

Module description for Nautical sciences / Transport Operation Double degree

Abkürzungserklärung

Im System der Abkürzungen der wissenschaftlichen Qualifikationen bezeichnet der erste Buchstabe den akademischen Grad, die zweiten Buchstaben kennzeichnen das Wissenschaftsgebiet, in dem der Abschluss erzielt wurde, z.B.:

- S.T. 1. Hochschulabschluss (Sarjana satu) vergleichbar mit Bachelor im Gebiet der Technik
- M.A. 2. Wissenschaftlicher Hochschulabschluss Master/ Magister in Arts

Name of Module	1 Technical Mechanics and Material Engineering
Subject	Static and strength of materials
Content	<p>Static: central-plane-multi-dimensional force system, general-plane and multi-dimensional system, balance of systems rigid body, frameworks, static of rigid beams, Coloumb's friction law,</p> <p>Fundamentals of strength of materials: material laws, Mohr Tension circle, bending of straight beams, differential equation of bending line, torsion of rods, compounded forces, buckling of straight rods, tension, cut parameter, kinds of stress, distortion, stretching, sliding, kinds of forces, securities, and allowed tension, pull-, press,- and torsion stress, plane and multi-dimensional tension conditions, fatigue limit and time related fatigue limit.</p> <p>Part of, Task and meaning of material engineering: structured setup metallic materials, mechanical properties (elastic and plastic deformation) friction, fatigue, facts to increase the strength of materials, physical properties (electrical, solenoid, thermal);</p> <p>Iron basic materials: (steel and cast iron) changings, (crystallization, changing of phase in hard conditions, thermal stimulated processes, diagrams (2-materials-system, iron-carbon diagram);</p> <p>Materials properties and production: cut, coating, thermal treatment, mechanical joining;</p> <p>Laboratory: cut and mechanical joining, stainless metals, creation of alloy, choice of material;</p> <p>Plastic, ceramics and compound materials;</p> <p>Test of materials: analytics, structure investigation, test processes, nondestructive tests;</p> <p>Laboratory: tensile test, hardness test, impact test, metallography, nondestructive tests;</p> <p>Chemical properties: corrosion of metals, corrosion processes, kinds of corrosion, and the appearing, corrosion protection</p>
Aim of qualification	Solution competence for technical problems and understanding of fundamentals connections between structurer, properties and application of different materials
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes)
Number of credits	4 CR according ECTS
Work load	120 hours
Duration of module	1 semester with 2 swh lesson and 2 swh exercises
Literature	<ul style="list-style-type: none"> - Statics – Formulas and Problems: Engineering Mechanics 1 D. Gross and W. Ehlers - Engineering Mechanics 1: Statics D. Gross, W. Hauger - Mechanics of Materials – Formulas and Problems: Engineering Mechanics 2 D. Gross, W. Ehlers
Reviewer	Prof. Jürgen Siegl/Khaeroman,S.T., M.T.

Name of Module	2 Physics and Thermodynamics
Subject	Physics and thermodynamics
Content	<p>Mechanics of deformable media: Hydrodynamics and hydrostatics, buoyancy, hydrostatic paradox, surface tension, wetting, capillarity, vibration in liquid and gases- flow field, continuity, Bernoulli's equation, circulation, Newton's law of friction, viscosity, Hagen-Poiseuille law, Reynolds, Froude number</p> <p>Vibration: harmonic, damped and undamped free, energy conversion, forced oscillation and resonance, super position,</p> <p>Waves: wave equation, propagation, standing, Huygens-Fresnel-principle, reflection, interferences, Doppler effect, refraction, diffraction</p> <p>First law of TD: maintaining of energy- adding- removing- conversion</p> <p>Second Law of TD: entropy reversible and irreversible processes,</p> <p>Thermodynamically properties of fluids: equation for gas, liquids and steam mixture of gas and humid air</p> <p>Condition changings: isochoric, isentropic/polytropic, isobar, isotherm, displaying in diagrams,</p> <p>Processes: Carnot, Diesel, Otto, Clausius-Rankine, Joule process</p>
Aim of qualification	Solution competence in physical problems and understanding of natural processes
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes)
Number of credits	4 CR according ECTS
Work load	120 hours
Duration of module	1 semester with semester 2 swh lesson and 2 swh exercises
Literature	<ul style="list-style-type: none"> - Introduction To Thermodynamics and Heat Transfer Y. Cengel - Thermodynamic properties of complex fluid mixtures, G. Maurer - Fundamentals of Physics: Mechanics, Relativity, and Thermodynamics R. Shankar - Fundamentals of Physics D. Halliday et al
Reviewer	Prof. Karsten Wehner/Suyono, S.T., M.Si. and Ruliatima, S.Si., M.Sc.

Name of Module	3 English
Subject	Intro in maritime communication
Content	<p>Terms I: kind of ships, application areas and structure of crew; Terms II: components of ships including bridge, charge and discharge equipment and engine room, port and operation parts; Communication during port visit with application of terms I and II; Official correspondence: letter from board regarding simple official communication; Reading and understanding of special nautical publications: sea charts, notice to mariners, sea pilot (sailing directions) etc., parts of conventions/ documents of IMO Kinds of transport: transport via road, sea transport (organization of shipping, kinds of ships, routing service and conferences, tramp shipping) air transport, rail transport; Kind of cargo: bulk cargo, container cargo, liquid cargo, dangerous goods, heavy load, Packaging, marking, labeling, dimensions and weights; Office communication I: make a call with standard phrases.</p>
Aim of qualification	Learning of maritime basis terms, repeating of very important points of grammar, introduction in typically verbal-communicative means of expression I maritime, enabled to communicate in case of multi-international crews and they're specials.
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes)
Number of credits	4 CR according ECTS
Work load	120 hours
Duration of module	1 semester with 2 swh lesson and 2 swh exercises
Literature	<ul style="list-style-type: none"> - Admiralty Manual of Seamanship V. Vance - Maritime English (IMO) - handouts
Reviewer	Dr.-Ing. Wolfgang Busse/Ario Hendartono, S.Pd, M.Pd
Review	Content of modul had been reviewed without any additional material

