

## Bachelor of Marine Technology, Maritime Management, Captain (270 SP)

Examen: YH-examen i sjöfart

Examensbenämning: Sjökapten (YH), Bachelor of Marine Technology

Beräknad studietid: 4,5 år

Studieform: Dagstudier **D**

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Kod	Namn	Studiepoäng/år/totalt					
		1	2	3	4	5	Totalt
COMMON	<b>COMMON STUDIES</b>						39 SP
MM14CN	<b>Natural Science</b>						21 SP
MM14CN01	• <b>Mathematics 1</b>	1,5					1,5 SP
MM14CN02	• <b>Mathematics 2</b> <i>To provide the student with good mathematical readiness for further studies at the university of applied sciences level.</i>	1,5					1,5 SP
MM14CN03	• <b>IT Studies 1</b> <i>The student is provided with knowledge of the basics of in-formation technology, word-processing, table management and information communication.</i>	1,5					1,5 SP
MM14CN04	• <b>Physics 1</b> <i>To provide the student with good skills in the subject of physics for further studies at the university of applied sciences level.</i>	1					1 SP
MM14CN05	• <b>Physics 4</b>	2,5					2,5 SP
MM14CN06	• <b>Mathematics 5</b>		2				2 SP
MM14CN07	• <b>Physics 2</b> <i>To provide the student with good skills in the subject of physics for further studies at the university of applied sciences level.</i>	2					2 SP
MM14CN08	• <b>Physics 3</b>	2					2 SP
MM14CN09	• <b>Mathematics 3/4</b>	3					3 SP
MM14CN10	• <b>Maritime Chemistry</b> <i>The student is able to assess the chemical characteristics of different cargoes both from safety and environmental perspectives and understands the chemical background of cargo handling.</i>	1					1 SP
MM14CN11	• <b>Mathematics 6</b> <i>The student is provided with knowledge of graphical representations and interpretation of statistical material. The student is familiar with the basics of probability calculus and has knowledge of the normal distribution.</i>				1,5		1,5 SP
MM14CN12	• <b>Mathematics 7</b> <i>The student is able to apply linear optimization when planning the transport of cargoes to several ports. The student is provided with knowledge of differential coefficient and integral application to cargo handling and ship theory.</i>				1,5		1,5 SP
MM14CL	<b>Languages</b>						9 SP
MM14CL01	• <b>Professional English 3</b> <i>The student knows basic practical Maritime English. The active vocabulary, with the emphasis onboard communication, is expanded. Emphasis on practical Maritime English.</i>	1,5					1,5 SP
MM14CL02	• <b>Professional Swedish</b> <i>The student</i> <ul style="list-style-type: none"> <li>• learns the basics of the Swedish language,</li> <li>• is familiar with the main structures of the language</li> <li>• has acquired a basic vocabulary.</li> <li>• can handle simple, everyday situations.</li> </ul> <i>The course content and pace will be adapted to the learning ability of the students and is a continuation of the course Swedish I. The student is able to apply Novia University of Applied Sciences' technical instructions on academic writing.</i>		1,5				1,5 SP
MM14CL03	• <b>Professional English 1</b>		2				2 SP

	The student is able to manage the officer's duties in connection with different emergency situations and safety exercises and drills in English.						
MM14CL04	<ul style="list-style-type: none"> <li>• <b>English ML E1</b></li> </ul> The student is able to <ul style="list-style-type: none"> <li>• use the information from scientific sources as well as analyse and present it in an appropriate way.</li> <li>• participate and argue in discussions dealing with de-manding subjects.</li> <li>• develop a written report which is formulated according to the Novia University of Applied Sciences instructions for the final projects.</li> </ul>				2		2 SP
MM14CL05	<ul style="list-style-type: none"> <li>• <b>English ML E2</b></li> </ul> The student has ability to perform administrative duties in English with the emphasis on maritime-related examples.				2		2 SP
MM14CG	<b>General Studies</b>						9 SP
MM14CG01	<ul style="list-style-type: none"> <li>• <b>Swedish 1</b></li> </ul> The student, being a beginner <ul style="list-style-type: none"> <li>• acquires the first basics of the Swedish language</li> <li>• learn to understand and use simple everyday language in everyday situations.</li> </ul> The course content and pace will be adapted to the learning ability of the students.	3					3 SP
MM14CG02	<ul style="list-style-type: none"> <li>• <b>Basic Finnish 1</b></li> </ul> The student being a beginner <ul style="list-style-type: none"> <li>• acquires the first basics of the Finnish language</li> <li>• learn to understand and use simple everyday language in everyday situations.</li> </ul>	3					3 SP
MM14CG03	<ul style="list-style-type: none"> <li>• <b>Sustainable development</b></li> </ul> The student <ul style="list-style-type: none"> <li>• knows that SD comprise an ecologic, economic, technical, social and cultural aspect which are all dependent of each other.</li> <li>• understand that future possibilities to survival and a good life is dependent on a sustainable use of nature, people and environment.</li> <li>• can consider the ecologic, social and cultural aspects of SD as well as accessibility aspects in all activities and in his/her own working community act in a sustainable way</li> <li>• can take responsibility by contributing to a global sustainable development of the community.</li> </ul>		1,5				1,5 SP
MM14CG04	<ul style="list-style-type: none"> <li>• <b>Research methodology</b></li> </ul> The student <ul style="list-style-type: none"> <li>• can conform to the research process systematically and flexibly in the degree project process and in other projects.</li> <li>• can conform to research ethics in the research process</li> <li>• understands and conforms to qualitative and quantitative methods.</li> <li>• is able to review and analyse scientific text and see the connection between research and practical operations.</li> <li>• is able to avail evidence based knowledge.</li> <li>• is able to respond to and make relevant questions.</li> </ul>				1,5		1,5 SP
PROFE	<b>PROFESSIONAL STUDIES</b>						103 SP
MM14S1	<b>Support Level STCW function 1</b>						5 SP
MM14S101	<ul style="list-style-type: none"> <li>• <b>Onboard Community and Watchkeeping Duties</b></li> </ul> The student <ul style="list-style-type: none"> <li>• Is familiarised with the vessel as a social environment and work place</li> <li>• knows the onboard community and how it functions</li> <li>• knows the watchkeeping arrangements onboard vessels at sea and in port</li> <li>• knows how to keep a navigational watch according to the principles of good seamanship</li> <li>• knows how to steer the vessel and how to follow helm orders also when given in the English language</li> <li>• knows how to steer using magnetic and gyro-compasses</li> <li>• understands helm orders</li> <li>• knows how to change-over from automatic pilot to hand steering and vice versa</li> <li>• knows the decisions on manning of ships, certification of sea-farers and watchkeeping onboard</li> <li>• gains a thorough knowledge of different communication systems onboard</li> <li>• gains a thorough knowledge of alarm systems onboard and one's personal duties in connection with these</li> <li>• is able to understand orders and to use seafaring terminology and definitions with the officer of the watch, and to handover watch according to the watchkeeping routines, and knows the responsibilities of a look-out</li> <li>• is familiar with the preparations before arrival, taking a pilot onboard, anchoring operations and mooring</li> <li>• is familiar with the basic principles of the protection of the marine environment</li> <li>• Familiarisation and security awareness</li> </ul>	1,5					1,5 SP
MM14S102	<ul style="list-style-type: none"> <li>• <b>Terrestrial Navigation and Collision Regulations</b></li> </ul> The student <ul style="list-style-type: none"> <li>• has the skills in navigation and seamanship required for the competency for functioning as a look-out on the bridge.</li> <li>• knows how to use the International Code of Signals.</li> </ul>	1,5					1,5 SP

