



SD2723 Marine Hydromechanics 7.5 credits

Marin hydromekanik

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

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

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

Specific prerequisites

Bachelor of Science Degree in vehicle engineering, engineering physics, mechanical engineering or similar.

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

This course gives opportunities to apply and deepen knowledge in mechanics, fluid mechanics, statistics and mathematics, in the modelling and evaluation of seakeeping characteristics and manoeuvrability of ships. The objective is that students after finishing the course shall be able to:

1. investigate, evaluate and interpret a ship's roll and transversal stability characteristics and its operability with respect to seakeeping and manoeuvrability;
2. model water waves and sea states;
3. model ship manoeuvring and ship motions in waves;
4. characterize the stochastic processes for ship response to waves and interpret the responses with respect to safety standards;
5. engage and contribute in teamwork and group discussions;
6. clearly present and discuss engineering conclusions and the knowledge and arguments behind them, orally and in writing;
7. discuss safety, performance, economic and environmental aspects in the context of seakeeping and manoeuvring.

Course contents

The course is built around a number of assignments supported by lectures, seminars, and experiments aboard ships and includes: Analytical and numerical analysis of ship motions and maneuvering. Hydromechanic and probabilistic modelling of water waves. Ship operability analysis with respect to seakeeping and seaworthiness. Ship motion investigations in the time domain as well as in the frequency domain where the linear responses are calculated by means of the ship's transfer function and the sea state expressed as a wave spectrum. Characterization of stochastic processes (waves and ship response) in terms of statistical measures and extreme values. Full-scale experiment for investigating a ships roll characteristics and maneuverability.

Examination

- TEN1 - Examination, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Assignments, 5.5 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.

Other requirements for final grade

ÖVN1 5,5 ECTS

TEN1 2 ECTS

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.