Name of Module	4 Mathematics and statistics
Subject	Introduction in differential and integral calculation and statistics
Content	<p>Integrals: Technique of integration, application, sector formula, length of circles, static moments, numerical integration,</p> <p>Function with multi variables: graphs, and quantum, partial differential equation and gradient, total differential equation with application in failure application, least square method,</p> <p>Differential equation: first order with separated parameter and linear differential equation second order;</p> <p>Infinity series: numerical series, power series incl. convergence interval, Fourier series,</p> <p>Plane integrals: definition, double integrals with technical application like torque first end second order and middle points as well;</p> <p>Probability calculus and statistics: Random events, complete systems, event fields, relative frequency, classical definition of probability, conditional probability, independence and incompatibility of events Law of total probability, Bayes' theorem, random variables and their distributions, characteristic values of probability distributions, discrete probability distributions Continuous probability distributions and their characteristics , exponential and normal distribution, use the table of the normal distribution. View of statistical estimation and testing procedures.</p>
Aim of qualification	Highest solution competence in mathematical problems
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 2 swh lesson and 3 swh seminars
Literature	<ul style="list-style-type: none"> - Mathematics for Engineers, Vol. 1 W.N. Rose - Mathematics for Engineers I-IV G. Baumann
Reviewer	Febri Sartika Fatriani, S.Pd.

Name of Module	5 Informatics and information technology
Subject	Creation of computer programs
Content	<p>Introduction: history and development of computer, terms, setup of computer and hardware;</p> <p>Software: operation system, grid operation, using of internet, standard software like MS Office;</p> <p>Information processing: dual and hexadecimal system, connection and translation to each other;</p> <p>Introduction in higher programming language: Integrated development environment and compiler, RAM and using, language elements, sub programming technique, application of algorithm and special mathematic processes;</p> <p>Application of higher programming language: work with external data, processing of sign chains and statistical indication of figures, filtering of relevant data, transforming of digital data to text data, and vice versa, solution of standard problems like sorting of data and investigation of statistical parameter like minimum, maximum, arithmetic operations, routines and functions using of existing tools, object oriented programming and using visual components</p>
Aim of qualification	Excellent using of standard software/ knowledge in programming
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or alternative examination form
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester; with 1 swh lesson 1 swh seminar and 1 semester with 1 swh lesson 2 swh seminars
Literature	- The book of informatics J. Gammack et al
Reviewer	Gunawan Budi S, S.Kom., M.Kom.

Name of Module	6 Electrics/electronics and measurement and control technology
Subject	Basics in electrics/electronics & in measurement and control technology
Content	<p>Basics in electronic: Voltage, current, resistant, impedance, capacity, induction, Ohm's law</p> <p>Direct current: Physical basis, voltage sources, natural laws, methods of calculation; Electrical field, terms, voltage, capacity, condenser; technical application; Magnetic field: parameter, natural laws, forces and energy, induction and the effects, technical application;</p> <p>Alternator current: Generating and displaying of alternator voltage, parameter, duo pole, series and parallel circuits, power, power factor and phase compensation, resonance; Calculation, overview about calculation processes, resistant operator, AC circuits</p> <p>Basis of measurement: System Theoretical foundations; Electrical measuring non-electrical quantities; Structure and function of the measuring equipment;</p> <p>Fundamentals of Control Engineering: Logical basic and special functions; Logic blocks; Structure and function of control systems;</p> <p>Fundamentals of Control Engineering: Description of transmission elements; System Theoretical Foundations of Control Engineering; Continuous and discontinuous controllers; Structure and function of control loops; Optimum setting of controllers in the control loop; Laboratory and simulator exercises.</p>
Aim of qualification	<p>Handling of natural laws, associated to electro technique as well as processes for calculation. Principle of electrical and electrical based information instruments, electrical engines, devices and components.</p> <p>Circuits of control and measurement technique The students should be able to measure and assess control and regulation process, which are relevant in Nautical Science/ Transport Operation. This also applies to the detection of errors and causes of malfunctions in automated systems, including their disposal and damage prevention measures and maintenance of the components of the measuring and adjusting plane of process control systems and other guidance systems.</p>
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 2 swh lesson and 2 swh exercise, 1 swh laboratory
Literature	<ul style="list-style-type: none"> - Fundamentals of Electrical Engineering C.A. Gross, T. Roppel - Fundamentals of Instrumentation and Measurement D. Placko
Reviewer	Noviarianto, S.T, M.Eng.

Name of Module	7 Navigation I
Subject	Basics in navigation
Content	Terrestrial and coastal navigation: Buoyage and lights; Course and bearing process, Terrestrial compass controls ship locations; Accuracy of the location determination, coastal navigation, Navigational travel planning; Dead reckoning, great circle navigation, dead reckoning, navigation, taking into account current and wind; Card designs and geographical coordinate systems, Mercator illustration, ball projection; Nautical documents; Travel planning, track guide and track control under consideration of position lines, wind and current action; Magnetic compass: structure, function and operation, terrestrial and naval magnetism, Deviation and operation of the compensation means, determination of deviations;
Aim of qualification	Knowledge and skills in coastal and terrestrial navigation
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (150 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 1 swh lesson and 1 swh seminar 1 semester with 1 swh lesson and 2 swh seminars
Literature	<ul style="list-style-type: none"> - The Admiralty Manual of Navigation Vol 1 The Principles of Navigation Lt Cmdr Alan Peacock FNI - The Use of Visual Aids to Navigation Second edition Commodore David Squire CBE FNI FCMI - NAVBasics A. Khalique
Reviewer	Prof. for Navigation (NN)/Amthori Anwar, M.Si., M.Mar.

