

Translation: Only the Danish version is authentic

*Order no. 1324 of 17 December 2012 issued by
the Danish Agency for Higher Education and Educational Support*

Order on the training programme for masters

In pursuance of section 12(1) and section 13(1) of the act on maritime training programmes (*lov om maritime uddannelser*), cf. consolidated act no. 207 of 4 March 2011, as amended by act no. 478 of 30 May 2012, the following provisions are laid down:

Part 1

Purpose of the training programme

Section 1. The purpose of the training programme for masters is to qualify the student for functioning as a manager in the maritime profession. The master shall be capable of forming part of the crew on merchant ships as a mate and, after having acquired the necessary duration of service, be capable of acquiring competency rights as a master.

Subsection 2. The training programme for masters shall meet the requirements of the International Convention on Standards of Training, Certification and Watchkeeping, as amended (the STCW Convention), so that, following the prescribed duration of service, it shall be possible to issue certificates at the management level pursuant to part II/2 of the Convention for merchant ships with a gross tonnage of or above 3000.

Part 2

Objective of the training programme

Section 2. The training programme for masters is graded at level 5 in the Danish qualification framework for lifelong learning.

Subsection 2. The training programme shall develop the student focusing on management, safety, operation optimisation and internationalisation using English as the working language.

Section 3. The objective of the learning outcomes includes the knowledge, the skills and the competences that a master is to acquire from the training programme.

Subsection 2. The learning objective related to knowledge is that the master has

- 1) an understanding of the principles behind ships' design and equipment;
- 2) knowledge about mechanical engineering systems and installations on board ship engaged in trade in all sea areas;
- 3) an understanding of the navigational operation of ships engaged in trade in all sea areas;
- 4) an understanding of the factors affecting a ship's stability and how to assess a ship's stability;
- 5) knowledge of maritime accounts, including profitability, earning capacity, liquidity and solidity;
- 6) an understanding of management, communication and cultural differences and the importance hereof to onboard cooperation and ship-to-shore cooperation;

- 7) knowledge of the market situation of maritime companies;
- 8) an understanding of the environmental effects of shipping and how to protect the surrounding environment; and
- 9) knowledge of entrepreneurship and innovation.

Subsection 3. The learning objective related to skills is that the master can

- 1) organise cargo handling and stowage;
- 2) operate a ship's systems and machinery (up to 750 kW) where an engine crew is not required in an appropriate manner in terms of safety;
- 3) plan and organise the management of maintenance and repair work, including resource management in accordance with the company's instructions;
- 4) function as the shipowner's representative in connection with dockings;
- 5) perform the bridge and watchkeeping duty on board ships engaged in trade in all sea areas;
- 6) master the maritime English necessary for a mate and master of ships engaged in international trade;
- 7) master technical terms in oral and written communication within the fields of ship and watchkeeping duty and other maritime disciplines in Danish and English;
- 8) use information technology as a tool;
- 9) use relevant international and Danish regulations;
- 10) independently improve the ship's safety culture and the ship's general safety, including draw up, use and evaluate procedures;
- 11) use the ship's safety muster lists in both Danish and English;
- 12) draw up written guidelines, statements and reports related to maritime and technical problems so that they appear in an understandable and correct structural manner;
- 13) perform the ship's administrative functions, including the documentation of importance to the ship's operation; and
- 14) use the project organised, problem solving working method, including take part in the planning and implementation of projects.

Subsection 3. The learning objective related to competences is that the master can

- 1) perform the function as a watchkeeping navigator and as a master on board ships engaged in trade in all sea areas;
- 2) perform the management tasks, including evaluate and improve routines and work procedures on board ships engaged in trade in all sea areas;
- 3) arrange the establishment of an efficient onboard organisation;
- 4) independently acquire knowledge and be active in his own learning as well as assume the responsibility for developing new processes;
- 5) cooperate and show responsible behaviour as well as social flexibility;
- 6) promote efficiency, motivation and cooperation between crew members and ensure that the ship's critical processes are always performed by qualified personnel;
- 7) assume responsibility for organising, planning and evaluating the onboard fire preparedness;
- 8) perform the function as the person responsible for safety and the environment on board ships;
- 9) analyse and reconstruct situations on the basis of average reports; and
- 10) assume responsibility for environmentally-friendly ship operation, including energy-friendly operation and reduction of emissions from ships in all sea areas and contribute to improving processes.