MM14S103	<ul style="list-style-type: none"> <li>• <b>English 1</b></li> </ul> <p>The course introduces the student with Maritime English and its range of use. The student knows the most important vocabulary in connection with radio communication in distress situations and in routine radio traffic.</p>	1					1 SP
MM14S104	<ul style="list-style-type: none"> <li>• <b>Ships Machinery</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• knows the main parts of the diesel engine and its purpose.</li> <li>• knows the different fields of application of diesel engines.</li> <li>• knows the environmental effects of diesel engines.</li> <li>• realises the importance of maintenance for safe navigation and minimised environmental consequences.</li> </ul>	1					1 SP
MM14S2	<ul style="list-style-type: none"> <li>• <b>Support Level STCW function 2</b></li> </ul>						2 SP
MM14S201	<ul style="list-style-type: none"> <li>• <b>Ship Types and Cargo Handling</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• knows how to make the vessel ready for sea and duties in port in connection with loading and discharging, cargo handling and handling of hazardous cargoes.</li> <li>• knows the structure of a merchant ship and the most common vessel terms.</li> <li>• has thorough knowledge of the objectives of environmental protection and occupational welfare.</li> <li>• knows the characteristics and functioning of mooring equipment and lifting devices and cargo securing methods</li> </ul>	1,5					1,5 SP
MM14S202	<ul style="list-style-type: none"> <li>• <b>Tanker Familiarization Course</b></li> </ul> <p>The aim of the Tanker Familiarization Course is that those who intend to start working on a tanker, others than officers or crew having responsibility for cargo transport or handling, will get acquainted with tanker cargoes, cargo handling equipment, cargo shipments and tanker operations. After passing the course the student gets a certificate which entitles him/her to apply for an official certificate from the Finnish Maritime Administration.</p>	0,5					0,5 SP
MM14S3	<ul style="list-style-type: none"> <li>• <b>Support Level STCW function 3</b></li> </ul>						10,5 SP
MM14S301	<ul style="list-style-type: none"> <li>• <b>Ship Maintenance and Seamanship 3, deck machinery</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• has thorough knowledge of deck machinery, its construction, usage and maintenance.</li> <li>• knows the maintenance of cargo handling equipment and lifting devices.</li> <li>• learns to observe safe occupational safety routines.</li> <li>• has thorough knowledge of the objectives of environmental protection and occupational welfare.</li> </ul>	1					1 SP
MM14S302	<ul style="list-style-type: none"> <li>• <b>Watchkeeping Duties, Engine</b></li> </ul> <p>The student must be familiar with the watchkeeping routines in accordance with the STCW Convention and understand their significance when it comes to good and safe seamanship and minimised environmental effects. Furthermore, the student must be able to understand and use the correct terms referring to the different parts of the engine room and its general organization.</p>	1					1 SP
MM14S303	<ul style="list-style-type: none"> <li>• <b>Ship Maintenance and Seamanship 1, workshop</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• knows the basics in ship maintenance</li> <li>• knows the handling, storing, overhauling and maintaining of ropes, hawsers and cables, and is aware of the breaking load of the ropes.</li> <li>• is familiar with the securing of equipment and necessities.</li> <li>• is familiar with the waste disposal management onboard.</li> <li>• learns to observe safe occupational protection routines.</li> <li>• has thorough knowledge of the objectives of environmental protection and occupational welfare.</li> </ul>	1,5					1,5 SP
MM14S304	<ul style="list-style-type: none"> <li>• <b>Ship Maintenance and Seamanship 2, corrosion</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• has thorough knowledge of the objectives of ship maintenance and protection against corrosion.</li> <li>• is familiar with the corrosion process and protection against corrosion.</li> <li>• is familiar with the cleaning methods and agents.</li> <li>• learns to observe safe occupational safety routines.</li> <li>• has thorough knowledge of the objectives of environmental protection and occupational welfare.</li> </ul>	1					1 SP
MM14S305	<ul style="list-style-type: none"> <li>• <b>Metal works</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• gets familiar with the most usual cutting and welding methods common onboard modern vessels.</li> <li>• gets familiar with the safety measures to be taken when performing work with cutting and welding equipment.</li> <li>• gets to know the most common tools used in metal work, their functioning and areas of use.</li> <li>• is able to apply occupational safety instructions when using tools and machine-tools.</li> <li>• knows how to perform minor overhaul and maintenance related tasks.</li> <li>• is able to take environmental aspects into consideration in connection with welding and metal work.</li> </ul>	1					1 SP