Name of Module	8 Chemistry and dangerous goods
Subject	Basics in chemistry
Content	Basics: atom, periodic table, chemical compounds, stoichiometry, reaction kinetic, chemical balance; Properties and reaction of important elements, Gas law, chemical thermodynamic; Introduction in hazardous goods; Corrosion, electrolyze, galvanic elements; electrochemical potential, crude oil distillation
Aim of qualification	Knowledge and skills in recognizing and assessing of chemical processes
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes)
Number of credits	4 CR according ECTS

Work load	120 hours
Duration of module	1 semester with 2 swh lesson and 2 swh exercise
Literature	<ul style="list-style-type: none"> - Manual on chemical Pollution section 1-3(IMO) - Fundamentals of chemistry R.A. Burns
Reviewer	Agung Saputra, S.Si.T, M. Mar

Name of Module	o8 Scientific work
Subject	Scientific work
Content	Intro in scientific work: set up of projects and trouble while performance, Gaining and handling of handling raw data, assessment of data. Literature research, books journals and internet, Reporting and describing of scientific documents, Handling with editor programs
Aim of qualification	Students will be able to express own minds and be able to apply international guidelines in reporting and documentation.
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in alternative form
Number of credits	4 CR according ECTS
Work load	120 hours
Duration of module	1 semester with 2 swh lesson and 2 swh seminars
Literature	- non
Reviewer	Dra. Septina Dwi Retnandari,M.A.
Review	Content of modul had been reviewed without any additional material

Name of Module	10 Seaman ship
Subject	seamanship
Content	Behavior, rules and routines on board a ship Understanding and performing of historically, nautical and necessary fundamentals
Aim of qualification	
Association to	
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	This module is a social module and awarded non credits
Number of credits	0 ECTS
Work load	120 hours
Duration of module	1 semester
Literature	<ul style="list-style-type: none"> - seamanship notes - 21st Century seamanship
Reviewer	Widar Bayu Wantoro, S.H

Name of Module	11 Supply chain management and port and shipping management
Subject	Supply chain management and port and shipping management
Content	<p>maritime transport: Fundamentals of transport :(mobility, market structures, organizational structures, performance characteristics and division of labor) Structure of the German merchant fleet: Payment and Delivery commercially, division of labor in the maritime seaport industry and maritime services, business forms in shipping, Conventional Liner Shipping (markets, organizational structures), container traffic (ditto), ferry (ditto), Charter (ditto), passenger shipping , economy and organization of shipping operation, financing, cost structures, travel bill, insurance, budgets in the shipping business, marine tourism, marine policy (incl. flags). Economics and organization of land transport: inland waterways and air transport, markets of the above Modes of transport; Foreign Trade: Selection of foreign markets, foreign trade risks, arbitration in international trade; The bill of lading and its role in the future; Fairs abroad, foreign market-oriented product, product range, prices, conditions and communications policy; Export, packing and labeling; The INCOTERMS, transport insurance, The terms of payment, export credit insurance, escalation clauses and guarantees in foreign trade, commodity exchanges, barter, advocacy of German foreign trade abroad.</p>
Aim of qualification	Understanding in connection of transport economics
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (150 minutes) or oral exam (30 minutes)
Number of credits	7 CR according ECTS
Work load	210 hours
Duration of module	1 semester with 4 swh lesson and 3 swh seminars
Literature	<ul style="list-style-type: none"> - Logistics and Supply Chain Management M. Christopher - Port and Terminal Regulation A, Jennings - ISGOTT, 5th Edition International Safety Guide for Oil Tankers and Terminals - Marine Terminal Management and Self-Assessment OCIMF
Reviewer	Retno Anggoro, S.ST, M.M.Tr.

Name of Module	12 Meteorology and oceanography
Subject	Meteorology and weather; oceanography
Content	<p>Introduction to Meteorology / Oceanography: Fundamentals and basic parameters; Weather elements: the Earth's atmosphere, temperature, air pressure, wind, water vapor, visibility, clouds; Fundamentals of Oceanography: Ocean currents: causes and occurrence, significance for navigation; Seas: causes and occurrence, significance for navigation; Sea ice: occurrence and species importance for navigation; Meteorological elements and their occurrence in cyclones and other weather phenomena: Representation of meteorological elements (air masses, pressure formations, fronts) using the example of the Atlantic Ocean; Weather in temperate latitudes; Weather in the Tropics / Tropical cyclones: Weather phenomena in the tropics; Tropical cyclones: Properties, calculate the location of hazardous areas, aimed at avoiding tropical cyclones; Meteorology and Oceanography in the ship management / Introduction to weather reports, weather services: Understand weather reports, reading weather maps, weather service (construction and operation of meteorological equipment), bridge watchkeeping duties, weather observations and handling with the measurement technology, Meteorological diary, exercises to carry out meteorological observations; practical weather service on seagoing vessels: Meteorological passage planning; determining optimal routes and analysis of route recommendations; Meteorological navigation and collision avoidance maneuver regarding oceanographic meteorological hazards; Route weather forecasts; Preparation and application of oceanographic and meteorological information.</p>
Aim of qualification	Knowledge and skills to recognize and assess hydro-metrological processes
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 2 swh lesson and 3 swh seminars
Literature	<ul style="list-style-type: none"> - Polar ship operation Cpt. D. Snider - Numerical Weather prediction H. Davies - Maritime weather and climate N. Lynagh
Reviewer	Prof. Thomas Böcker/Fitri Suprapti, S.ST.