Subsection 5. After having completed the training programme, the student shall meet the requirements of the STCW Convention in accordance with the qualification requirements of the Danish Maritime Authority hereon regarding

- 1) watchkeeping on the bridge, including full mission training, cf. table A-II/1 of the STCW Code;
- 2) automatic radar plotting aids (ARPA), cf. table A-II/1 of the STCW Code;
- 3) electronic chart display and information system (ECDIS), cf. table A-II/1 of the STCW Code;
- 4) General Operator's Certificate (GOC) in accordance with the Global Maritime Distress and Safety System (GMDSS) and regulation IV/2 of the STCW Convention;
- 5) fire-fighting on ships, cf. regulation VI/3 of the STCW Convention;
- 6) operation of lifeboats, liferafts and rescue boats, cf. regulation VI/2, paragraph 1, of the STCW Convention;
- 7) the theoretical basis for issuing a certificate in basic training for oil, chemical and gas tanker cargo operations, cf. regulation V/1-1, paragraph 2.2, and regulation V/1-2, paragraph 2.2, of the STCW Convention;
- 8) security preparedness and special security tasks in ships, Ship Security Officer, cf. regulation VI/5, paragraph 1.2, of the STCW Convention;
- 9) maritime medical examiner training programme for medicine chest category A;
- 10) certificate of competency in motor operation; and
- 11) occupational health course for members of the safety group in merchant ships.

Part 3

Arrangement of the training programme

Section 4. The training programme shall be arranged with an increasing degree of difficulty and complexity through the education.

Subsection 2. New national and international knowledge and new methods of relevance to masters shall be incorporated into the teaching.

Subsection 3. The teaching shall be arranged so that correlation is created between theory and the practical experience gained from the student's duration of service.

Subsection 4. Varied study forms shall support the student's development of independence and interpersonal skills as well as his ability to be innovative.

Section 5. The training institution shall be responsible for carrying out the training programme in its entirety, including any outsourced teaching.

Part 4
Duration of the training programme

Section 6. The official length of the training programme shall be 2.5 student full time, equivalents corresponding to 150 credits in the European Credit Transfer System (ECTS credits).

Subsection 2. For students who have passed the exam as a master (home trade), the master training programme shall have an official length of 120 ECTS credits. This shall not include any time spent on a maritime preparatory course, cf. section 9(2).

Subsection 3. For students who have passed the exam as a master (restricted), the master training programme shall have an official length of 60 ECTS credits. This shall not include any time spent on a maritime preparatory course, cf. section 9(2).

Section 7. The training programme shall be completed within the number of years corresponding to twice the prescribed duration, cf. section 6.

Subsection 2. The training institution may, when justified by special conditions, grant exemptions from the time-limit stipulated in subsection 1.

Section 8. Leave applied for shall be accepted if reasoned by maternity/paternity leave, adoption, documented illness, military service, UN service or the like.

Part 5
Admission

Section 9. The training institution shall admit the students to the master training programme and ensure that they meet the admission requirements.

Subsection 2. Students at the master training programme shall have passed the tenth grade leaving exam of the Danish Folkeskole in the subjects Danish, English, mathematics, physics and chemistry and at least acquired the exam mark 02 according to the 7 point marking scale or the mark 6 according to the 13 point marking scale in each subject or have passed the maritime preparatory course.

Subsection 3. In order to be admitted to the master training programme, the applicant shall:

- 1) have completed the ship's assistant training programme (basic level) combined with 12 months' duration of service as a mate candidate or 18 months' duration of service as an ordinary ship's assistant;
- 2) have completed a final course for ship's assistants combined with 15 months' duration of service as an ordinary ship's assistant;
- 3) have completed vocational training within the field of the iron and metal industries and the ship's assistant training programme for persons holding a certificate of apprenticeship combined with 12 months' duration of service as a ship's assistant;
- 4) have completed a training programme as a ship's mechanist; or
- 5) have 36 months' relevant duration of service in merchant ships with a gross tonnage of or above 20 acquired before 1 February 2002 and have completed approved basic training complying with the requirements of regulation VI/1 of the STCW Convention and of section A-VI/1, paragraph 2 on "Basic Training" of the STCW Code.

