

Course manual

Bachelor-Degree Course Nautical Sciences / Transport Operation



Hochschule Wismar

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More information you can find here:

<https://fiw.hs-wismar.de/bereiche/sal/studiengaenge/nautical-sciences-transport-operations/>



General Terms

Basic module

Each student regularly has to participate in all basic modules.

Usability

The row “Usability” explains for what degree course such a module can recognize.

Work load and credit points

The award of credit point (CP) is strictly oriented to the European Credit Transfer System (ECTS) One CP is respectively to 30 hours work load. The scheduled workload is composed by fixed time in attendance plus self-study time.

Criteria to gain credit points

The preliminary to award CP is principally successful finalizing of each module. The kinds of examination preliminaries and module examinations can be found in this row. More information can be found in the academic rules.

Duration of module

Modules can be taken one or two semesters. The specific time of attendance is presented in time per week. One semester contains 16 weeks plus examination period.

Foreign language

From the first semester excellent skills in English will be expected.

Prerequisite for participation

Some modules can be depending of other modules; e.g. MINT III mathematics, to participate in this module examination it is necessary to pass the examination successful in MINT I before. Find more information in the academic rules.



Nomenclature

APL	Alternative exam test, compare the academic rules § 9 to find possible forms of APL
B	Assignment or report to create during the semester and finished before examination.
CP	Credit points according the European Credit Transfer System.
E	Exercise, is used to apply and deepen the theoretical content by practical problems in small groups. Student try to solve such exercise task during the self-study and getting supervised
IMO	International Maritime Organisation
K	Written exam test (figure behind explains the maximum time for the test)
L	Lecture
LN	Form, duration and prerequisites of exam test to finish the several modules
LS	Successful participation in laboratories
M	Oral exam test (figure behind explains the maximum time for the test)
MKK	Module content belongs to STCW requirements
MKDK	
PA	Written project report
PM	Compulsory module
S	Seminar, is used to gain and deepen new knowledge by interactive acting in small or medium sized groups.
ST	Simulator Training
STCW	International convention in Standards of Training, Certification and Watch keeping. STCW describe the guidelines for competencies and skills and minimum requirements to become crewmember on board a floating unit.
SWH	Semester week hours, explain how much time in attendance is intended to teach the content.
TRB	Training Record Book for deck cadets.

Number/Code	
Module German	
Module English	PM 01 MINT I: Mathematics/Physics
Module abbreviation	
Subject	Physics and thermodynamics linked to MKDK
Responsible lecturer	Prof. Karsten Wehner/Suyono, S.T., M.Si. and Ruliatima, S.Si, M.Sc
Lecturer	
Content	<p>Mathematics:</p> <ul style="list-style-type: none"> - quantities, real numbers, inequalities, binominal theorem - complex numbers: basic calculation, transforming and displaying - functions: elementary function, polynomials, broken rational functions and properties (monotony, periodicity, symmetry, reversibility) - numerical sequence, definition, convergence, divergence - limit values of function and continuity - differential equation, ordinary, techniques of differentiation, application <p>Physics mechanics, heat and gas:</p> <ul style="list-style-type: none"> - mass, volume, density, forces, kind of forces, force addition and separation, - motions (uniform and accelerated), force and newton's law, friction, pressure and buoyancy, - work, energy, power, simple machines, linear motions-linear equations, free fall and vertical throw - circular motion, rotation, gravitation - hydrodynamics and hydro statics, 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>volume change by heat change, Temperature, atom model, internal energy, heat capacity properties of fluids: equation for gas, liquids and steam mixture of gas and humid air</p>
Objectives	Solution competence in physical problems and understanding of natural processes and application competences in mathematical problems
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance



Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 02 MINT II: Information Technology
Module abbreviation	
Subject	Creation of computer programs linked to MKDK
Responsible lecturer	Gunawan Budi S, S.Kom., M.Kom.
Lecturer	
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>
Objectives	Excellent using of standard software/knowledge in programming
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 st semester 1 SWH lecture and 2 SWH seminars, 2 nd semester 1 SWH lecture and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after the 1 st semester and written examination (90 minutes) or oral examination (20 minutes) after the 2 nd semester
ECTS-Credits	6 CR according ECTS
Workload	180 hours, 3 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ The book of informatics J. Gammack et al ▪ Handbooks in VBA, Python, MATLAB