MM14S306	<ul style="list-style-type: none"> <li>• <b>Law and legislation 1</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• has thorough knowledge of the legislation regulating the duties and occupational protection onboard as well as the effects seafaring has on the environment.</li> <li>• is able to undertake precautionary measures to prevent the pollution of the maritime environment.</li> <li>• understands orders and is understood in regard to onboard duties.</li> <li>• is able to contribute towards meaningful interpersonal relations onboard a vessel.</li> <li>• is aware of the existence of international safety conventions regarding maritime environment and ship safety.</li> </ul>	1					1 SP
MM14S307	<ul style="list-style-type: none"> <li>• <b>Occupational Safety</b></li> </ul> <ul style="list-style-type: none"> <li>• Safety routines</li> <li>• is familiar with the accident and health risks onboard, the occupational safety organization and legislation.</li> <li>• has knowledge and skills to manage and organise work onboard taking occupational safety into account.</li> </ul>	1					1 SP
MM14S308	<ul style="list-style-type: none"> <li>• <b>Basic Safety</b></li> </ul> <p>The student is provided with the basic safety skills required in the STCW Convention from all persons who intend to work onboard a vessel, in accordance with STCW-Code:A-VI/1-1 and A-VI/1-4.</p>	0,75					0,75 SP
MM14S309	<ul style="list-style-type: none"> <li>• <b>Basic Fire Fighting</b></li> </ul> <p>The student familiarizes him-/herself with the fire-fighting equipment onboard, its operational aspects and areas of usage, and is able to perform common fire-fighting measures onboard the vessel in accordance with STCWCode: A-VI/1-2.</p>	0,5					0,5 SP
MM14S310	<ul style="list-style-type: none"> <li>• <b>Medical Care 1, First Aid</b></li> </ul> <p>The student gains basic knowledge and skills in first aid as to various kinds of accidents and illnesses onboard a vessel, in accordance with STCWCode: A-VI/1-3 and A-VI/2-1.</p>	0,75					0,75 SP
MM14S311	<ul style="list-style-type: none"> <li>• <b>Lifeboatman</b></li> </ul> <p>The student is provided with the skills and knowledge needed for the issuance of the certificate Course in Survival Crafts and Rescue Boats other than Fast Rescue Boats in accordance with STCW-Code:A-VI/2 –1.</p>	1					1 SP
MM14O1	<b>Operational Level STCW function 1</b>						30 SP
MM14O101	<ul style="list-style-type: none"> <li>• <b>Terrestrial Navigation A</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• must have a command of basic terrestrial navigational theory.</li> <li>• is able to determine the vessel's position with means of landmarks, lighthouses, navigation marks and buoys.</li> <li>• is able to determine the vessel's position by means of numerical values from electronic positioning devices.</li> <li>• is able to draw a route plan.</li> </ul>	1,5					1,5 SP
MM14O102	<ul style="list-style-type: none"> <li>• <b>Terrestrial Navigation B</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• obtains knowledge of geodetics and chart projections.</li> <li>• has command of the standardised buoyage systems and of the theory of lines of position.</li> <li>• is able to project the earth's coordinate system and its projection on even surfaces.</li> <li>• has thorough knowledge of and ability to use nautical charts and publications such as sailing directions, notices to mariners, radio navigational warnings and ships' routeing information.</li> </ul>		1				1 SP
MM14O103	<ul style="list-style-type: none"> <li>• <b>Terrestrial Navigation C</b></li> </ul> <p>The student is able to</p> <ul style="list-style-type: none"> <li>• perform chart plotting through marking courses on a navigational chart and making position controls and course corrections on the basis of current and drift.</li> <li>• make entries into the ship's logbook</li> <li>• perform rhumb line calculations</li> </ul>		1				1 SP
MM14O104	<ul style="list-style-type: none"> <li>• <b>Terrestrial Navigation D</b></li> </ul> <p>The student can</p> <ul style="list-style-type: none"> <li>• perform chart plotting through marking courses on a nautical chart and making position controls and course corrections on the basis of current and drift.</li> <li>• make entries to the ship's logbook.</li> <li>• draw, assess and realise a route plan.</li> </ul>		2				2 SP
MM14O105	<ul style="list-style-type: none"> <li>• <b>Route planning 1</b></li> </ul> <p>To provide the student with skills to use great circle calculations in practical route planning work.</p> <p>To provide the student with skills to draw up a route plan.</p>		1,5				1,5 SP
MM14O106	<ul style="list-style-type: none"> <li>• <b>Meteorology and Oceanography</b></li> </ul> <p>The student understands the basics of meteorology and oceanography and their effect on vessel operations. The student knows how to use the meteorological instruments onboard and how to interpret the information obtained from them.</p>		1				1 SP