Subsection 4. A minimum of 12 months of the duration of service required in subsection 3 shall have been acquired in merchant ships with a gross tonnage of or above 500, hereof six months in ships outside coastal trade.

Subsection 5. In order to be admitted to the master training programme, the applicant shall furthermore:

- 1) hold a valid health certificate for seafarers and fishermen without limitations;
- 2) be fit for lookout duty;
- 3) hold a watchkeeping certificate; and
- 4) have completed practical training during the duration of service as described in a training record book approved by the Agency for Higher Education and Educational Support, however not as regards persons covered by subsection 3(v).

Part 6

Course regulations

Section 10. The training institution shall, in the course regulations, stipulate the regulations and guidelines governing the arrangement and implementation of the teaching. The course regulations shall contain a description of how the training institution, when arranging the training programme, meets part 3 of this order and the contents stipulated in annex 3 of this order as well as the requirements of the STCW Convention so that it is possible to issue a certificate pursuant to part II/2 of the Convention.

Subsection 2. Furthermore, the course regulations shall contain provisions on the following:

- 1) the purpose of the training programme;
- 2) the structure and arrangement of the training programme, including modules and ECTS credits;
- 3) types of teaching and cooperation;
- 4) cooperation with the industry and other training institutions;
- 5) syllabuses;
- 6) examinations and the types of evaluation used;
- 7) study activity;
- 8) credit transfer;
- 9) leave; and
- 10) exemptions.

Subsection 3. It shall be evident from the course regulations that the institution may grant exemptions from the provisions in the course regulations that have been laid down solely by the institution as such.

Subsection 4. It is presupposed that the course regulations and important amendments hereof are drawn up by acquiring inspiration from the two sides of industry.

Section 11. Course regulations and important amendments hereof shall enter into force at the start of a semester.

Subsection 2. Course regulations and important amendments hereof shall contain interim provisions.

Subsection 3. The course regulations in force shall be available from the webpage of the institution and documented in the quality assurance system of the training institution.

Part 7

Examination and examination certificates

Section 12. As regards examinations and evaluations, reference is made to the order on the holding of tests and the evaluation of students at the maritime training programmes in force (the examination order).

Subsection 2. The training institution shall issue exam certificates when:

- 1) the student has completed the entire training programme;
- 2) passed the final exams; and
- 3) acquired the duration of service required to acquire a certificate of competency where the exam certificate is required.

Part 8

Teacher qualifications

Section 13. The teachers shall, in general, have a level of qualification higher than the exit level for the training programmes. Qualification level shall mean educational competence and documented theoretical, expert and professional competence.

Subsection 2. New teachers shall, within the first three years of employment, have completed a relevant adult education training programme corresponding to 30 ECTS credits, which may be acquired through a combination of theoretical teaching and follow-up at their own training institution.

Part 9

Other provisions

Section 14. Decisions made by the training institutions in accordance with this order may be brought before the Danish Agency for Higher Education and Educational Support by the one affected by the decision, cf. the order on complaints related to the act on maritime training programmes. The complaint shall be submitted to the training institution, which shall send on the complaint to the Danish Agency for Higher Education and Educational Support accompanied by a statement. The training institution shall give the plaintiff an opportunity to comment on the statement within a time-limit of one week. Any comments from the plaintiff shall accompany the complaint when sent to the Danish Agency for Higher Education and Educational Support.

Subsection 2. The time-limit for filing complaints under subsection 1 shall be two weeks from the day when the plaintiff was informed of the decision.

Subsection 3. Decisions made by the Danish Agency for Higher Education and Educational Support shall not be brought before any higher administrative authority.

Section 15. The Danish Agency for Higher Education and Educational Support may allow deviations from the order as part of experiments. At the same time, the duration and reporting form of the experiment shall be determined.

Subsection 2. The Danish Agency for Higher Education and Educational Support may grant exemptions from the order when special conditions give reason for this.

Part 10

Entry into force and interim provisions

Section 16. This order shall enter into force on 1 January 2013.

Subsection 2. Students who have initiated the training programme before 31 December 2012 may complete the training programme in accordance with the provisions in force until now.

Subsection 3. The training institutions shall arrange for the necessary interim arrangements for students as mentioned in subsection 2 wanting to finalise their training programme according to this order.