Number/Code	
Module German	
Module English	PM 03 MINT III: Physics/Thermodynamics
Module abbreviation	
Subject	Physics and thermodynamics
Responsible lecturer	Prof. Karsten Wehner/Suyono, S.T., M.Si. and Ruliatima, S.Si., M.Sc.
Lecturer	
Content	<p>Optic and acoustic: light propagation, reflection, light calculation Acoustic phenomena Speed of Sound Acoustic waves</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 Conditions and changings: isochoric, isentropic/polytrophic, isobar, isotherm, displaying in diagrams,</p> <p>Gas mixtures: partial pressure and volume, behavior of gas mixtures</p> <p>Humid air/water: relative and abs. moisture, evaporation, condensing and sublimation of water</p> <p>Second Law of TD: entropy reversible and irreversible processes, Processes: Carnot, Diesel, Otto, Clausius-Rankine, Joule process</p>
Objectives	Solution competence in physical problems and understanding of natural processes
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 3 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	5 CR according ECTS
Workload	150 hours, 5 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ Introduction to Thermodynamics and Heat Transfer Y. Cengel ▪ Thermodynamic properties of complex fluid mixtures, G. Maurer



	<ul style="list-style-type: none">▪ Fundamentals of Physics: Mechanics, Relativity, and Thermodynamics R. Shankar▪ Fundamentals of Physics D. Halliday et al
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Number/Code	
Module German	
Module English	PM 04 MINT IV: Mathematics/Statistics
Module abbreviation	
Subject	Introduction in differential and integral calculation and statistics
Responsible lecturer	Febri Sartika Fatriani, S.Pd.
Lecturer	
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>
Objectives	Highest solution competence in mathematical problems
Language	English
Teaching and Learning Methods	Lectures and exercise
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 3 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	5 CR according ECTS
Workload	150 hours, 5 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ Mathematics for Engineers, Vol. 1 W.N. Rose ▪ Mathematics for Engineers I-IV G. Baumann



Number/Code	
Module German	
Module English	PM 05 English
Module abbreviation	
Subject	Introduction to maritime communication, link to MKPK
Responsible lecturer	Dr.-Ing. Wolfgang Busse/Ario Hendartono, S.Pd, M.Pd
Lecturer	
Content	<p>Terms I: kind of ships, application areas and structure of crew;</p> <p>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;</p> <p>Official correspondence: letter from board regarding simple official communication;</p> <p>Reading and understanding of special nautical publications: sea charts, notice to mariners, sea pilot (sailing directions) etc., parts of conventions/ documents of IMO</p> <p>Kinds of transport: transport via road, sea transport (organization of shipping, kinds of ships, routing service and conferences, tramp shipping) air transport, rail transport;</p> <p>Kind of cargo: bulk cargo, container cargo, liquid cargo, dangerous goods, heavy load, Packaging, marking, labeling, dimensions and weights;</p> <p>Office communication I: make a call with standard phrases.</p>
Objectives	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 their particularities.
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ Admiralty Manual of Seamanship V. Vance



	<ul style="list-style-type: none">▪ Maritime English (IMO)▪ handouts
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Number/Code	
Module German	
Module English	PM 06 Ship Construction I/Technical Mechanics
Module abbreviation	
Subject	Static and strength of materials; linked to MKK
Responsible lecturer	Prof. Jürgen Siegl/Khaeroman,S.T., M.T.
Lecturer	
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, Coulomb'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, non-destructive tests;</p> <p>Laboratory: tensile test, hardness test, impact test, metallography, non-destructive tests;</p> <p>Chemical properties: corrosion of metals, corrosion processes, kinds of corrosion, and the appearing, corrosion protection</p>
Objectives	Solution competence for technical problems and understanding of fundamentals connections between structure, properties and application of different materials
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH exercises
Frequency	



Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 07 Electrics/ Electronics and Measurement and Control Technology
Module abbreviation	
Subject	Basics in electrics/electronics and in measurement and control technology
Responsible lecturer	Noviarianto, S.T, M.Eng.
Lecturer	
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>
Objectives	<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>
Language	English
Teaching and Learning Methods	Lectures, exercises and laboratory
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation



Duration	1 semester: 2 SWH lectures, 1 SWH exercise and 1 SWH laboratory
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none">▪ Fundamentals of Electrical Engineering C.A. Gross, T. Roppel▪ Fundamentals of Instrumentation and Measurement D. Placko



Number/Code	
Module German	
Module English	PM 08 Chemistry and Dangerous Goods
Module abbreviation	
Subject	Basics in chemistry linked to MKK
Responsible lecturer	Agung Saputra, S.Si.T, M. Mar
Lecturer	
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
Objectives	Knowledge and skills in recognizing and assessing of chemical processes
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none">▪ Manual on chemical Pollution section 1-3(IMO)▪ Fundamentals of chemistry R.A. Burns



Number/Code	
Module German	
Module English	PM 09 Health Safety Environment/ Environment Awareness/ Prevention of Pollution
Module abbreviation	
Subject	Knowledge and skills in maritime environment protection, linked to MKDK
Responsible lecturer	Prof. Sven Dreeßen/Capt. Prijantono Dillyanto, S.H, M.H
Lecturer	
Content	<p>Occupational protection: Rules, procedures, behaviour</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 misdemeanours</p>
Objectives	Knowledge and skills in maritime environment and international requirements to protect environment and health.
Language	English
Teaching and Learning Methods	Lectures, seminars and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester: 2 SWH lectures, 1 SWH seminar and 1 SWH exercise
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes)
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 10 Navigation I
Module abbreviation	
Subject	Basics in navigation, linked to MKK
Responsible lecturer	Prof. for Navigation (NN)/Amthori Anwar, M.Si., M.Mar.
Lecturer	
Content	<p>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, considering 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 lines of position, wind and current action; Magnetic compass: structure, function and operation, terrestrial and naval magnetism, Deviation and operation of the compensation means, determination of deviations;</p>
Objectives	Knowledge and skills in coastal and terrestrial navigation
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 st semester: 1 SWH lectures and 1 SWH seminar 2 nd semester: 2 SWH lectures and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	6 CR according ECTS
Workload	180 hours, 6 hours per week in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 11 Manoeuvring and Ship Handling
Module abbreviation	
Subject	Manoeuvring and ship handling, linked to MKK
Responsible lecturer	Prof. for ship handling N.N./Erwin Sutantyo, S.SiT, M.Mar.
Lecturer	
Content	<p>Manoeuvring II: Definition and examples of manoeuvres; Elementary / basic manoeuvres, complex manoeuvres; Control behaviour 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 manoeuvre; Manoeuvring 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 behaviour - Combined Manoeuvre: Additional resistance at controlled movements - "fishtailing" and turning manoeuvres combined with, the use of additional manoeuvring;</p> <p>Influence of external factors on drive and control behaviour: 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 behaviour through shallow water;</p> <p>Methods and conditions for the inclusion of manoeuvre characteristic values: rules and methods for the determination of this values; Conditions for test drives, organizing and implementing the ship handling simulator evaluation / production manoeuvre documents and bridge documents for different manoeuvres;</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>
Objectives	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.
Language	English
Teaching and Learning Methods	Lectures and seminar-based teaching
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 st semester: 1 SWH lectures and 1 SWH seminar-based teaching 2 nd semester: 2 SWH lectures and 3 SWH seminar-based teaching



Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	7 CR according ECTS
Workload	210 hours, 7 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none">▪ Ship handling D.J. House▪ Practical ship handling M.C. Armstrong



