Linnæus University

Jnr: 2020/2508-3.1.3.2

Course syllabus

Faculty of Technology
Kalmar Maritime Academy

1NA72U Avancerad manövrering och nödoperationer, 7,5 högskolepoäng

Advanced ship handling and emergency operations, 7.5 credits

STCW reference
Sektion, AII/2, BI 1/2

Subject Group
Other Subjects within Technology

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by Faculty of Technology 2020-08-10
The course syllabus is valid from autumn semester 2020

Prerequisites
General entry requirements and Mathematics 2a / 2b / 2c, Physics 1b1 / 1a or Mathematics B, Physics A (Field-specific entry requirements 7/A7). Completion of the program course Watch Keeping, 5 credits, or equivalent.

Objectives

Proficiency and comprehension
Knowledge and understanding of the scientific basis of the course regarding, among other things, scientific context in hydrodynamics. Proven experience and operational knowledge in shipping is central to the course.
By the end of this course, students will be able to:

- give an account of different ships handling characteristics in varying external conditions.

Skills and abilities
Skills and abilities for this course means being able to use adequate methods in planning and accomplishment relevant to professional practice as well as using various information sources, means and instruments during maneuvering.
By the end of this course, students will be able to:

- perform maneuvering tests
- apply the technique of "turning with fixed radius"
- maneuver the ship under varying external conditions in the port areas to and from the dock, during embarkation and disembarkation of pilots, in rivers and in areas with restricted water depths and with and without tugboat assistance

- compile report on accident at sea and apply and evaluate information from incident reporting systems

Evaluation skills and Approach
A critical approach to information obtained from instruments during the maneuvering of vessels and a systematic and effective approach including regard for safety and the environment at professional practice is central to the course.
By the end of this course, students will be able to:

- analyze and evaluate the results of the maneuvering tests based on established maneuvering criteria
- evaluate and maintaining the ship's maritime safety during all types of maneuvering in port, in ice-covered waters, in heavy weather, when anchoring and during helicopter operations

Content

- Design factors affecting ship manoeuvring such as size, design and bridge placement
- The vessel's behaviour, pivot point and drift angle
- Hydrodynamics with respect to squat, bank effect and interaction between ships
- The influence of wind and current on the ship
- Manoeuvring tests and manoeuvring criteria and applicable rules
- Different types of tugs, connecting of tugs, determine the number of tugs needed and escort towage
- Risks for vessels in ice-covered waters, handling and operation of ships, including the assistance from icebreakers and applicable “guidelines "
- Risks and management of vessels in harsh weather, speed reducing, change of direction, actions when vessel is unable to manoeuvre, reduction of drift and applicable “guidelines”
- The ship's various movements in wave and swell systems
- Interaction between the ship and helicopter, demands on manoeuvre area for helicopter operations, preparations for receiving helicopter, communication between the vessels and helicopter and manoeuvring in connection with helicopter operations
- Maneuvers upon arrival pilotage area and the embarkation and disembarkation of pilots
- Choice of anchorage area and the influencing factors in the evaluation of outsourced length of anchor chain
- Dredging and recover of anchor stuck in the sea bed
- Maneuvering and mooring when berthing to another ship for example when shifting cargo and when bunkering.
- Application of “constant turning radius” including Curved EBL and Track steering
- Maneuvering and handling of ships in the harbor, canal, river, estuary, as well as restricted and shallow waters
- Docking and departure from berth in varying conditions and utilization of hawsers and anchors
- Maneuvering with assistance of tug, different types of tugs, connecting of tug, number of tugs needed, as well as interaction and communication between ship and tug
- National and international regulations concerning search and rescue organizations
- Planning and management of search and rescue operations of ships or aircrafts in distress by means of the IAMSAR
- Position reporting system SAR (Search And Rescue)
- Emergency action plans and actions to take at cargo shifting, grounding, stranding, collision, as well as risk assessment and prioritization at the incident or emergency
- MAS (Maritime Assistance Service), emergency ports
- Methods, when grounding, in order to get a ship afloat with or without assistance
- Salvage operations, masters obligations, request of assistance, assessment of the current situation, salvage contracts and international law as well as the use of "Lloyds Open Form"
- Emergency towing and arrangements, preparation for towing, connection to the tug as well as commencing towing (Emergency Towing Procedures)
- Accident incident reporting and accident investigation

Exercises
During the course, exercises conducted in the navigation simulator includes search and rescue, maneuvering tests, controlled navigation with constant turning radius and maneuvering of ships in restricted areas with maneuvering to and from the dock and with use of anchors as well as tugboats.

Type of Instruction

The teaching consists of lectures, exercises, group work and independent work.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).
Knowledge assessment takes place as follows:

- By individual written exam and practice performance/exercises

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

Required reading
Borg, Björn & Åkerblom, Gunnel (2012). Sjömanskap. Stockholm: Jure. Latest edition, about 440 pages

Reference literature
Rowe, R. W. (Latest edition). *The ship handler's guide for masters andnavigating officers*, pilots and tug masters. London: Nautical Institute

Hervé Baudu, *Ship Handling*. (Latest edition). Dokmar maritime publisher B.V.I****