Danish Agency for Higher Education and Educational Support, 17 December 2012

Inge Mærkedahl / Sune Rahn

Description of the contents of the training programme for masters

Interdisciplinary elements (4 ECTS credits)

The interdisciplinary work shall help strengthen the student's independent handling of problems that he may encounter after having finalized the training programme. At the same time, the work shall develop the student's ability to evaluate and improve work elements, processes and procedures.

In the interdisciplinary work, practical situations are simulated that the student will encounter in his working life where it will not necessarily be possible to separate the subjects. Interdisciplinary elements are, therefore, suitable for exercises and project work.

Navigation and watchkeeping (29 ECTS credits)

The student shall, through the instruction in navigation, watchkeeping and meteorology, be qualified to function as a mate and master on board merchant ships engaged on international voyages.

Subject: Navigation

Test requirements: Exam.

Central themes:

- 1. Positioning** – determine the ship's position using distinctive marks at sea and ashore, astronomical navigation, reckoning, shipboard navigation equipment.
- 2. Navigation equipment** – use of magnetic and gyro compasses, including the determination of indication errors in these; radar and ECDIS, including ARPA simulator course, use of common navigation equipment for ships engaged in international voyages.
- 3. Charts and manuals** – maintaining the stock of charts and manuals, including electronic updating (ECDIS), planning and carrying out ships' safe voyages, use of ship's logs, aids to navigation, IAMSAR, tidal conditions.
- 4. Manoeuvring** – ships' manoeuvring characteristics and abilities, mooring and anchoring and theoretical and practical handling of rescue situations.

Subject: Watchkeeping

Test requirements: Exam.

Central themes:

- 1. Regulations for preventing collisions at sea** – international regulations for preventing collisions at sea, special national regulations, including safe navigation in Danish waters.
- 2. Collision prevention** – radar and ARPA taking full account of the international regulations for preventing collisions at sea and the watchkeeping order, situational assessment and carrying out manoeuvres for preventing collisions.

3. Watchkeeping procedures – the watchkeeping order, ship's logs, checklists, procedures and instructions, full mission bridge training, cf. the qualification requirements in force.

4. Communication – distress and rescue signals, English terminology for watchkeeping terms, ship reporting systems and VTS.

5. Visual signalling – international code of signals, safe use of one-letter signals, distress signals, including SOS transmitted using light.

Subject: Meteorology

Test requirements: Exam.

Central themes:

1. Weather systems – characteristics of various weather systems, meteorological phenomena, sea currents, etc.

2. Retrieval of information – common meteorological instruments and relevant meteorological information, retrieval and transmission of meteorological information.

3. Voyage planning – special meteorological conditions for specific sea areas necessary for planning and carrying out a ship's safe voyage.

ADMINISTRATION, MANAGEMENT AND COMMUNICATION (22 ECTS credits)

Subject: Maritime law and administration

The student shall, through the instruction in the provisions of the seamen's act and the merchant shipping act, qualify to function as a mate and master on board ships engaged in voyages in all sea areas. Furthermore, the student shall be engaged in basic principles related to ship and wage accounting and basic operating economy for ships necessary for functioning as a master on board ships. Finally, the student shall acquire wide knowledge of the use of computers, including programmes and equipment for technical and administrative purposes on board ships.

Test requirements: Exam.

Central themes:

1. Employment law – the provisions of the seamen's act on service contracts, the ship service, disputes about conditions of service and penalty provisions as well as conditions related to occupational injuries.

2. Maritime law and the obligations of the master – cargo documents, conditions of authority for the master and cargo owner, maritime insurance and requirements for ship's manning as well as maritime inquiries, police authority as well as other authority tasks, inward and outward clearance.

3. Technical operation and administration – survey, ships' classification, certification and port State control.

4. Regulations on the environment, safety and occupational health – ISM (International Safety Management), occupational health legislation and pollution prevention.

5. Administration, accounting and acquisition – document management of the ship's certificates and drawing up written reports, inward and outward clearance in international trade.

6. Computers – the use of administrative computer programmes on board the ship as well as for information retrieval and ship-to-shore communication.

Subject: Maritime management

The student shall, through the instruction, qualify to take care of the operational management on board. The student shall, furthermore, be trained within management, communication and cultural differences, including the importance of the crew's cultural backgrounds to onboard cooperation and ship-to-shore cooperation.