Name of Module	13 Maritime English
Subject	Maritime communication
Content	<p>Communication for weather/ meteorological navigation: standard weather report/ tropical gale warning, weather conversation;</p> <p>Communication to NAVAIDS: description of user surface, oral explanation, RADAR image;</p> <p>Detection/ catching of navigation warning in case of failure with NAVAIDS;</p> <p>Seamanship communication: mooring and departs with rope guiding and engine commands;</p> <p>Direction determination from ships::</p> <p>Complex pilot communication: requirements from pilots-, transfer and conversation;</p> <p>Bridge communication: change of watch, , bridge regime, briefing;</p> <p>Communication charge/discharge: operation of charge technology, specials in container and fluid charge/discharge; oral and written communication in charge/ discharge period incl. damage reports and claims;</p> <p>Communication for check-in/ checkout: incl. communication in customs and immigration questions;</p> <p>Communication in safety on board according SOLAS: general activities, communication for fire protection and firefighting, using of rescue resources;</p> <p>Communication in port state control;</p> <p>SAR on board communication: for standby formation, SAR activities and PoB activities;</p> <p>Communicative using of follow documents: directive text like IMO documents, STCW, SOLAS, COLREGs, MARPOL, customs directives, port's order, sea books and port books, claims and sea protests, cargo documents;</p> <p>English based ship external routines and VTS communication: using of IMO and SMCP and consideration of international radio order.</p>
Aim of qualification	Learning of maritime basis terms, repeating of very important points of grammar, introduction in typically verbal-communicative means of expression in maritime, enabled to communicate in case of multi-international crews and they're specials.
Prerequisite for participation	non
Language	English
Kind of teaching	seminars and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (150 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 1swh lesson and 2 swh seminars 1 semester with 5 swh exercises
Literature	<ul style="list-style-type: none"> - The mariner's guide to marine Communications I. Waugh - IMO SMCP
Reviewer	Dipl.-Lehrerin Uta Buttler/Ario Hendartono, S.Pd, M.Pd

Name of Module	14 Ship machinery plants
Subject	Operation and monitoring technical plants in ship operation
Content	<p>Combustion engines (diesel engine): classification, characteristic data, components, lubrication and cooling, working process, charging/discharging, super charging, controlling, injection, mixture formation, power, efficiency, fuel oil consumption, characteristic maps, monitoring and interaction engine-propeller;</p> <p>Work and deck machines: pumps, compressors, pipe systems instruments and deck machines;</p> <p>Ship engine plants: tap water generator, separator, filter, oil separator, ship black water plants;</p> <p>Heat-ventilation and air condition: steam boiler, heat exchanger, refrigerant plants;</p> <p>Operation fluids: fuel, lubrication oil/ grease, cooling water, boiler water;</p> <p>Ship automation: remote control, current generator, alert systems;</p> <p>Ship electro technique: structure of grid and dimensioning,, energy supply by diesel generator, shaft generator, turbo generator, characteristic maps, synchronization, blackout, Meyer-circuit, protection Measurements;</p> <p>General ship engine operation : occupational protection, systems, bring ship in sea modus, operation with heavy fuel oil, engine monitoring, bunkering, classification and dry dock;</p>
Aim of qualification	Knowledge and skills to operate technical plants in context with ship operation.
Prerequisite for participation	Non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 1 swh lesson and 1 swh seminars 1 semester with 1 swh lesson and 2 swh seminars
Literature	<ul style="list-style-type: none"> - Marine engineering Q&A - Engineering examiner second engineer - Ship automation for marine engineer - Motor starters and controls for marine gears
Reviewer	Prof. Karsten Wehner/Capt. Prijantono Dillyanto, S.H, M.H

Name of Module	15 ship construction and stability
Subject	Basics in ship building and ship theory and aspects in transport equipment
Content	<p>Definition/ classification transport equipment, overview field of knowledge: Transportation in the transport system, classification of vehicles / vessels, drive and locomotion principles, dynamics / dynamic introduction basics: equations of motion, apparent mass / mass factors;</p> <p>Shipbuilding Basics: Basics for the description of the hull: Basic concepts and definitions; Coordinate systems and main dimensions, Introduction to the representation of the ship, shipyard plans and documents: Shape description by shape parameters in the form of graph; Of drafts, displacement, mass determination ship / longitudinal stability: use charging scale / trim diagram form curve values determine the true mean draft,; Forces and moments to the longitudinal stability, moment calculation, realization of given drafts;</p> <p>Survey and certification of transport / Tonnage Measurement: limits the loading of transport: freeboard and capacity of ships, freeboard account;</p> <p>Basics lateral stability I: Forces and moments at the ship upright and tilt / metacenter, righting; Initial stability and stability at larger angles of inclination influence of free liquid surfaces and icing, stability requirements: Overview of national and international requirements, methods of measuring the height of the center of gravity: Moment calculation, shifting of center of gravity ; Assessment of the stability on the stability boundary curves; heeling attempt, roller timing, carrying on board;</p> <p>Basics lateral stability II (Dynamic Stability): Calculation and presentation of the stability path; static and dynamic stability balances at different initial states and stability loads; capsize lever and capsizing angle, weather criterion of the IMO;</p> <p>Basics maneuvering I: Systematics travel and maneuverability, driving behavior on a straight path: equation of motion and forces acting; Ship resistance and propulsion, special types of propellers, drive change on a straight path: hydrodynamic inertia forces during acceleration, propeller operating conditions during deceleration and braking, manoeuver characteristic values for constant speed, trim speed;</p> <p>Strength stress of transport / ships: Classification / : investigation loads / stress resistance of the hull and control: Example calculation and discussion shear force / torque profile of various ships and load types, components and associations of the ship and its importance for the stability, error and damage to cargo spaces, hatch covers and ballast tanks.</p> <p>Classification of ships: Overview and tasks, maintenance, repair, corrosion protection, construction and repair supervision.</p>
Aim of qualification	Student gain fundamental knowledge in field of transportation, particular in ship building/ ship theory and the association to ships.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation

Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 2swh lesson, 1 swh seminar 1 semester with 2 swh lesson, 3 swh seminars
Literature	<ul style="list-style-type: none"> - Stability, Trim and Strength in Merchant Ships and Fishing Vessels IC Clark - Hatch Covers inspection W. Vervloesem - Improving ship operational design
Reviewer	Prof. Jürgen Siegl/Capt. Prijantono Dillyanto, S.H, M.H

Name of Module	16 Navigation II
Subject	Advanced navigation in terrestrial, celestial and astronomical
Content	Astronomical Navigation: Astronomical position lines, localization and compass control; Concepts of time and time conversions, Sextant (handling, control);
Aim of qualification	Knowledge and skills in using and operating in navigation systems. Students getting ability for autonomous navigation. Furthermore student is familiar with localizing and curved tracks.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes) + laboratory certificate
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 1 swh lesson, 1 swh seminar, 1 swh simulator training 1 semester with 1 swh lesson, 1 simulator training
Literature	<ul style="list-style-type: none"> - The Admiralty Manual of Navigation Vol 2: Astro Navigation 11th edition Alistair Harris - Navigation Accidents and their Causes D. Pockett et al
Reviewer	Prof. for Navigation (NN)/Erwin Sutantyo, S.SiT, M.Mar.

Name of Module	17 Maritime claim and insurance and legal aspects
Subject	Rights and obligations sea trade-, ocean freight and marine insurance
Content	<p>Contracts in the maritime transport: cargo, charter party- and special contracts;</p> <p>Persons subject to maritime law: shippers, supplier, charterers, contractors ocean freight contracts, contractors overseas sales contracts;</p> <p>General requirements for ocean freight contracts: private law provisions of the Civil Code, public service requirements, cabotage restrictions;</p> <p>Right in bill of lading: importance of the bill of lading, bill of lading properties, transfer of the bills of lading, types of bills of lading, Exhibition bill of lading, sea waybills;</p> <p>Charter rights: Formal requirements for charter agreements, term charter party content 'charters, special features for time charter, charter clauses;</p> <p>Principles of liability of freight contracts: general legal principles, scope of liability of Carrier, discharge of liability of Carrier, allowed exemption by carriers;</p> <p>Principles of non-contractual liability: Principles of ship-owner liability, Captain liability under the German Commercial Code, liability for oil pollution;</p> <p>Liability for passenger transport: Unified framework, contractors passage contracts, General Conditions of Carriage, peculiarities of liability;</p> <p>General rules for unloading: Term of unloading, Provision of a naval and efficient cargo ship, Position of the agreed vessel, location-based provision of the vessel, timely availability of the vessel;</p> <p>General provisions for sea transport: general duty of care by carriers, travel and more travel route and deviation, transport of deck cargo, transport of dangerous goods, the consequences of random travel obstacles;</p> <p>General rules on termination of the voyage: the delivery of the goods, inspection of goods, loss or damage to the goods, freight agreements, general agreements of the goods freight contracts, general conditions in the regular service;</p> <p>Shipping right: seagoing ship ownership, ship mortgages, liens;</p> <p>Transfiguration: concept of transfiguration, Captain, procedures, response to marine casualties skills, measures cargo damage;</p> <p>Salvage law: definitions, conditions, new regulations of IÜB, 1989;</p> <p>General Average: meaning and application of the York-Antwerp Rules, Dispatch process;</p> <p>Insurance Law: concepts, persons, contractual obligations, Direct hull.</p>
Aim of qualification	Knowledge and skills to assess right associated problems in shipping
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation

Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	6 CR according ECTS
Work load	180 hours
Duration of module	1 semester with 3 swh lesson, 3 swh seminars
Literature	<ul style="list-style-type: none"> - Enforcement of maritime claims Lloyd's shipping D.C. Jackson - Excessive maritime claims J.A. Roach et al - Marine insurance Vol.-1 R.H. Brown
Reviewer	Retno Anggoro, S.ST, M.M.Tr.

Name of Module	18 Economic and maritime business/entrepreneurship and plan maintenance and procurement
Subject	Economic and maritime business/entrepreneurship and plan maintenance and procurement
Content	<p>General economics: application to material and non-material processes</p> <ul style="list-style-type: none"> - The enterprise, Form of law, organization, work and social aspects, human resources, material economics- logistic, Marketing, Balancing and costs calculation, Financing, Investment, Management - Ensuring the safety of navigation: Risk and safety, technology and law, international contracts, international organizations; <p>Shipping Administration: the Federal Maritime Responsibilities Act, the layout of the maritime administration, the flags and registers law;</p> <p>Powers of the flag States: Competences of the flag States under UNCLOS=UN convention of the law of the sea; Ship's certificates and certificates, the requirement to keep diaries, certification for crews, marine casualty investigation, quality assurance systems (ISM, ISO 9000);</p> <p>Powers of coastal States: Competencies of coastal States in accordance with the UNCLOS, the safety of waterways (VTS, dangerous goods), Search and Rescue (SAR, ship reporting systems), the pilotage;</p> <p>Powers of port States: the input and checkout, port state control;</p> <p>International cooperation: cooperation within the EU, global collaboration (INMARSAT), International authorities;.</p>
Aim of qualification	Knowledge and skills in maritime environment protection
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 4 swh lesson, 3 swh seminars, 1swh exercise

Literature	<ul style="list-style-type: none"> - Passage planning guidelines - Passage planning principles, Skuld - Passage planning practice N. Anwar - Handbook of maritime Economics and Business C.Th. Grammenos - Shipping business and maritime economics J. MacConville et al
Reviewer	Hero Budi Santoso, M.M., M.Mar.

