



Course syllabus

Turbomaskiner Turbomachinery

MVKN61, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED M

Date of Decision: 2023-04-11

General Information

Main field: Sustainable Energy Engineering.

Elective Compulsory for: MHET1

Elective for: M4-en, W4-et

Language of instruction: The course will be given in English

Aim

Turbomachinery hold a central role in power production. The course aims at providing an understanding of the turbomachines principles and design methods. Furthermore, the thermo- fluid interaction between the turbomachine parts and the working media will be analysed in great detail. The simple and effective design methods will be taught and an overview of the more advanced techniques will be given.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Have a sound knowlede of the working principles of different types of turbomachinery and their application within power production
- Be familiar with the turbomachines performance and various loss sources

Competences and skills

For a passing grade the student must

- Capable of formulating simple and effective turbomachine designs for various applications

- Being capable to estimate the performance of turbomachine from velocity triangles and energy balances

Judgement and approach

For a passing grade the student must

- be able to analyze different types of turbomachines designed for various applications
- be able to suggest a simple design for a specific application

Contents

- Fundamental analyses for turbomachines working with both compressible and incompressible media
- Losses and efficiencies
- Effective Methods for design
- Industrial applications, especially gas turbines

Examination details

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

Assessment: The examination is carried out individually. There are a few compulsory assignments and a written examination. To pass the course, the student must pass all of the compulsory assignments and the written examination. Grade is distributed based on the written 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

Admission requirements:

- MMVF01 Thermodynamics and Fluid Mechanics or MVKF30 Thermodynamics for Energy Engineers

The number of participants is limited to: No

The course overlaps following course/s: MVK026

Reading list

- Seppo Korpela: Principles of Turbomachinery. John Wiley & Sons, 2020, ISBN: 9781119518082. Second Edition.

Contact and other information

Course coordinator: Narmin Hushmandi , narmin.hushmandi@energy.lth.se

Examiner: Magnus Genrup, magnus.genrup@energy.lth.se

Course administrator: Isabelle Frej, isabelle.frej@energy.lth.se

Course homepage: <https://www.energy.lth.se/english/education/>

Further information: The course contains lectures and exercises