Test requirements: Exam.

Central themes:

1. Operational optimisation – costs in connection with the operation of a ship and how to minimize them.

2. Energy efficient operation – efficient use of resources in connection with ship operation.

3. Planning and organising day-to-day ship operation – distribution of work and duty rosters in consideration of the provisions on hours of rest and the human resources on board.

4. Entrepreneurship – entrepreneurship, innovation and development of new processes.

Subject: English

The student shall, through the instruction, qualify to be able to use maritime English at the level necessary for mates and masters of ships engaged in international trade. This means that the student is able to use English as his working language, including read English publications, understand messages concerning the ship's safety and navigation and express oneself clearly both orally and in writing when exchanging messages over the ship's communication systems. Finally, the student shall be able to draw up written instructions and guidelines in English so that they can be used by a multilingual crew.

Test requirements: Exam.

Central themes:

1. Maritime English – IMO's maritime standard phrases and English technical manuals.

2. Safety communication – safety muster lists, safety information and aids to communication, escape routes and alarm signals.

3. Daily communication – ship's safety, operation and watchkeeping, especially with a view to using a multilingual crew.

4. Administrative communication – inward and outward clearance, chartering and cargo-related documents, reporting.

Subject: Communication

The student shall, through the instruction in communication, qualify to be able to carry out the radio communication occurring in connection with a bridge watch on board a merchant ship engaged in international voyages.

Furthermore, the student shall acquire the qualifications in oral and written Danish and English communication necessary to function at the senior level in large merchant ships.

Test requirements: Exam as well as a course in General Operator's Certificate in GMDSS (GOC), cf. the qualification requirements in force.

Central themes:

1. Communication and operational management – communication about operational conditions, including the drawing up of reports, chairing meetings and drafting minutes as well as follow-up, safe management communication, the making of working and safety procedures.

2. Communication about training programmes on board – planning and organising training, arranging and evaluating training programmes, including for junior officers, guidance of the training officer.

3. Communication in emergencies – planning and organising communication procedures in connection with the following situations:

- a) emergencies;
- b) search and rescue situations;
- c) loss and salvage;
- d) damage to the ship and cargo; and
- e) accidents, including personal and pollution accidents.

4. Handling negotiations – carrying out negotiations and conversations concerning the ship's operation and maintenance as well as surveys.

Safety, health and maritime security (12 ECTS credits)

Subject: Safety and environmental protection

The student shall, through the instruction in safety and environmental protection, qualify to perform the function as the person having the safety and environmental responsibility on board a ship engaged in international trade.

Test requirements: Internal test.

Central themes:

1. Environmentally sound ship operation and pollution prevention – including assuming the responsibility for protecting the surrounding environment.

2. Handling emergencies – measures related to the protection of those on board, decision techniques and risk assessment, handling losses.

3. Maritime safety management – safety communication, creating a safety culture and prevention, arranging and carrying out instructions of those on board about the ship's safety, environmental protection and occupational safety, including inspection of emergency and safety equipment as well as personal protective equipment as well as maintenance hereof.

4. Operation of lifeboats, liferafts and rescue boats – planning and carrying out safety drills on board, cf. the qualification requirements in force.

5. SMS (Safety Management System) – drawing up, using, evaluating and revising the ship's safety instructions and procedures.

6. Occupational health – course for members of the safety group on board merchant ships as well as the establishment of a ship's safety organisation, cf. the qualification requirements in force.

Subject: Fire-fighting and fire management

The student shall, through the instruction in fire-fighting, qualify to be able to operate and maintain the ship's fire-fighting and smoke-diver's equipment in accordance with the guiding manuals available. Furthermore, the student shall be able to function as a fire leader on board a ship.

Test requirements: Completed course in fire-fighting for ships, cf. the qualification requirements in force.

Central themes:

1. Organisation of fire-prevention – assessment of the fire-prevention in relation to work situations, ensuring appropriate handling of combustible substances and naked fire.

2. Instructions concerning fire preparedness – drawing up, maintaining and presenting instructions to the crew.

3. Fire-fighting and evaluation of the fire preparedness – planning, organising and managing fire-fighting as well as subsequent evaluation and improvement of the fire preparedness.

Subject: Maritime security

The student shall, through the instruction, qualify to function as a maritime security officer. Knowledge of conditions of capture and the reactions hereto.

