



SD2709 Underwater Technology 7.5 credits

Undervattensteknik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The course syllabus is valid from Spring 2022 according to the school principal's decision: S-2022-0529 Decision date: 2022-02-24

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

The course is aimed at students in the first or second year at a Masters program in engineering. Bachelor of engineering with working knowledge in Matlab, mechanics, algebra and calculus is required.

English B / English 6

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course aims at giving basic understanding, knowledge and skills in design and operation of underwater vessels (UV). The course will treat basic conditions, performance issues, subsystems and integrated systems of both small and large vessels.

After the course you will be able to:

- Define and explain the fundamental mechanics of UV,
- Define and describe some basic types of UV,
- In a UV development process consider system architecture and performance in relation to stakeholder expectations and system requirements,
- Solve and judge basic power/energy need, range and performance calculations of UV,
- Define and explain fundamental control systems aspects for UVs,
- Solve and judge the planning, execution and evaluation of a UV mission at sea,
- Design a conceptual UV for a specific mission,
- Judge and argue for/against various design choices to assess the optimality of an UV, also considering sustainability and environmental aspects.

Course contents

The course is problem based, where you develop towards the learning objectives by working with requirements, design, analysis, synthesis, and system evaluation for a particular underwater system. The design work is supported by a number of seminars, which treat the basic principles of the field in general and some detailed aspects in particular. The seminars are based on a number of articles, standards and other literature according to the literature list below and very importantly - discussions around the progress of your design work. In the final seminar the different designs are presented, compared and evaluated. The design assignment and details of what you are expected to do and deliver are specified in a separate document.

Examination

- PRO1 - Project, 7.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Examination is done through active participation in the seminars, including literature reviews and other preparation and deliveries as described in the agenda below and in a separate document specifying your design mission. To pass the course you should participate actively in all seminars and complete and deliver all deliveries on time. One or two missed seminars can be accepted if the stated deliveries for that seminar are met.

Other requirements for final grade

To pass the course you should participate actively in all seminars and complete and deliver all deliveries on time. One or two missed seminars can be accepted if the stated deliveries for that seminar are met.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.