	<p>The student has knowledge of the characteristics of different weather systems and the procedures for reporting and recording.</p> <p>The student is able to apply the available meteorological information.</p>						
MM14O107	<p><b>• Tidal Calculations</b></p> <p>The student knows the basics of tide theory. The student is provided with skills to calculate the height of the tide at a certain point of time and the exact time for a certain height of the tide and knows how to calculate the course and speed of tidal currents.</p>	1					1 SP
MM14O108	<p><b>• Navigational Aids; Radar</b></p> <p>The student knows the operational aspects, reliability and limitations of radar equipment and the basics of determining the position and monitoring the traffic situation with the help of radar.</p>	2					2 SP
MM14O109	<p><b>• Navigational Aids; GNSS, compasses and steering</b></p> <p>The student</p> <ul style="list-style-type: none"> <li>• knows how to use electronic aids, and he/she knows about their reliability and limitations as complementary means to ensure safe navigation.</li> <li>• is able to determine the vessel's position with the help of electronic navigational aids.</li> <li>• understand the principal structure of satellite positioning systems (GNSS).</li> <li>• is aware of limitations and errors of GNSS systems and their level of position accuracy.</li> <li>• knows how to use the echo-sounder and how to apply the information correctly.</li> <li>• has knowledge of the functioning of the magnetic and gyro-compasses.</li> <li>• is able to determine errors in magnetic and gyro-compasses using celestial and terrestrial methods and to take such errors into account.</li> <li>• has knowledge of the steering control systems, operating instructions and change-over from manual steering to autopilot and vice versa. He/she knows how to adjust the controls for optimal performance.</li> </ul>	1,5					1,5 SP
MM14O110	<p><b>• Navigational Aids; ECDIS</b></p> <p>The student</p> <ul style="list-style-type: none"> <li>• is able to determine the vessel's position with the help of electronic navigational aids.</li> <li>• understands the structure of ECDIS.</li> <li>• knows the errors and limitations of the ECDIS systems as well as their levels of accuracy in giving positions</li> <li>• knows different kinds of electronic navigational charts, their configuration and pros and cons.</li> <li>• has skills in using satellite positioning systems and electronic navigational charts.</li> <li>• knows the operational aspects of AIS.</li> <li>• knows the operational aspects of VDR.</li> </ul>	1,5					1,5 SP
MM14O111	<p><b>• Celestial Navigation 1</b></p> <p>The student understands the basics of celestial position determination.</p> <p>The student is provided with skills in using the sextant.</p> <p>The student is provided with skills in calculating the height to various celestial bodies.</p> <p>The student is provided with skills in calculating the hour angle and declination of celestial bodies.</p>	1					1 SP
MM14O112	<p><b>• Celestial Navigation 2</b></p> <p>The student is provided with skills in determining the position by the means observing the sun and the stars.</p> <p>The student is provided with skills in determining compass errors by means of observing celestial bodies.</p>	1					1 SP
MM14O113	<p><b>• Celestial Navigation 3</b></p> <p>The student is provided with skills in determining the position by means of observing the sun and the stars.</p>	1					1 SP
MM14O114	<p><b>• Watchkeeping Duties 1: Collision Regulations</b></p> <p>The student</p> <ul style="list-style-type: none"> <li>• has a thorough knowledge of the contents and objectives of the International Collision Regulations for Preventing Collisions at Sea and regulations for inland waters.</li> <li>• is provided with skills in using various kinds of signals at sea.</li> </ul>	1,5					1,5 SP
MM14O115	<p><b>• Watchkeeping Duties 1 B: Bridge routines</b></p> <p>The student gains a thorough knowledge of the contents and the objectives of the International Collision Regulations for Preventing Collisions at Sea and regulations for inland waters.</p> <p>The student is provided with skills in using various kinds of signals at sea.</p> <p>The student gains a thorough knowledge of the basic principles which must be applied on watchkeeping on the bridge</p>	1,5					1,5 SP
MM14O116	<p><b>• Radar Plotting 1: Manual plotting</b></p> <p>To provide the student with the skills to manage traffic situations as the officer of the watch through the use of radar plotting and with ability to use radar in order to maintain safety of navigation and fulfil the requirements set in the IMO Res. A.483(XII).</p>	1					1 SP