Name of Module	19 Business English
Subject	Business administration communication
Content	<p>Written administrative communication:</p> <ul style="list-style-type: none"> - Handling with administrative correspondence - Documentation, recognizing, summarizing and performance - Handling of e-mails, letters and memos - Report about events, investigation and setting of comments - Marine specific publication <p>Oral administrative communication:</p> <ul style="list-style-type: none"> - Handling with complains, - Company presentation - Phone calls
Aim of qualification	<p>Gaining skills in assorted text related to maritime affairs, to understand, recognize text passages and can react efficiently and suitable to text information.</p> <p>Furthermore, students are able to participate in seminars and conferences in passive and active position.</p>
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or alternative form
Number of credits	4 CR according ECTS
Work load	120 hours
Duration of module	1 semester with 4 swh exercises
Literature	<ul style="list-style-type: none"> - Business English M.E. Guffey, C.M. Seefer
Reviewer	Dipl.-Lehrerin Uta Buttler/Mahsunah Etik R, M.Hum.

Name of Module	20 Emergency management I
Subject	Safety management
Content	<p>Security Theoretical foundations; Safety management; Operational ship safety: International and National legal basis and organization of ship safety, construction of ships, ship management, organization of safe operation, ISM Code, integrated system for the management of emergencies, Modern emergency management; Rescue from drowning: Legal basis, tasks, principles of the equipment of ships with collective life-saving appliances, basic requirements for life-saving equipment system Collective life-saving appliances, individual life-saving equipment, Communicative rescue, ship engineering measures, survival at sea, search and rescue, flooding, grounding; Simulator training; Practical training.</p>
Aim of qualification	Knowledge and skills in operative ship security
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes) plus assignment and testate
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 3 swh lesson, 3 swh seminars, 2 swh exercise
Literature	<ul style="list-style-type: none"> - Derivates and risk management in shipping P. Caridis - Solas Consolidated (IMO) - Ship Safety officer A. Khalique - Surveying marine damage C.B. Thompson - Navigation accidents and their causes D. Pockett et al
Reviewer	Prof. Sven Dreeßen/Rahindra Bayu Kumara, S.ST.

Name of Module	21 Human resources management, leadership and team working
Subject	Human resources management, leadership and team working
Content	<p>General labor skills, knowledge of the sailor Law: Employee participation; Working time arrangements; Safety and accident prevention regulations</p> <p>System Human Element and organization in human-machine system: Definition leadership, superior, prerequisite for leadership; Principles of communication, communication theory; Skills: expertise, methodological competence, social competence and leadership skills, Human performance: Human organism and its property to the performance, capacity as suitability for the profession, levels of performance, Reliability of people: stress, strain modes, error, error types; Work ability, work ethic, work organization Activity structure of a surgeon: situation awareness and mental models, situation assessment, decision, execution, control; Care for persons on board: Multicultural collectives order onboard Humanitarian working and living conditions aboard hygiene; Behavior of people in emergency situations: stress and emergency, effect of stress, phases of human behavior in emergencies, conflict management; Training on board: design of theoretical teaching sessions and practical exercises, planning and contingency planning. Security Theoretical Foundations in man-machine systems: Safety, risk, hazard, system conflicts, system responses; Security management: Organization of security, operational security; rules in case of disturbance: Federal Pollution- protection law, requirements for the prevention of accidents, potential hazards in a system; Case studies; project work</p>
Aim of qualification	Knowledge and skills in leadership
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	6 CR according ECTS
Work load	180 hours
Duration of module	1 semester with 3 swh lesson, 3 swh seminars
Literature	<ul style="list-style-type: none"> - Leadership Throughout R. Jeffery - The Admiralty manual of seamanship V. Vance - Managing traumatic stress Guidance for maritime Organisations
Reviewer	Amthori Anwar, M.Si., M.Mar.
Review	Content of modul had been reviewed without any additional material

Name of Module	22 Health safety environment/ environment awareness, prevention of pollution
Subject	Knowledge and skills in maritime environment protection
Content	<p>Occupational protection: Rules, procedures, behavior</p> <p>Occupational law: national and international law, to protect health and safety of crew members</p> <p>Regulations on environmental protection: policy and general legal bases, multilateral agreements, EU law, federal law, state legislation MV; Limitation of Pollution: MARPOL provisions, rules of the Helsinki Convention, reporting requirements;</p> <p>Responsibility for marine pollution: combating marine pollution, liability rules, environment penalty- and misdemeanors</p>
Aim of qualification	Knowledge and skills in maritime environment and international requirements to protect environment and health.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	5 CR according ECTS
Work load	150 hours
Duration of module	1 semester with 2 swh lesson, 1 swh seminar, 2 swh exercises
Literature	<ul style="list-style-type: none"> - Guidelines for the control and management of ships' ballast Water to minimize the transfer of HAO and Pathogens IMO - Manual on oil pollution sect. 1-6 IMO
Reviewer	Prof. Sven Dreeßen/Capt. Prijantono Dillyanto, S.H, M.H
Review	Content of modul had been reviewed without any additional material