Number/Code	
Module German	
Module English	PM 12 Meteorology and Oceanography
Module abbreviation	
Subject	Meteorology and weather; oceanography linked to MKK
Responsible lecturer	Prof. Thomas Böcker/Fitri Suprapti, S.ST.
Lecturer	
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 manoeuvre regarding oceanographic meteorological hazards; Route weather forecasts; Preparation and application of oceanographic and meteorological information.</p>
Objectives	Knowledge and skills to recognize and assess hydro-metrological processes
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester: 2 SWH lecture and 3 SWH seminar
Frequency	
Prerequisites for Participating	None
Preliminary examination	



Requirements for awarding credit points	Successful passing of examination in written form (120 minutes) or oral examination (30 minutes)
ECTS-Credits	5 CR according ECTS
Workload	150 hours, 5 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none">▪ Polar ship operation Cpt. D. Snider▪ Numerical Weather prediction H. Davies▪ Maritime weather and climate N. Lynagh



Number/Code	
Module German	
Module English	PM 13 Collision Regulation and Watch Keeping
Module abbreviation	
Subject	Ship management and ship operation, linked to MKK
Responsible lecturer	Prof. Thomas Böcker/Capt. P. Tony Kusumartono, M.M.
Lecturer	
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, manoeuvring 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>
Objectives	Knowledge and skills to execute a safe watchkeeping
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 2 SWH lectures and 2 SWH seminar 1 semester with 2 SWH simulator training
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) after 1 st semester and written examination (90 minutes) or oral examination (20 minutes) after 2 nd semester
ECTS-Credits	6 CR according ECTS
Workload	180 hours, 6 hours per week are in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ Managing Collision avoidance at sea G. W.U. Lee ▪ Officer in Charge of navigational watch IMO



Number/Code	
Module German	
Module English	PM 14 Maritime English and Maritime Communication
Module abbreviation	
Subject	Maritime communication, linked to MKK
Responsible lecturer	Dipl.-Lehrerin Uta Buttler/Ario Hendartono, S.Pd, M.Pd
Lecturer	
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 check-out: 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>
Objectives	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.
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation



Duration	2 semesters: 1 semester with 2 SWH lectures and 3 SWH exercises 1 semester with 4 SWH exercises
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) after 1 st semester and written examination (120 minutes) oral examination (30 minutes) after 2 nd semester
ECTS-Credits	9 CR according ECTS
Workload	270 hours, 9 hours per week are in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none">▪ The mariner's guide to marine Communications I. Waugh▪ IMO SMCP



Number/Code	
Module German	
Module English	PM 15 Ship Construction and Stability II
Module abbreviation	
Subject	Basics in ship building and ship theory and aspects in transport Equipment, Linked to MKK
Responsible lecturer	Prof. Jürgen Siegl/Capt. Prijantono Dillyanto, S.H, M.H
Lecturer	
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 / metacentre, 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 centre of gravity: Moment calculation, shifting of centre 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 manoeuvring I: Systematics travel and manoeuvrability, driving behaviour 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, manoeuvre 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,</p>



