



# HÖGSKOLAN I GÄVLE

## Fundamentals in Fluid Mechanics 7.5 cr

Grundläggande strömningsmekanik 7,5 hp

Set by Faculty of Engineering and Sustainable Development

### Version

Set at

Valid from

12/15/21

HT2022

<b>Level</b>	G1N
<b>Education level</b>	First cycle
<b>Course identifier</b>	ETG007
<b>Credits</b>	7.5 cr
<b>Main field of study</b>	Energy Systems
<b>Subject group</b>	Energy Technology
<b>Disciplinary domain</b>	Technology 100.0 %

**Learning outcomes** After completing the course, the student should be able to

Knowledge and understanding

1. explain basic concepts of flow mechanics and flow statistics
2. explain the application of incompressible flow

Competence and Skills

3. evaluate simple technical flow systems with regard to dimensioning
4. develop and apply control volumes for basic equations in fluid mechanics
5. use dimensional analysis
6. perform engineering calculations involving basic fluid mechanics
7. perform various experiments and report the results in writing
8. evaluate simple technical flow systems with regard to dimensioning
9. show ability for teamwork and collaboration in laboratory groups with a focus on fluid mechanics
10. demonstrate the ability to give a written account of their and the group's laboratory report and discuss problems and solutions in dialogue with others in the group.

**Course content** Basic concepts in fluid mechanics

Flow statics - basic equations in flow mechanics, pressure variation in liquids  
Principles of moving fluids - mass conservation, Bernoulli's equation and impulse rates  
Dimensional analysis and modeling  
Laminar/turbulent flow, Reynolds speech, Moody chart  
Introduction to turbomachinery

<b>Teaching</b>	Lectures, exercises and laboratory work
<b>Prerequisites</b>	General entry requirements for higher education in Sweden and courses corresponding to the following Swedish Upper Secondary School courses: - Physics 2 - Mathematics 3c or Mathematics D
<b>Examination</b>	Written exam and laboration 0010 Written exam 6.5 credits examines learning objectives 1-6, 8, grades A-F 0020 Laboration 1 credit examines learning objectives 7, 9-10, grades Fail, Pass
<b>Grade</b>	A, B, C, D, E, Fx, F
<b>Other regulations</b>	Grading criteria are announced by the course coordinator or examiner at the start of the course.
<b>Sustainable environment</b>	A minor part of the course content deals with sustainable development.
<b>Module</b>	
	0010 Written examination 6.5 cr Grade: AF
	0020 Laboration 1 cr Grade: UG