Test requirements: Completed course as a maritime ship security officer (SSO), cf. the qualification requirements in force.

Subject: Medical examiner training programme

The student shall, by completing the medical examiner training programme, qualify to be able to function as a medical examiner on board ships that shall be provided with a medicine chest A.

Test requirement: Completed medical examiner training programme for medicine chest category A, cf. the qualification requirements in force.

Ship construction and mechanical engineering (38 ECTS credits)

Subject: Ship construction and cargo handling

The student shall, through the instruction in ship construction, cargo handling and stowage, qualify to assume the responsibility for the planning and carrying out of the cargo handling and stowage and for the ship's condition of loading in general as a mate and master on board ships in all sea areas. The student shall be able to use international maritime conventions, including especially SOLAS, MARPOL and the International Load Line Convention, in connection with practical problems.

Test requirements: Exam as well as basic tanker familiarization course, cf. the qualification requirements in force.

Central themes:

- 1. The construction of ship types** – arrangement, equipment and characteristics.
- 2. Stability** – centre of gravity, centre of buoyancy, draught and trim as well as calculation of the ship's position on the water, factors affecting a ship's stability, including the effects of the wind, the sea and free liquid surfaces, damage stability.
- 3. Stresses on the ship and its equipment** – assessment of whether the ship or parts of its equipment will be overloaded in case of local stresses.
- 4. Organising the following activities for typical types of ships** – loading, unloading, stowage, ballast operations, ventilation and temperature adjustments, cargo-securing and lashing, inspection of the cargo as well as inspection of the ship's condition.
- 5. Effects on the ship** – stresses on the ship's hull, the ship's position on the water, the ship's static and dynamic stability.
- 6. Corrosion of the ship and its equipment** – the effect of corrosion on the ship's seaworthiness, assessment of the corrosion as well as planning the corrosion protection on board.
- 7. Assessment of safety risks** – analysis of special situations where the ship is exposed to a risk in connection with for example cargo shifting, grounding and leakage, the handling of the ship and cargo in case of loss.
- 8. Cargo handling in general and where the cargo constitutes a safety or environmental risk** – loading, unloading, stowage, securing and storing the cargo in accordance with procedures as well as carrying out the necessary instructions of those on board, including on the use of safety and protection equipment.

9. International regulation, including on dangerous goods – national and international legislation, codes and standards, including the IMDG Code, the IGC Code, the IMSBC Code, the IBC Code on cargoes constituting a safety or environmental risk and their practical application.

10. Regulation – safety requirements, protection of the marine environment, national and international legislation, codes and standards on the handling, stowage, securing and carriage of cargoes, special instructions from the cargo owner and the shipping company, including requirements on compliance with national special regulations and refrigerating orders.

11. Document handling and management – organising document handling in connection with cargo voyages as regards special documentation on the condition and treatment of the cargo, including refrigerating record as well as Cargo Securing Manual.

Subject: Mechanical engineering and maritime technology'

The student shall, through the instruction in mechanical engineering and maritime technology, qualify to be able to perform the operation of ship machinery of up to 750 kW in an appropriate manner in terms of safety on board ships where there is no requirement for an engine crew. Furthermore, the student shall, through the instruction in technical systems and system understanding, qualify to be able to act rationally and correctly and localise and remedy simple defects in common technical, electrical and hydraulic systems on board ships

Test requirements: Internal test as well as test for certificate of competency in motor operation, cf. the qualification requirements in force.

Central themes:

1. Ship machinery – manoeuvring and navigation systems, propulsion machinery, electrical supply, including auxiliary machinery and shaft generator, fuel system, lubricating oil system, refrigerating system, tank system, bilge system, alarm system.

2. Deck equipment – hydraulic and electrical winches.

3. Electrical systems – generators, shaft generators and emergency power systems and correct operation of these systems as regards safety.

4. Maritime computer systems and programmes – systematic maintenance, stability and cargo handling as well as integrated ship control.

Operational management (15 ECTS credits)

Subject: ship operation

The student shall, through the instruction, acquire the qualifications necessary for him to be able to plan and carry out the voyages of a merchant ship taking full account of all conditions related to the ship's safe and appropriate operation. In this connection, the master shall carry out independent manoeuvring.

Test requirements: Exam.

