

SYLLABUS

Water turbine 7.5 credits

F7017T

Strömningsmaskiner

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2021-02-17

Water turbine 7.5 credits F7017T

Strömningsmaskiner

Second cycle, F7017T

Education level
Second cycle

Grade scale
G U 3 4 5

Subject
Strömningslära

Subject group (SCB)
Engineering Physics

Main field of study

Mechanical Engineering

Entry requirements

M0013M Mathematics , F7016T Advanced Fluid Mechanics, F0031T Hydromechanics or equivalent

Selection

The selection is based on 30-285 credits

Course Aim

After completing the course, the student will be able to

- Describe and explain the main hydraulic turbines (Pelton, Francis, Kaplan), their components and methods to characterize them.
- Describe and explain the main fluid related flow phenomena appearing in hydraulic turbines and scale-up formula.
- Determine and analyze the efficiency map of a hydraulic turbines.
- Apply methods and analyze results to determine and design the hydraulic flow passage of hydraulic turbine (Francis, Kaplan) comprising spiral, distributor, runner, draft tube.
- Develop the ability to collaborate with other people in a project and laboratory environment.
- Communicate results of calculation and experiments and present results obtained in written and oral form.

Contents

The course deals with basic methods for designing hydraulic turbines of Francis and Kaplan types. In the course, students use the computer tool Matlab to dimension and represent turbine components and efficiency map.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The teaching takes place in the form of lectures, lessons, laboratory work and eventual visit. Laboratory work is a compulsory part.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written exam with differentiated grades. For final grades, approved project and laboratory work is required. Exam: 40% Laboratory work: 30% Project: 30%.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course F7017T is equal to MTM168

The course F7017T corresponds to the course MTM168.

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Laboratory work	G U 3 4 5	2.2	Mandatory	A07	
0003	Project	G U 3 4 5	2.2	Mandatory	A07	
0004	Written exam	G U 3 4 5	3.1	Mandatory	A21	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Head Faculty Programme Director Niklas Lehto 2021-02-17

Syllabus established

The syllabus was established by the Department of Applied Physics and Mechanical Engineering 2007-02-28, and remains valid from autumn 2007.