

SYLLABUS

Applied fluid mechanics 7.5 credits F7027T

Tillämpad strömningsmekanik

Course syllabus admitted: Spring 2024 Sp 3 - Present

**DECISION DATE
2023-06-15**

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Tillämpad strömningsmekanik

Second cycle, F7027T

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G#	Strömningslära	Engineering Physics

Entry requirements

Courses within the area Fluid Dynamics, F7015T and F7018T, or equivalent knowledge.

Selection

The selection is based on 30-285 credits

Course Aim

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

Knowledge and understanding

- Describe different fluid mechanical applications important for industry and society
- Give example of scientific questions within fluid mechanics
- Summarize and briefly explain fluid mechanical scientific publications
- Explain how numerical calculations and experiments can be combined to study fluid mechanical problems.

Skills and abilities

- Identify key information from fluid mechanical textbooks, scientific and popular science texts based on a given assignment
- Prepare and conduct oral presentations of given assignments
- Apply an advanced tool for numerical calculation of simpler fluid mechanical cases
- Carry out flow field measurements of simpler fluid mechanical cases and present the results in writing.

Judgement and approach

- Show ability to collaborate with other students in group assignments
- Reflect on fluid mechanical applications from an engineering perspective
- Motivate, verify, and critically review results from numerical flow calculations
- Give and receive constructive feedback.

Contents

The course aims to provide deeper knowledge of fluid mechanical applications that are important for industry and society. Flow phenomena such as turbulence and industrial applications such as hydropower are linked to current research and interesting issues. Students will be given an overview of experimental methods in fluid mechanics, experience measuring flow fields, and will also apply a numerical tool to simulate and analyze a flow process.

Realization

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

Teaching and learning mainly takes place through own studies and mandatory group work with 2-4 participants. The student must be able to search for additional necessary information and knowledge beyond the specified course material. Shorter lectures may occur within selected course segments, as well as guest lectures. All groups are given an assignment for each course occasion involving reading and summarizing relevant literature on their own, presenting this orally. Attendance is mandatory at all scheduled course occasions and active participation is required where students reflect on and discuss what is presented. Exemption from the attendance requirement can be granted in special cases in exchange for the student doing a hand-in assignment instead. The course also includes a project work where the students practice their ability to use a tool for numerical flow calculations. The project work is orally presented at the end of the course. The course also includes a project work where the students practice their ability to use a tool for numerical flow calculations and a laboratory where the students experience measuring flow fields. The laboratory is presented in writing and the project work is presented orally at the end of the course.

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. All learning objectives are examined both continuously through oral presentations and through the written laboratory report continuously through oral presentations with the grading scale U G#. Active attendance is required, implying that the student need to come prepared, present and participate in the subsequent discussion.

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.

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0003	Oral presentations	U G#	6.5	Mandatory	S24	
0004	Laboratory work	U G#	1	Mandatory	S24	

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 Mats Näsström, acting Head of Undergraduate Education 2023-06-15

Syllabus established

by Department of Applied Physics and Mechanical Engineering 2010-02-23