



Course syllabus

Faculty of Technology
Kalmar Maritime Academy

1NA91K Skeppsteknik, fartygs konstruktion och stabilitet, 7,5
högskolepoäng

Ship Technology, Ship Design and Stability, 7.5 credits

STCW reference

Sektion A-II/1 och A-II/2

Subject Group

Other Subjects within Technology

Level of classification

First Level

Progression

G1N

Date of Ratification

Approved by Faculty of Technology 2017-05-29

The course syllabus is valid from spring semester 2018

Prerequisites

General entry requirements and Mathematics 2a / 2b / 2c, Physics 1b1 / 1a or
Mathematics B, Physics A (Field-specific entry requirements 7/A7).

Objectives

Proficiency and comprehension

By the end of this course, students will be able to:

- describe main dimensions and main structural parts of a ship, including loads on the hull and watertight integrity
- describe relevant national regulations and international conventions regulating to the design and stability of the ship
- explain how trim and waves affect stability of the ship
- explain common expressions and suitable countermeasures to be taken in case of damage to the watertight part of the hull.

Skills and abilities

By the end of this course, students will be able to:

- calculate the intact ship's draught, trim and stability and evaluate the ships intact stability properties according to IMO's stability criteria

Content

Proficiency and comprehension of the course's scientific basis includes known scientific context such as Archimedes principle. Proven experience and maritime operational expertise is central to the course, such as Raholas stability criterions. The main course contents are divided into the following areas:

- main dimensions of ships
- main parts of construction and watertight integrity
- loads on the hull
- Simpsons rules for calculation of area
- SOLAS, TSFS covering ship safety, International Convention on Load Lines, MARPOL and tonnage measurements
- classification societies
- trim and stability booklet
- principle of Archimedes
- transverse stability
- effect of free surfaces
- longitudinal stability, trim
- heel
- inclining experiment and roll test
- basic damage stability

Type of Instruction

Instruction consists of lectures.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The expected objectives must be achieved in order to pass the course. Knowledge assessment takes place through individual written exam. In order to receive the grade Pass with distinction, it must be obtained on the written exam.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty and at the Kalmar Maritime Academy.

Required Reading and Additional Study Material

van Dokkum, Klaas, et al. *Ship stability*. DOKMAR Maritime Publishers BV, latest edition, (approximately 176 pages)

van Dokkum, Klaas. *Ship Knowledge: Ship Design, Construction and Operation*. DOKMAR Maritime Publishers BV, latest edition, (140 of 382 pages).