	error and damage to cargo spaces, hatch covers and ballast tanks. Classification of ships: Overview and tasks, maintenance, repair, corrosion protection, construction and repair supervision.
Objectives	Student gain fundamental knowledge in field of transportation, particular in ship building/ ship theory and the association to ships.
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 2 SWH lectures and 1 SWH seminar 1 semester with 2 SWH lectures and 3 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	8 CR according ECTS
Workload	240 hours 8 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 16 Emergency Management I
Module abbreviation	
Subject	Safety management, linked to MKK
Responsible lecturer	Prof. Sven Dreeßen/Rahindra Bayu Kumara, S.ST.
Lecturer	
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;</p> <p>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;</p> <p>Simulator training; Practical training.</p>
Objectives	Knowledge and skills in operative ship security
Language	English
Teaching and Learning Methods	Lectures, seminars and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 3 SWH lectures, 3 SWH seminars, 2 SWH exercise
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (180 minutes) or oral examination (40 minutes)
ECTS-Credits	8 CR according ECTS
Workload	240 hours 8 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 17 Navigation II
Module abbreviation	
Subject	Advanced navigation in terrestrial, celestial and astronomical, linked to MKK
Responsible lecturer	Prof. for Navigation (NN)/Erwin Sutantyo, S.SiT, M.Mar.
Lecturer	
Content	Terrestrial and coastal navigation; Astronomical Navigation: Astronomical position lines, localization and compass control; concepts of time and time conversions, sextant (handling, control);
Objectives	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.
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 1 SWH lecture, 1 SWH seminar and 1 SWH simulator training 1 semester with 1 SWH lecture and 2 simulator training
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	7 CR according ECTS
Workload	210 hours 7 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 18 Electronic Navigation
Module abbreviation	
Subject	Technical navigation, linked to MKK
Responsible lecturer	Prof. for Navigation (NN)/Hero Budi Santoso, M.M., M.Mar.
Lecturer	
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;</p> <p>Radar: Structure of the radar system and its operation, types of representation; ARPA: Automatic Radar plotting aids, technical limitations of the radar image;</p> <p>Exercises on the radar simulator: manual and ARPA evaluation</p> <p>Training on ship handling simulator;</p>
Objectives	Knowledge and skills in using and operating of electrical navigation systems.
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 1 SWH lecture and 1 SWH seminar 1 semester with 2 SWH lectures and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	6 CR according ECTS
Workload	180 hours 6 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 19 Cargo Handling, Stowage and Securing
Module abbreviation	
Subject	Maritime cargo operation/dangerous cargoes, linked to MKK
Responsible lecturer	Prof. Thomas Böcker/Agung Saputra, S.Si.T, M.Mar
Lecturer	
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; 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>
Objectives	Skills and knowledge in planning and surveying of cargo operation and thorough knowledge and skills in planning and monitoring of loading/unloading processes
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 2 SWH lectures and 2 SWH seminars 1 semester with 3 SWH lectures and 3 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) after 1 st semester and written examination (180 minutes) or oral examination (40 minutes) after 2 nd semester
ECTS-Credits	11 CR according ECTS
Workload	330 hours, 11 hours per week are in attendance



Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 20 Ship Machinery Plants
Module abbreviation	
Subject	Operation and monitoring technical plants in ship operation, linked to MKK
Responsible lecturer	Prof. Karsten Wehner/Capt. Prijantono Dillyanto, S.H, M.H
Lecturer	
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>
Objectives	Knowledge and skills to operate technical plants in context with ship operation.
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	2 semesters: 1 semester with 1 SWH lecture and 1 SWH seminar 1 semester with 1 SWH lecture and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (90 minutes) or oral examination (20 minutes) after 1 st semester and written examination (120 minutes) or oral examination (30 minutes) after 2 nd semester
ECTS-Credits	5 CR according ECTS
Workload	150 hours, 5 hours per week are in attendance



Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 21 Human Resources Management, Leadership and Team Working
Module abbreviation	
Subject	Human resources management, leadership and team working, linked to MKK
Responsible lecturer	Amthori Anwar, M.Si., M.Mar.
Lecturer	
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; Behaviour of people in emergency situations: stress and emergency, effect of stress, phases of human behaviour 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>
Objectives	Knowledge and skills in leadership
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 3 SWH lectures and 3 SWH seminars
Frequency	



Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (150 minutes) or oral examination (30 minutes)
ECTS-Credits	6 CR according ECTS
Workload	180 hours 6 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 22 Emergency Management II
Module abbreviation	
Subject	Emergency management, linked to MKK
Responsible lecturer	Prof. Sven Dreeßen/Rahindra Bayu K, S.ST
Lecturer	
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. GOC</p>
Objectives	Knowledge and skills in operative ship security
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 3 SWH lectures and 3 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (150 minutes) or oral examination (30 minutes)
ECTS-Credits	6 CR according ECTS
Workload	180 hours 6 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 23 Scientific Work
Module abbreviation	
Subject	Scientific work linked to MKDK
Responsible lecturer	Dra. Septina Dwi Retnandari, M.A.
Lecturer	
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
Objectives	Students will be able to express own minds and be able to apply
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) or alternative examination
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ none