MM14O117	<ul style="list-style-type: none"> <li>• <b>Radar Plotting 2: ARPA</b></li> <li>• To fulfill the requirements of the IMO Resolution A482(XII) with reference to ARPA equipment training.</li> <li>• To provide the student with the skills and knowledge in terms of managing the system of radar charts in ARPA equipment.</li> </ul>	1,5				1,5 SP
MM14O118	<ul style="list-style-type: none"> <li>• <b>Manoeuvring 1</b></li> <li>To provide the student with skills to know how the deadweight, draught, different trims and speed affect the manoeuvring characteristics of the vessel and the effects of wind and currents and shallow waters.</li> <li>The student knows the basics of the remote control of the main engine and other vessel manoeuvring equipment.</li> </ul>	2				2 SP
MM14O119	<ul style="list-style-type: none"> <li>• <b>MRM</b></li> <li>The student</li> <li>• has skills to manage human and technical resources in an operative vessel environment</li> <li>• is able to create conditions for a change in the attitudes towards a safer working culture and environment.</li> </ul>	1				1 SP
MM14O120	<ul style="list-style-type: none"> <li>• <b>Radio Communication GOC</b></li> <li>The student has knowledge and skills to manage radio communication at sea on a ship radio station, equipped with radio equipment according to the GMDSS-system for all sea areas.</li> </ul>	4,5				4,5 SP
MM14O2	<b>Operational Level STCW function 2</b>					6,5 SP
MM14O201	<ul style="list-style-type: none"> <li>• <b>Cargo Handling 1</b></li> <li>The student must be able to supervise the loading and stowing of the vessel as well as the lashing and discharging of the cargo.</li> <li>The student has knowledge of the effects of cargo, the seaworthiness and stability of the ship.</li> <li>The student must be familiar with the "Cargo Securing Manual". He/she is familiar with the IMO publications with reference to the securing of cargo, e.g. "Code of Safe Practice for Cargo Stowage and Securing". He/she knows the factors causing the shifting of cargo and vessel movements at sea as well as the parameters which affect acceleration.</li> </ul>	4				4 SP
MM14O202	<ul style="list-style-type: none"> <li>• <b>Cargo Handling 2</b></li> <li>The student is provided with knowledge of safe handling, stowage and securing of cargoes including dangerous, hazardous and harmful cargoes and their effect on the safety of life and the ship.</li> <li>The student is able to use the IMO IMDG Code and its supplements. He/she knows the characteristics and classification of dangerous cargoes. He/she knows which measures are to be taken in case of an accident and how to manage first aid. He/she knows the national and international legislation with reference to dangerous goods.</li> </ul>	1				1 SP
MM14O203	<ul style="list-style-type: none"> <li>• <b>Advanced Tanker Safety</b></li> <li>The student shall have knowledge of</li> <li>• different kinds of tanker types and the general principles of tanker traffic.</li> <li>• operative and safety procedures in connection with loading/discharging and during cargo or ballast passage.</li> <li>• the construction of a tanker, its equipment, and the general principles and health risks of tank cargoes.</li> <li>• safety and safety equipment onboard tankers.</li> <li>• pollution prevention.</li> </ul>	1,5				1,5 SP
MM14O3	<b>Operational Level STCW function 3</b>					14,5 SP
MM14O301	<ul style="list-style-type: none"> <li>• <b>ISM + Conventions</b></li> <li>The student has an understanding of the ISM Code and have knowledge to manage human and technical resources in operational ship environment.</li> </ul>	0,5				0,5 SP
MM14O302	<ul style="list-style-type: none"> <li>• <b>Environmental Protection</b></li> <li>The student is provided with knowledge of the precautions to be taken to prevent pollution of the marine environment including:</li> <li>Measures to prevent pollution and all equipment with reference to this.</li> <li>Knowing the effects of seafaring on the marine environment and the sources of discharge.</li> <li>Knowing the procedures which should be taken in order to prevent pollution of the marine environment with reference to both normal vessel operations and accidents.</li> <li>Knowing about the obligation to report in case of damage on the vessel or observing oil in the water.</li> </ul>	0,75				0,75 SP
MM14O303	<ul style="list-style-type: none"> <li>• <b>SSO (Ship Security Officer)</b></li> <li>As specified in STCW-Code:A-VI/5</li> <li>The student</li> <li>• has the skills and knowledge required of a Ship Security Officer.</li> <li>• has theoretical and practical knowledge and skills to manage the systems and complex of problems in connection with this special area.</li> </ul>	0,75				0,75 SP

MM14O304	<p>• <b>Stability 1</b> The student understands the fundamentals of ship stability and is able to apply them in practice. The student knows the national and international requirements with reference to ship stability. The student knows static and dynamic stability, stability criteria for different vessel types and is able to perform an inclining test. The student knows how to perform stability calculations in order to determine whether the vessel fulfils the national and international requirements concerning ship stability. The student is able to read hydrostatic tables and curves, dead weight scale. The student knows how to perform trim calculations.</p>		1,75			1,75 SP
MM14O305	<p>• <b>Stability 2</b> The student understands the fundamentals of ship stability and is able to apply them in practice.  The student knows the national and international requirements with reference to ship stability. The student knows static and dynamic stability, stability criteria for different vessel types and knows how to perform an inclination test. The student knows how to perform stability calculations in order to determine whether the vessel fulfils the national and international requirements concerning ship stability. The student is able to read hydrostatic tables and curves, dead weight scale. The student knows how to perform trim calculations.</p>		1,5			1,5 SP
MM14O306	<p>• <b>Ship Theory 1</b> The student knows</p> <ul style="list-style-type: none"> <li>• the basic principles of ship construction.</li> <li>• the correct terms referring to the most important construction details on a vessel and their purpose on the vessel.</li> <li>• the technical solutions for preventing vessels from polluting the maritime environment.</li> <li>• the structural solutions on ships to prevent fires and the spreading of fires.</li> <li>• the principles of ship maintenance and how they affect the condition and life-span of the vessel and understands the significance of one's own contribution to ship maintenance.</li> <li>• the classification of vessels.</li> <li>• the corrosion problems on vessels and how they can be prevented.</li> <li>• how to inspect and report damages and defects in vessel construction.</li> <li>• Basic principles of factors affecting vessels energy consumption</li> </ul>		1,75			1,75 SP
MM14O307	<p>• <b>Safety for Officers</b> • To fulfil the requirements set in the STCW Convention with reference to the training in maritime and ship safety for the Operational Level. • STCW A-II/1</p>		2			2 SP
MM14O308	<p>• <b>Advanced Fire Fighting for officers</b> As specified in STCWCode: Table A-II/1.. The student</p> <ul style="list-style-type: none"> <li>• has knowledge of fire prevention</li> <li>• is able to organise fire fighting drills.</li> <li>• has knowledge of different types of fires and fire-related chemistry.</li> <li>• has knowledge of fire fighting systems.</li> <li>• gains knowledge of the measures to be taken in case of a fire, including fire affecting the oil system</li> </ul>		1			1 SP
MM14O309	<p>• <b>Law and Legislation 2</b> Basic knowledge of adequate conventions produced by IMO regarding safety and environmental protection of the marine environment. The basics of national maritime law. Have an idea of the social system, the courts function and so on. Understand the meaning of the conclusion of the employment contract, understand carbon-bargaining agreement. Be aware of employers' and workers rights and duties of board, be aware on forced and compulsory regulations. Recognize the existence of international safety conventions regarding marine and vessel safety (IMO, SOLAS, MAR-POL).</p>		1			1 SP
MM14O310	<p>• <b>Occupational Safety</b> • The student</p> <ul style="list-style-type: none"> <li>• is familiar with the accident and health risks onboard, the occupational safety organization and legislation.</li> <li>• has knowledge and skills to manage and organise work onboard taking occupational safety into account.</li> </ul>		1			1 SP
MM14O311	<p>• <b>Watchkeeping Duties 2: Bridge routines, simulator</b> The student is provided with the skills and knowledge to keep watch on the bridge as the officer of watch.  The student has knowledge of the methods of cooperation when on bridge duty.  The student has knowledge of vessel reporting systems.  The student is provided with skills to encounter emergency situations through the knowledge of measures which should be taken with reference to the safety of passengers in emergency situations; immediate action which should be taken after a collision or grounding and initial evaluation of damages.  The student is provided with knowledge about measures to be taken in order to save human life at sea, assist vessels in distress and encounter emergency situations which can take place in harbours.</p>					1 SP
MM14O312	<p>• <b>Medical Care 2</b> The student</p> <ul style="list-style-type: none"> <li>• has the knowledge and skills to give immediate first aid onboard the vessel,</li> <li>• knows the first aid to be given in accidents in connection with transportation of dangerous goods.</li> <li>• knows how to examine an injured/ill person and can evaluate the need for help.</li> </ul>		1,5			1,5 SP