Central themes:

1. Voyage planning – organising the voyage planning and carrying it out in all relevant areas in consideration of the nature of the waters, meteorological conditions, ice conditions, visibility, the ship's manoeuvring characteristics, traffic conditions as well as sea and tide currents.

2. Organising watches – organising the bridge and deck watches, ensure sufficient personnel, ensure that the correct decisions are taken as regards the weather, traffic, losses as well as other emergencies.

3. Organising, controlling and maintaining equipment – gyro and magnetic compasses, radar/ARPA systems, ECDIS and AIS, integrated control systems (IBK, ISK), radio navigation systems, auto pilot as well as charts and manuals.

4. Handling emergencies and accidents – arranging and carrying out search and rescue operations in accordance with IAMSAR.

5. Propulsion – propulsion resistance, interrelation between speed and fuel consumption as well as the possibilities of optimising the operation.

Subject: Chartering and document handling

The student shall, through the instruction, acquire the knowledge about national and international legislation as well as conventions, especially concerning ship safety, certification and chartering, necessary to meet his special obligations as a deck officer or master.

The master shall be able to assume responsibility for the administrative operation of a merchant ship at the senior level taking full account of:

- a) the commercial interests in the ship, its cargo and operation;
- b) the regulations, acts and provisions in force; and
- c) policies and instructions from the shipping company and other interested parties, including the charterer, cargo owner, insurance companies and classification societies.

Test requirement: Exam.

Central themes:

1. Maritime law and the obligations of the master – the master's police authority, cargo documents, shipowner and cargo owner's agency, maritime insurance and requirements for the ship's crew as well as maritime enquiry.

2. International conventions – relevant international regulations and their implementation into Danish law.

3. Technical operation and administration – survey, ship classification, certification, port State control and vetting.

4. Administration and reporting – document handling of the ship's certificates, documentation and reporting in connection with loss of ship and salvage, accidents, etc. as well as administrative tasks in connection with loading.

5. Shipping as a business – shipping industry's interest areas, chartering, interested parties and their organisations, insurance and classification of ships as well as the interests of society, including Danish maritime acts and the authorities' inspection.

Subject: Operational management

The student shall, through the instruction, acquire the qualifications necessary for him to carry out the operational management on board a merchant ship, including the planning and evaluation of the daily operation and the cooperation with the shipping company's organisation ashore. Furthermore, the student shall be engaged in basic principles concerning ship and wage accounts as well as basic business economics of ships engaged in international trade necessary to function as a master on board these ships.

Test requirements: Exam.

Central themes:

1. Accounts, budgets and market situation – the types of costs related to ship operation and how to minimize them, the accounts of ships and shipping companies, including the central economic terms and key figures, budgeting as a management tool on board ships, the market situation of maritime companies.

2. Quality management, logistics and environmental accounts – principles of quality management and general quality standards as well as standards of environmental protection, process and project management as well as logistics and the ship's environmental accounts.

3. Ship and company operation – planning and organising the acquisition of stores and bunkers, establishing an efficient ship organisation as well as methods for effective cooperation with the shipping company, the functions and activities of the cooperation organisations.

4. Entrepreneurship – company types, strategy and types of growth, rights and patent possibilities as well as contracts and negotiation skills.

Management and cooperation (15 ECTS credits)

Subject: Geography and cultural sociology

The student shall, through the instruction, acquire the qualifications necessary to function as a senior officer on board merchant ships engaged in international trade taking account of the cultural and societal conditions and differences that may exist on board and in connection with calls in foreign ports.

Test requirements: Internal test.

Central themes:

1. Geography and social conditions – other countries' societal and educational conditions, politics and legal systems.

2. Cultural conditions, value norms and customs – the importance of cultural, religious and value-related conditions to:

- a) onboard cooperation;
- b) ship-shore cooperation; and
- c) social relations.

Subject: Crew resource management

The student shall, through the training, acquire the basic qualifications in the subject of management and cooperation – as a member of the senior management on a merchant ship – necessary to be able to further efficiency, motivation and cooperation between crew members and to ensure that the ship's critical processes are always carried out by qualified personnel.

Test requirements: Internal test.

Central themes:

1. Human personality, development and perception – theories within these subjects as well as their use in connection with management, assessment of the employees' qualifications, development and training, interrelation between qualifications and task performance.