Number/Code	
Module German	
Module English	PM 24 Economic and Maritime Business/Entrepreneurship/Plan Maintenance and Procurement
Module abbreviation	
Subject	Economic and maritime business/entrepreneurship and plan maintenance and procurement; linked to MKDK
Responsible lecturer	Hero Budi Santoso, M.M., M.Mar.
Lecturer	
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; ▪ Shipping Administration: the Federal Maritime Responsibilities Act, the layout of the maritime administration, the flags and registers law; ▪ 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); ▪ 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; ▪ Powers of port States: the input and checkout, port state control; ▪ International cooperation: cooperation within the EU, global collaboration (INMARSAT), International authorities.
Objectives	Knowledge and skills in maritime environment protection
Language	English
Teaching and Learning Methods	Lectures, seminars and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures, 2 SWH seminars, 1SWH exercise
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (150 minutes) or oral examination (30 minutes) or alternative examination
ECTS-Credits	6 CR according ECTS
Workload	180 hours 5 hours per week are in attendance
Maximum Attendees	



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
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Number/Code	
Module German	
Module English	PM 25 Maritime Claim and Insurance and Legal Aspects
Module abbreviation	
Subject	Rights and obligations sea trade-, ocean freight and marine insurance, linked to MKDK
Responsible lecturer	Retno Anggoro, S.ST, M.M.Tr.
Lecturer	
Content	<p>Contracts in the maritime transport: cargo, charter party- and special contracts;</p> <p>Persons subject to maritime law: shippers, supplier, charterers, contractor's 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; Transfiguration: concept of transfiguration, Captain, procedures, response to marine casualties' skills, measures</p>



	cargo damage; Salvage law: definitions, conditions, new regulations of IÜB, 1989; General Average: meaning and application of the York-Antwerp Rules, Dispatch process; Insurance Law: concepts, persons, contractual obligations, Direct hull.
Objectives	Knowledge and skills to assess right associated problems in shipping
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 3 SWH lectures, 3 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (150 minutes) or oral examination (30 minutes) or alternative examination
ECTS-Credits	6 CR according ECTS
Workload	180 hours 6 hours per week are in attendance
Maximum Attendees	
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



Number/Code	
Module German	
Module English	PM 26 Supply Chain Management and Port and Shipping Management
Module abbreviation	
Subject	Supply chain management and port and shipping management linked to MKDK
Responsible lecturer	Retno Anggoro, S.ST, M.M.Tr.
Lecturer	
Content	<p>Maritime transport: Fundamentals of transport :(mobility, market structures, organizational structures, performance characteristics and division of labour) Structure of the German merchant fleet: Payment and Delivery commercially, division of labour 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 labelling; The INCOTERMS, transport insurance, terms of payment, export credit insurance, escalation clauses and guarantees in foreign trade, commodity exchanges, barter, advocacy of German foreign trade abroad.</p>
Objectives	Understanding in connection of transport economics
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 1 SWH seminar
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) or alternative examination
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 3 hours per week are in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ Logistics and Supply Chain Management M. Christopher ▪ Port and Terminal Regulation A, Jennings



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| | <ul style="list-style-type: none">▪ ISGOTT, 5th Edition International Safety Guide for Oil Tankers and Terminals▪ Marine Terminal Management and Self-Assessment OCIMF |
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Number/Code	
Module German	
Module English	PM 27 Sea Internship I
Module abbreviation	
Subject	Internship on board, linked to PFKK
Responsible lecturer	Responsible professor for sea internship (Prof. Sven Dreeßen)
Lecturer	
Content	<p>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.</p>
Objectives	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.
Language	English
Teaching and Learning Methods	Internship
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	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
ECTS-Credits	30 CR according ECTS
Workload	900 hours
Maximum Attendees	
Literature	Not applicable



Number/Code	
Module German	
Module English	PM 28 Sea Internship II
Module abbreviation	
Subject	Internship on board, linked to PFKK
Responsible lecturer	Responsible professor for sea internship (Prof. Sven Dreeßen)
Lecturer	
Content	<p>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.</p>
Objectives	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.
Language	English
Teaching and Learning Methods	Internship
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	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
ECTS-Credits	30 CR according ECTS
Workload	900 hours
Maximum Attendees	
Literature	Not applicable