	<ul style="list-style-type: none"> <li>• is able to apply the medical care manual in practice,</li> <li>• has the skills to take appropriate action on the basis of advice received on the radio/through telephone with reference to accidents or illnesses which are likely to happen onboard a vessel.</li> </ul>						
MM14M1	<b>Management Level STCW function 1</b>						13,5 SP
MM14M101	<ul style="list-style-type: none"> <li>• <b>Meteorology 2</b></li> </ul> <p>The student has</p> <ul style="list-style-type: none"> <li>• the ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax or from the Internet.</li> <li>• knowledge of the characteristics of various weather systems, including tropical revolving storms and methods of avoiding these.</li> <li>• the understanding of the effects of weather conditions on the choice of route and be able to use available weather services in the planning and follow-up of a route plan</li> </ul>				1,25		1,25 SP
MM14M102	<ul style="list-style-type: none"> <li>• <b>Search and Rescue (SAR)</b></li> </ul> <p>To give the student knowledge of and skills in the planning and leading search and rescue operations at sea.</p>				1,5		1,5 SP
MM14M103	<ul style="list-style-type: none"> <li>• <b>Navigational Aids: Compasses</b></li> </ul> <p>The student is provided with</p> <ul style="list-style-type: none"> <li>• an ability to determine and allow for errors in magnetic and gyro-compasses.</li> <li>• knowledge of the principles of magnetic and gyro-compasses.</li> <li>• theoretical knowledge and whether theory has been realised with reference to gyro-compasses on vessels as well as the faults and limitations of gyro-compasses.</li> <li>• an understanding of systems (master/slave) under the control of the master gyro and knowledge of the operation and care of the main types of gyro-compasses.</li> </ul>				1,25		1,25 SP
MM14M104	<ul style="list-style-type: none"> <li>• <b>Navigational Aids: INS</b></li> </ul> <p>The student is provided with knowledge of the inter-relationship and optimum use of all navigational data available for conducting navigation.</p> <p>The student is provided with knowledge of , different sensors and datatransfer systems/protocols</p> <p>The student is able to obtain knowledge of the use of integrated navigation systems</p>				1,5		1,5 SP
MM14M105	<ul style="list-style-type: none"> <li>• <b>Watchkeeping Duties 3</b></li> </ul> <p>The student is provided with solid knowledge of the contents, application and objectives of the International Regulations for Preventing Collisions at Sea (Colregs).</p> <p>The student gains solid knowledge of the contents, application and objectives of the principles to be observed in keeping a navigational watch.</p> <p>The student knows the effective procedures for cooperation on the bridge.</p>				1,5		1,5 SP
MM14M106	<ul style="list-style-type: none"> <li>• <b>Route Planning 2</b></li> </ul> <p>The student</p> <ul style="list-style-type: none"> <li>• is in all conditions able to determine position using both celestial and terrestrial observations</li> <li>• knows how to assess the reliability of the position with the help of navigational charts, notices for mariners and other nautical publications.</li> </ul> <p>The student is provided with knowledge of voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account e.g.</p> <ul style="list-style-type: none"> <li>• restricted waters</li> <li>• meteorological conditions</li> <li>• ice</li> <li>• restricted visibility (blind pilotage)</li> <li>• traffic separations schemes</li> <li>• areas of extensive tidal effects</li> </ul> <p>The student gains knowledge of routing in accordance with the General Principles on Ships' Routing.</p> <p>The student is able to report in accordance with the Guidelines and Criteria for Ship Reporting Systems.</p> <p>The student knows the methods of blind pilotage.</p>				1,5		1,5 SP
MM14M107	<ul style="list-style-type: none"> <li>• <b>Manoeuvring 2</b></li> </ul> <p>The student is provided with knowledge, proficiency and skills as to the manoeuvring and handling of a ship in all conditions, including:</p> <ul style="list-style-type: none"> <li>• manoeuvres when approaching pilot stations and embark-ing or disembarking pilots, with due regard to weather, tide, head reach and stopping distances</li> <li>• handling the ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response</li> <li>• application of constant rate of turn techniques</li> <li>• manoeuvring in shallow waters, including the reduction in underkeel clearance caused by squat, rolling and pitching</li> <li>• interaction between passing ships and between one's own ship and nearby banks (canal effect)</li> <li>• berthing and unberthing under various conditions of wind, tide and current with or without tugs</li> <li>• ship and tug interaction</li> <li>• use of propulsion and manoeuvring systems</li> <li>• choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of the anchor cable to be used</li> </ul>				3,5		3,5 SP