Name of Module	23 Maneuvering and ship handling
Subject	Maneuvering and ship handling
Content	<p>Maneuvering II: Definition and examples of maneuvers; Elementary / basic maneuvers, complex maneuvers; Control behavior when changing direction and the heading hold: applied forces and moments on the hull and rudder, equations of motion of the ship - Introduction and physical discussion, motion sequence when controlled movements, dynamic yaw stability and spiral maneuver; Maneuvering characteristics and influence coming from ship internal factors: Turning circle drive, zig-zag test, spiral test / pull-out test, Scharnow and Williamson's turn, single turn; Relationship between drive and control behavior - Combined Maneuver: Additional resistance at controlled movements - "fishtailing" and turning maneuvers combined with, the use of additional maneuvering;</p> <p>Influence of external factors on drive and control behavior: Forces and moment equilibrium at wind influence, yaw and rudder angles on a straight tracks / limits the ability to steer, sea impacts, influences on fairway Restrictions: Squat - cause and effect, draft increase in heeling of the ship, change of control behavior through shallow water ;</p> <p>Methods and conditions for the inclusion of maneuver characteristic values: rules and methods for the determination of this values; Conditions for test drives, organizing and implementing the ship handling simulator evaluation / production maneuver documents and bridge documents for different maneuvers;</p> <p>Ship Vibration and dangers at sea: Marine natural oscillations – types and approximate methods for calculation of sea kind and parameters to describe; Stability variation in waves; Encounter period between ship and waves; Resonance / Parametric excitation methods to avoid large roll oscillations and hazards of Broaching and Surf Riding</p>
Aim of qualification	Students gain basic knowledge in field of ship dynamic, impact of forces for propulsion and maneuvering, as well as the application of knowledge and skills for safety ship maneuver.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1semester with 1 swh lesson, 2 swh seminars 1 semester with 2 swh lesson, 2 swh seminars
Literature	<ul style="list-style-type: none"> - Ship handling D.J. House - Practical ship handling M.C. Armstrong
Reviewer	Prof. Thomas Böcker/Erwin Sutantyo, S.SiT, M.Mar.

Name of Module	24 Electronic Navigation
Subject	Technical navigation
Content	<p>Technical Navigation: Direction measuring systems: principles, operation, performance limits; Sonar measurement systems: principles, operation, performance limits; Satellite position finding- and communication systems: principles, operation, performance limits.</p> <p>Integrated navigation systems: track guide, ECDIS, transponder; Exercises on radar for locating; Exercises compasses; Exercises on ship handling simulators; Navigation in a sea watch, assistant of the skipper in special situations, a one-man operation, and cooperative ship management in teams, passage planning, execution and control using efficient methods and tools, monitoring of systems and decision making in case of failure ; Radar: Structure of the radar system and its operation, types of representation; ARPA: Automatic Radar plotting aids, technical limitations of the radar image; Exercises on the radar simulator: manual and ARPA evaluation</p> <p>Training on ship handling simulator;</p>
Aim of qualification	Knowledge and skills in using and operating of electrical navigation systems.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 1 swh lesson, 1 swh seminar 1 semester with 2 swh lesson, 2 swh seminars, 2 swh exercises
Literature	<ul style="list-style-type: none"> - Integrated Bridge system ECDIS and Positioning A. Norris - Integrated Bridge system RADAR and AIS, A. Norris - ;Marine electronic navigation S.F. Appleyard et al
Reviewer	Prof. for Navigation (NN)/Hero Budi Santoso, M.M., M.Mar.

Name of Module	25 Cargo Handling, Stowage and Securing
Subject	Maritime cargo operation/ dangerous cargoes
Content	<p>Ship and cargo system: explanation of the system ship and cargo, forces on ship and cargo, stability stress of transitioning from charge, heavy cargo loading and water absorption of the deck cargo;</p> <p>Technical function, operating criteria, auditing, on-board documentation, monitoring and maintenance of: loading gear and deck cranes, doors, ramps, hatch covers, hydraulic lifts, conveyors, cooling systems;</p> <p>Stowage and securing loads: Preparing cargo spaces, storage rules and schemes, dunnage and separating, trimming bulk, principles of cargo securing, cargo stowage and securing; Cargo Securing Manual for general cargo, heavy cargo, Ro / Ro cargoes and containers;</p> <p>Loading and transporting dangerous goods: Storage principles, class-related stowage tips, working with the IMDG Code, load planning according classification and separation rules, documentation, emergency preparedness, emergency procedures medical first aid guide/emergency schedule</p> <p>Special loading and transport technologies: Cargo and heavy cargo, containers, ro / ro cargo, grain (grain-code), Mineral bulk cargoes (bulk cargoes code), timber deck cargo (timber-code, policy E1);</p> <p>Working with loading instruments; Project "Complex ship loading".</p>
Aim of qualification	Skills and knowledge in planning and surveying of cargo operation and thorough knowledge and skills in planning and monitoring of loading/unloading processes
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/ transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes) and Successful passing of examination in written form (120 minutes) or oral exam (30 minutes)
Number of credits	10 CR according ECTS
Work load	300 hours
Duration of module	1 semester with 2 swh lesson, 2 swh seminars 1 semester with 3 swh lesson, 3 swh seminars
Literature	<ul style="list-style-type: none"> - Revised recommendations on the safe transport of dangerous cargoes and related activities in port area IMO - Cargo handling and stowage P. Grunau
Reviewer	Prof. Thomas Böcker/Agung Saputra, S.Si.T, M.Mar