2. Management and interaction between manager and employee – ethics and values in relation to the social interaction between human beings on board, the manager's role in relation to the employees' personal and professional development, prevention and handling of stress and conflicts, manager's behaviour towards employees undergoing a personal crisis.

3. Management in emergencies and crises – appropriate manager behaviour in emergencies and crises on board ships, training of crews in the handling of emergencies and crises.

4. The maritime company's organisation – the shipping company's organisation, its culture and management processes, the interaction between various divisions, the functions, groups and persons in a company, especially in a shipping company and on board a ship, perceptions of the relationship between the company's management and employees.

Safety and maintenance (15 ECTS credits)

Subject: Safety management

The student shall, through the instruction, acquire the qualifications necessary for him to be able to carry out the safety management on board a merchant ship, including the planning and evaluation of the safety preparedness. Furthermore, the student shall acquire the knowledge of national and international legislation as well as conventions, especially concerning the ship's safety and protection of the marine environment, necessary to meet his special obligations as a deck officer or master.

Test requirements: Exam.

Central themes:

1. Noise exposure – sound theory and sound propagation, consequences of short-term and long-term noise exposure, principles of noise prevention.

2. Use of chemical substances and pollution prevention – the consequences of depositing residual and polluting products in nature, risks associated with the use of chemical substances, including toxicants.

3. Safety and environmental policies and regulation – ensuring compliance with national and international regulation, implementation of the shipping company's safety and environmental policy on board, scrutinising the ship's safety management system with a view to analysing its efficiency and reporting non-compliances in relation to the shipping companies' instructions.

4. International conventions – relevant international regulations and their implementation in Danish law, SOLAS, MARPOL, Maritime Labour Convention (MLC) and Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

5. Hours of rest and safe ship operation – planning and organising the daily ship operation, including the distribution of work taking into account provisions on hours of rest and human resources.

6. Handling emergencies and near misses – analyses of near misses with a view to improving the ship's safety, protection of the crew and other persons on board in emergencies, the ship's preparedness in connection with loss of ship and emergencies, including evaluation of safety drills, instructions of persons on board about the ship's safety, environmental protection and occupational safety, including the use and maintenance of emergency and safety equipment as well as personal protective equipment.

7. Occupational health on board – ensuring appropriate behaviour, the ship's safety committee, including the drawing up of workplace assessments (APVs) and workplace instructions (APBs), to be able to analyse the physical and mental working environment.

8. Protection of the marine environment – local, national and international environmental regulations, cycles and balances in nature as well as factors that may disturb these, reasons for and consequences of water and air pollution, methods for cleaning polluted water and air, analysis of the ship's procedures and instructions for preventing pollution as well as concerning the carriage of cargoes designated as sea polluting, use of the ship's emergency plan in case of a pollution accident, including the discharge of oil or chemicals.

9. Cargoes representing a safety or environmental risk – the effect of the cargo on the safety of the crew and the ship, instructions of persons on board, the use of safety and protective equipment.

Subject: Maintenance and docking

The student shall, through the instruction, acquire the qualifications concerning structural evaluation and knowledge about maintenance necessary to function as a head of maintenance and as the company representative in connection with dockings.

Test requirements: Internal test.

Central themes:

1. Planning a docking – the interconnection between maintenance and economics, planning and organising dockings and major repairs in cooperation with the shipping company's technical organisation.

2. Offers and specifications – preparing dockings, including the recording of maintenance work and inspections within steel, painting as well as machinery, the drawing up of docking specifications, acquisition and assessment of offers made by shipyards and sub-contractors.

3. Contact and cooperation with relevant actors – understanding of the requirements of the classification societies, insurance companies and authorities in connection with maintenance, cooperation with shipyards and sub-contractors, cooperation with authorities, classification societies and insurance companies before and during stays in dock, contact and reporting, including recording of non-conformities to shipping company and shipyard.

4. Inspection, finalisation and evaluation of the process – inspection of major repairs and dockings, final negotiations with the shipyard and sub-contractors, evaluation of the process and the result.

5. Attending to and assuming responsibility for general maintenance – management of maintenance and repairs as well as resource management in accordance with the company's instructions, planning and organising inspections of the ship, including the drawing up of structural evaluations for tanks, cargo holds and equipment, general maintenance of the ship, including maintenance programmes.