	<ul style="list-style-type: none"> <li>• dragging anchor; clearing foul anchors</li> <li>• dry-docking, both with and without damage</li> <li>• management and handling of ships in heavy weather, including assisting a ship or aircraft in distress; towing operations; means of preventing a vessel not under command from getting in a position where swell is coming from abeam, lessening drift and use of oil</li> <li>• precautions in manoeuvring to launch rescue boats or survival crafts in bad weather</li> <li>• methods of taking onboard survivors from rescue boats and survival crafts</li> <li>• ability to determine the manoeuvring and propulsion characteristics of common types of ships with special reference to stopping distances and turning circles at various draughts and speeds</li> <li>• importance of navigating at reduced speed to avoid damage caused by the ship's bow or stern wave</li> <li>• practical measures to be taken when navigating in or near ice or in conditions of ice accumulation onboard</li> <li>• use of, and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas</li> </ul>						
MM14M108	<p><b>• Mechanical Engineering</b> The student knows the operational requirements for a marine power plant and understands the principles of remote control. The student understands the principles of operating the auxiliary machinery. The student obtains knowledge of the marine engine terminology.</p>				1,5		1,5 SP
MM14M2	<b>Management Level STCW function 2</b>						8 SP
MM14M201	<p><b>• Cargo Handling 1 A (MnL): Transportation of general cargoes</b> The student must know the general cargo transports and the key point in planning of the future cargo. The student must know load lines and zones where the vessel is in traffic. Knowledge of cargo and vessel insurance.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				2		2 SP
MM14M202	<p><b>• Cargo Handling 2 B (MmL): Ro-Ro Transports</b> The student knows the principles of Ro-Ro transports. He/she knows the lashing arrangements onboard and stowing of goods. He/she knows the ballasting of the vessel. He/she knows the aspects related to the transportation of dangerous goods at sea onboard Ro-Ro vessels according to the IMDG Code. He/she knows how to draw a cargo plan.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				1,5		1,5 SP
MM14M203	<p><b>• Cargo Handling 3 C (MmL): Reefer Transports</b> The student knows the refrigerating needs onboard a reefer and stowing and securing of the cargo. He/she knows how to supervise the loading and unloading and, when need arises, to control the cargo. He/she is also familiar with the transport of wood, citrus and tropical fruit and vegetables. He/she is also familiar with the transport of frozen goods. He/she is familiar with the discharger's refrigerating instructions. He/she knows the ventilation problem and is able to make humidity calculations.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				1		1 SP
MM14M204	<p><b>• Cargo Handling 4D (MmL): Displacement Calculations</b> The student knows how to calculate displacement and longitudinal/transverse stability with different densities. He/she is able to use Simpson's rules to calculate surfaces and volumes for irregular bodies.</p> <p>The student is provided with knowledge of the IMO recommendations concerning ship stability.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				1,5		1,5 SP
MM14M205	<p><b>• Cargo Handling 5 E (MmL): Bulk Transports</b> The student is familiar with the Bulk Code. The student is familiar with the loading of grain. He/she is familiar with the concept of "Draft Survey" and is able to perform complete calculations as regards the loaded or unloaded cargo.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				1,5		1,5 SP
MM14M206	<p><b>• Cargo Handling 6 F (MmL): Tank Calculations</b> The student is familiar with measuring and calculating cargo volumes for crude oil, product, chemical and gas cargoes. The student is able to draw up a loading and unloading plan for different types of tankers, for different liquid cargoes in bulk. The student is familiar with relevant literature for the above mentioned and knows how to use it.</p> <p>The objectives presented in the Convention table A-II/2 column 2 are followed as applicable.</p>				0,5		0,5 SP
MM14M3	<b>Management Level STCW function 3</b>						13 SP
MM14M301	<p><b>• Damage Control</b> The student is provided with skills for assessing the situation and encountering emergency situations and maritime accidents including</p> <ul style="list-style-type: none"> <li>• Precaution when beaching a ship</li> <li>• Actions to be taken if grounding is imminent, and after grounding</li> </ul>				1		1 SP