Name of Module	26 Emergency management II
Subject	Emergency management
Content	<p>MARPOL Maritime environmental protection: Potential hazards, emission, immission, waste treatment on board;</p> <p>Security officer on the ship: Introduction, procedures for Maritime Security, responsibilities, risk assessment, security equipment to averting of danger, security plan, the ship detection and identification of threats and their encounter, Onboard security measures, security contingency planning, exercise and maneuvers, management of security measures, security training;</p> <p>Case studies; Simulator training; Practical training.</p>
Aim of qualification	Knowledge and skills in operative ship security
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (180 minutes) or oral exam (30 minutes)
Number of credits	8 CR according ECTS
Work load	240 hours
Duration of module	1 semester with 3 swh lesson, 3 swh seminars 1 semester with 2 exercises
Literature	<ul style="list-style-type: none"> - Maritime Security S: Jones - Casualty Management The nautical Institute - Managing Collision avoidance at sea G. W.U. Lee
Reviewer	Prof. Sven Dreeßen/Rahindra Bayu K, S.ST

Name of Module	27 Collision regulation and watch keeping
Subject	Ship management and ship operation
Content	<p>Introduction: national and international legislation, transport, routes, maritime transport system, ship types, construction and execution, Charge characteristic, particular requirements for the crew, interface problems, Business organization and board operations,</p> <p>Introduction to collision prevention: Collision Regulations and requirements: Introduction, term definition, lights and objects, sound and light signals;</p> <p>Security guard at sea and in port: International and national rules for watchkeeping, performing watchkeeping at sea and in ports (watchkeeping Regulation);</p> <p>Collision avoidance: Collision Regulations; Plotting (radar Drawing): Assessment of encounter situations at sea, decision for collision avoidance, collision avoidance actions, maneuvering collision avoidance; (Regulations for COLREG, regulations for the safety of navigation,); Use of conventional and ARPA radars (SOLAS) radar for collision avoidance, Integrated collision avoidance systems / AIS</p>
Aim of qualification	Knowledge and skills to execute a safe watchkeeping
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in written form (120 minutes) or oral exam (30 minutes) and laboratory certificate and Successful passing of examination in written form (150 minutes) or oral exam (30 minutes)
Number of credits	10 CR according ECTS
Work load	300 hours
Duration of module	1 semester with 1 swh lesson, 2 swh simulator trainings 1 semester with 3 swh lesson, 3 swh simulator trainings
Literature	<ul style="list-style-type: none"> - Managing Collision avoidance at sea G. W.U. Lee - Officer in Charge of navigational watch IMO
Reviewer	Prof. Thomas Böcker/Capt. P. Tony Kusumartono, M.M.

Name of Module	28 Sea internship I
Subject	Internship on board
Content	Requirements coming from STCW 95 convention. Furthermore in Germany are the rules of the StAK to consider. It is the internship regulations of the area seafaring as an annex to study regulation. The internship contracts are concluded by seafaring standard of the area. The content is in the "On Board Training Record Book for Deck Cadets", published by the Federal Maritime and Hydrographic Agency (BSH), published and are there, the constant adaptation and development.
Aim of qualification	The student shall apply the gained theoretical knowledge and skills in technical point of view as well as economical point of view. The internship shall give a view to the daily activities on board a merchant ship.
Prerequisite for participation	Minimum 90 ECTS gained according the curriculum
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Completion of demands according "On Board record book for deck cadets" and prove of 26 weeks on board a ship. Submitting of internship report per ship
Number of credits	30 CR according ECTS
Work load	900 hours
Duration of module	1 semester
Literature	-
Reviewer	Responsible professor for sea internship (Prof. Sven Dreeßen)

Name of Module	29 Sea internship II
Subject	Internship on board
Content	Requirements coming from STCW 95 convention. Furthermore in Germany are the rules of the StAK to consider. It is the internship regulations of the area seafaring as an annex to study regulation. The internship contracts are concluded by seafaring standard of the area. The content is in the "On Board Training Record Book for Deck Cadets", published by the Federal Maritime and Hydrographic Agency (BSH), published and are there, the constant adaptation and development.
Aim of qualification	The student shall apply the gained theoretical knowledge, skills in technical point of view as well as economical point of view. The internship shall give a view to the daily activities on board a merchant ship.
Prerequisite for participation	Minimum 90 ECTS gained according the curriculum
Language	English
Kind of teaching	Lesson and exercise

Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Completion of demands according "On Board record book for deck cadets" and prove of 26 weeks on board a ship. Submitting of internship report per ship
Number of credits	30 CR according ECTS
Work load	900 hours
Duration of module	1 semester
Reviewer	Responsible professor for sea internship (Prof. Sven Dreeßen)

Name of Module	30 Project week
Subject	IMO relevant training courses
Content	Bridge resource management, Ship security officer, crowd & crisis management, SAR, person over board
Aim of qualification	Formation of skills in field of leadership as well as skills in field of ship security through intensive training.
Prerequisite for participation	non
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Successful passing of examination in alternative form
Number of credits	9 CR according ECTS
Work load	270 hours
Duration of module	1 semester with 1 swh lesson, 6 swh simulator trainings
Reviewer	Prof. Sven Dreeßen

Name of Module	31 Bachelor Thesis
Subject	Bachelor thesis
Content	Chosen issue for the bachelor thesis, close connected to the contend of the degree course
Aim of qualification	The student demonstrates that he can handle a given topic independently using scientific methods. He shows this based on the developed solution strategies and comprehensive documentation the capacity of scientific work. The results will be defended in a colloquium.
Prerequisite for participation	Minimum 204 ECTS according the curriculum and at least 228 CR according ECTS for the colloquium
Language	English
Kind of teaching	Lesson and exercise
Usability	This module is applicable in the degree course nautical sciences/transport operation
Criteria to gain credits	Written bachelor thesis and colloquium
Number of credits	12 CR according ECTS
Work load	360 hours
Duration of module	12 weeks
Literature	-
Reviewer	Two professors each (research assistant/company supervisor alternatively as second appraiser)