Number/Code	
Module German	
Module English	PM 29 Emergency Management III & Supplementary Courses
Module abbreviation	
Subject	Emergency management and safety related courses
Responsible lecturer	Prof. Dr.-Ing. Sven Dreeßen
Lecturer	
Content	Enhanced emergency management including operational safety, safety of the maritime environment and marine accident investigation. Passenger safety, crowd and crisis management Intact and damaged stability on loading computers
Objectives	This module qualifies the student for enhanced safety management on board of ships.
Language	English
Teaching and Learning Methods	Lectures and seminars
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 2 SWH lectures and 2 SWH seminars
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of written examination (120 minutes) or oral examination (30 minutes) or alternative examination
ECTS-Credits	4 CR according ECTS
Workload	120 hours, 4 hours per week are in attendance
Maximum Attendees	
Literature	▪ None



Number/Code	
Module German	
Module English	PM 30 Applied Ship Operation
Module abbreviation	
Subject	Complex ship operation including technical aspects and leadership
Responsible lecturer	Prof. Dr.-Ing. Thomas Böcker/Prof. Dr.-Ing. Sven Dreeßen
Lecturer	
Content	Complex ship operation in situations through the coupling of the ship handling and ship engine simulator. Deepening technical understanding from a nautical point of view as well as in-depth nautical-technical point of view. Leading groups of people to solve the tasks, joint solution of complex tasks.
Objectives	After successful completion of this module, students will be able to do or have the following the following abilities or skills: <ul style="list-style-type: none"> ▪ recognise and evaluate complex interrelationships in maritime transport systems; ▪ competence to deal with complex and critical situations; ▪ systems thinking, ▪ ability to resolve conflicts, ▪ organisation and leadership of the crew, ▪ setting orders and procedures for the watchkeeping, ▪ ensuring a safe navigation, ▪ manoeuvring and handling the vessel in all conditions, and conditions, ▪ responding to emergencies while operating the vessel, ▪ transmitting and receiving information, ▪ performing the radio service, ▪ making optimum use of the means available on board, operational management and ensuring safety
Language	English
Teaching and Learning Methods	Lectures and simulator training
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 1 SWH lecture, 6 SWH simulator training
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Successful passing of oral examination (45 minutes) or alternative examination
ECTS-Credits	7 CR according ECTS
Workload	270 hours, 7 hours per week are in attendance
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ None



Number/Code	
Module German	
Module English	PM 31 Project Week
Module abbreviation	
Subject	IMO relevant training courses
Responsible lecturer	Prof. Sven Dreeßen
Lecturer	
Content	Bridge resource management, Ship security officer, crowd & crisis management, SAR, person over board
Objectives	Formation of skills in field of leadership as well as skills in field of ship security through intensive training.
Language	English
Teaching and Learning Methods	Lectures and exercises
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	1 semester with 1 SWH lecture, 6 SWH simulator training
Frequency	
Prerequisites for Participating	none
Preliminary examination	
Requirements for awarding credit points	Successful passing of oral examination (45 minutes) or alternative examination
ECTS-Credits	7 CR according ECTS
Workload	270 hours, 7 hours per week are in attendance
Maximum Attendees	
Literature	IAMSAR Manual, IMO



Number/Code	
Module German	
Module English	PM 32 Bachelor-Thesis
Module abbreviation	
Subject	Bachelor thesis
Responsible lecturer	Two professors each (research assistant/company supervisor alternatively as second appraiser)
Lecturer	
Content	Chosen issue for the bachelor thesis, close connected to the content of the degree course.
Objectives	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.
Language	English
Teaching and Learning Methods	Self-study and consultations
Type and usability	This module is applicable in the degree course nautical sciences/ transport operation
Duration	12 weeks
Frequency	
Prerequisites for Participating	None
Preliminary examination	
Requirements for awarding credit points	Written bachelor thesis and colloquium
ECTS-Credits	12 CR according ECTS
Workload	360 hours
Maximum Attendees	
Literature	<ul style="list-style-type: none"> ▪ To be decided by the student according to the chosen topic