanics) and MMVF01 (Thermodynamics and Fluid Mechanics)

The number of participants is limited to: No

The course might be cancelled: If the number of applicants is less than 12.

The course overlaps following course/s: MMK050

Reading list

- Compendia, Institute of Technology, Dept. of Mechanical Engineering, Linköping, Sweden.

Contact and other information

Director of studies: Elin Olander, elin.olander@design.lth.se

Course homepage: <http://www.product.lth.se/education/>