	<ul style="list-style-type: none"> <li>• Refloating a grounded ship with and without assistance</li> <li>• Action to be taken if collision is imminent and follow-ing a collision or impairment of the watertight integrity of the hull by any cause</li> <li>• Assessment of damage control</li> <li>• Emergency steering</li> <li>• Emergency towing arrangements and towing proce-dures</li> </ul> <p>The student knows the methods and aids to prevent pollution of marine environment by ships. The student has the knowledge and skills to draw up plans and check-lists to control emergencies and damages onboard.</p>							
MM14M302	<ul style="list-style-type: none"> <li>• <b>Ship Theory 2 Ship projects and maintenance</b></li> <li>• Student has knowledge about different shiptypes, their construction and measurements regarding ships characters.</li> <li>• Vessels constructions influence to stability and seaworthi-ness</li> <li>• Vessel construction and contructional strength of the hull</li> <li>• Starting and following of shipbuilding project.</li> <li>• Knowledge of vessels drawings and material delivered with vessels delivery.</li> <li>• Docking of the vessel, different possibilities and basics of vessel docking.</li> <li>• Knowledge of decimal system in ship maintenance</li> <li>• Knowledge of computer based maintenance system</li> </ul>					3		3 SP
MM14M303	<ul style="list-style-type: none"> <li>• <b>Law and Legislation 3</b></li> </ul> <p>The student is provided with knowledge of the various aspects of maritime law. He/she understands what is meant by non-contractual and contractual relations, and has a clear under-standing of the shipowner's responsibilities and how these can be concretized. The student gains an understanding of the lia-bility issues in connection with a ship collision and oil damag-es, and understands questions related to salvage, financing and safety. The student understands contractual relations including different forms of freighting and clauses. The student is famil-iar with the risk distribution system within the maritime law.</p> <p>The student has knowledge of the international maritime laws and their connection with international agreements and con-ventions.</p>					2,5		2,5 SP
MM14M304	<ul style="list-style-type: none"> <li>• <b>Maritime Economics</b></li> </ul> <p>The student is provided with knowledge of the world trade, economics and how goods generally move globally. He/she gains knowledge of the functioning mechanisms and operating principles of freight markets. The student is familiar with the cost construction in connection with shipping company opera-tions and vessel operations and financing.</p>					2		2 SP
MM14M305	<ul style="list-style-type: none"> <li>• <b>International legislative requirements and Environmental Management Systems</b></li> </ul> <p>Monitor and control compliance with international legislative requirements and measures to ensure the protection of the ma-rine environment.</p>					1		1 SP
MM14M306	<ul style="list-style-type: none"> <li>• <b>Safety Management</b></li> </ul> <p>The student is able to maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems.</p> <p>The student is provided with skills to develop emergency and damage control plans and handle emergency situations.</p> <p>The requirements set in the STCW Convention with reference to the training in maritime and ship safety for the Management Level, STCW A-II/ 2., as applicable, are fulfilled. The student is provided with knowledge and skills required to handle the management of safety-related tasks onboard both in normal operations and in crisis situations.</p>					1,5		1,5 SP
MM14M307	<ul style="list-style-type: none"> <li>• <b>Medical Care 3</b></li> </ul> <p>The student's knowledge and skills as regards to giving medi-cal care to persons who have fallen ill or got injured onboard are medically acceptable and adequate. The student can, when necessary, cooperate to get medical assistance to the vessel.</p> <p>The student:</p> <ul style="list-style-type: none"> <li>• is able to independently examine a patient who has fallen ill/had an accident and make care-related decisions as well as consult medical care professionals ashore</li> <li>• masters asepsis; he/she can perform aseptically demanding measures and prevent contagion and infections</li> <li>• is able to independently monitor and take care of the per-son who has fallen ill/had an accident according to the cur-rent recommendations or consultation</li> </ul>					2		2 SP
ELEC	<b>ELECTIVE STUDIES</b>							5 SP
ONBOARD	<b>ONBOARD TRAINING</b>							108 SP
MM14SOT	<ul style="list-style-type: none"> <li>• <b>Onboard Training Support Level</b></li> </ul> <p>The student gets an insight into how the tasks in navigation, mechanical engineering and safety, which belong to the foun-dations studies, are carried out in a vessel environment.</p>	13	5					18 SP
MM18SOT01	<ul style="list-style-type: none"> <li>• <b>Onboard Training Support Level</b></li> </ul> <p>The student gets an insight into how the tasks in navigation, mechanical engineering and safety, which belong to the foundations studies, are carried out in a vessel environment.</p>	13	5					18 SP

MM14OOT	<p><b>Onboard Training Operational Level</b>  <i>The student is familiar with navigation, cargo handling, sea-manship and leadership, maritime radio communications and measures taken in emergency and medical situations according to the Onboard Training Record Book and with the onboard work of the officer of the watch.</i></p> <p><i>The aim of the onboard training is that the student learns</i></p> <ul style="list-style-type: none"> <li>• to apply the knowledge he/she has picked up during the studies</li> <li>• to integrate theory and practice</li> <li>• to critically examine his/her skills</li> <li>• the work routines of the vessel both in port and at sea</li> <li>• the rules of the working life</li> <li>• to adapt to the vessel as a social environment</li> <li>• to deepen his/her professional competence</li> <li>• interaction</li> <li>• English language and intercultural communication</li> </ul> <p><i>The onboard training is recorded in the Onboard Training Rec-ord Book, "Uppföljningsbok för handledd praktik, STCW II/1, vaktstyrman" which has been drawn up for this purpose.</i></p> <p><i>The onboard training is arranged at shipping companies (and on vessels) which are ISM -certified. The shipping company, the vessel and the Degree Programme choose persons who are responsible for the instruction during the onboard training pe-riod.</i></p>		3	60	17	10	90 SP
MM18OOT01	<p>• <b>Onboard Training Operational Level</b>  <i>The student is familiar with navigation, cargo handling, sea-manship and leadership, maritime radio communications and measures taken in emergency and medical situations according to the Onboard Training Record Book and with the onboard work of the officer of the watch.</i></p> <p><i>The aim of the onboard training is that the student learns</i></p> <ul style="list-style-type: none"> <li>• to apply the knowledge he/she has picked up during the studies</li> <li>• to integrate theory and practice</li> <li>• to critically examine his/her skills</li> <li>• the work routines of the vessel both in port and at sea</li> <li>• the rules of the working life</li> <li>• to adapt to the vessel as a social environment</li> <li>• to deepen his/her professional competence</li> <li>• interaction</li> <li>• English language and intercultural communication</li> </ul> <p><i>The onboard training is recorded in the Onboard Training Rec-ord Book, "Uppföljningsbok för handledd praktik, STCW II/1, vaktstyrman" which has been drawn up for this purpose.</i></p> <p><i>The onboard training is arranged at shipping companies (and on vessels) which are ISM -certified. The shipping company, the vessel and the Degree Programme choose persons who are responsible for the instruction during the onboard training period.</i></p>		3	60	17	10	90 SP
THESIS	<b>THESIS</b>						15 SP