

# Module Handbook and Bibliography: Nautical Science and Maritime Transport

As of October 15, 2026

## Learning Outcomes of the Nautical Science and Maritime Transport Program

The learning outcomes for the Nautical Science and Maritime Transport program are designed so that, upon successful completion of their studies, students receive not only a Bachelor of Science degree but also a certificate of competency as a watch officer for seagoing vessels without restrictions. Graduates will then possess a broad and interdisciplinary knowledge and understanding of the scientific contexts within the nautical/maritime field. A minimum standard for the training of seafarers is mandatorily prescribed by the IMO (International Maritime Organization) and has also been incorporated into German law. Some of the technical, practical, methodological, and social competencies are derived from the current version of the STCW Convention. These largely cover the qualification objectives required for qualified employment.

### **Scientific Competence:**

Scientific competencies are taught in the modules of the introductory phase as well as in the modules of the advanced phase and in the required elective courses designed for in-depth study.

In the individual subject-specific modules, the technical and academic requirements are addressed alongside the aspects of knowledge and understanding (dissemination, deepening, and comprehension of knowledge), the use, application, and generation of knowledge (utilization and transfer, scientific innovation), communication and cooperation, as well as scientific self-awareness and professionalism; in the bachelor's thesis, students have the opportunity to demonstrate their subject-specific and scientific competence.

### **Ability to pursue a qualified career:**

Graduates possess analytical and problem-solving skills, including the ability to think in an interconnected manner—focusing on the use, application, and generation of knowledge—in the following areas of competence:

#### · Vessel navigation

- Planning and executing a voyage, as well as determining and assessing position,
- maintaining a safe bridge watch,
- Use of radar and ARPA systems to ensure navigational safety,
- Use of Electronic Chart Display and Information Systems (ECDIS)

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to ensure the safety of navigation,

- responding appropriately to emergency situations and distress signals at sea,
- Use of IMO standard maritime phrases and written and spoken English,
- Sending and receiving messages via visual signaling,
- Ship maneuvering and the understanding of fundamental hydrodynamic relationships,
- understanding and evaluation of weather forecasts and oceanographic conditions

### · Cargo handling and stowage

- Supervision of loading, stowage, securing, and unloading, as well as care of the cargo during the voyage,
- Inspection and assessment of cargo holds, hatch covers, and ballast tanks, as well as reporting of defects and damage to these and to the cargo,
- Knowledge of regulations governing the transport of dangerous goods,

### · Management of ship operations and care for persons on board

- Knowledge of the pollution prevention regulations and Ensuring compliance,
- maintaining and assessing the ship's seaworthiness,
- Planning and directing firefighting operations,
- deployment of rescue equipment,
- Providing first aid on board,
- monitoring legal regulations,
- Understanding and applying the fundamentals of shipbuilding, as well as the theories and factors that influence trim and stability, and evaluating them,
- Knowledge of the law of the sea as embodied in international treaties and conventions,

### · Radio communications

- Sending and receiving messages using GMDSS equipment

The learning objectives are taught in accordance with the intended level of responsibility (management level and operational level). The module descriptions refer to the corresponding competency that the module covers in accordance with STCW.

### **Competence in social engagement and personal development:**

Learning, social, and key competencies are integrated to a certain extent into every module. With regard to key qualifications and the learning objectives related to personal development, the Social Credit Points deserve special mention. Students are equipped to assume leadership positions in ship operations. Intercultural aspects are also integrated into this process. Teamwork skills are taught. Given the distinctly international nature of the shipping industry, it is a key priority of the department to provide its students not only with strong English language skills but also with exposure to other cultures (through seminars and electives). Students are guided and empowered to professionalize their future professional and social interactions and communication—with an eye toward an international environment

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—and to critically reflect on their own actions.

The Bachelor's program in Nautical Science and Maritime Transport prepares students for nautical leadership positions aboard ships and for leadership roles in the maritime industry and administration.

The qualifications and course content taught in the program go far beyond the nautical competencies required by the STCW and, through the selection of a study profile, intensively prepare students for future careers in the secondary nautical labor market.

## Notes on the Handbook

All modules with a number listed in the "Semester" field are offered every semester. The program begins in the summer semester and **the winter semester. Starting in 2022, the summer semester will be taught in English and the winter semester in German.** This means that all required lectures will be offered each semester, once in English and once in German. The instructor will inform students at the beginning of the semester in which language the course will be taught. For now, the following rule applies:

Summer Semester lectures: 1st academic semester in English (starting in 2022), 3rd academic semester in English (starting in 2023),  
5th semester in English (starting in 2024)

Winter Semester Lectures: 4th semester in English (starting in 2023), 6th semester in English (starting in 2024),

8. semester in English (starting in 2025)

**In order to cover German shipping law in accordance with BSH requirements in German, the lectures on Private Commercial Law and Public Maritime Law are always taught in German.**

**In these German-language lectures, anyone can demonstrate German language proficiency at the B2 level or higher.**

Otherwise, for a course taught and examined in German, German language proficiency must be demonstrated in accordance with:

- German Language Test for University Admission, Level 2 (DSH 2), or
- Test of German as a Foreign Language, Level 4, in all four sections (TestDaF).

Profile modules are often drawn from the Maritime Technology and Shipping Management program or the new Maritime Industrial Engineering program and are offered either in the summer semester or the winter semester. This is then noted in the "Semester" field.

## Bibliography

At the end of the module handbook, there is a bibliography for each module that teaches STCW competencies. To keep the list manageable, we have omitted references to IMO regulations, academic publications, and journals.

## Term Papers as a Form of Assessment

As a general rule, papers are expected to be 20 pages long and to adhere to academic standards for research and citation.

| Abbrev.                      | Meaning                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1st PS                       | 1st practical semester                                                                                                                                                                                   |
| 3 months Bachelor's thesis   | Writing the bachelor's thesis within 3 months                                                                                                                                                            |
| AIS                          | Automatic Identification System                                                                                                                                                                          |
| ARPA                         | Automatic Radar Plotting Aid                                                                                                                                                                             |
| B                            | Practical Training                                                                                                                                                                                       |
| B + K2/H                     | Practical Work Experience and Exam (2 hours) or Term Paper                                                                                                                                               |
| B2                           | Foreign Language Proficiency Level                                                                                                                                                                       |
| BA                           | Bachelor's Thesis                                                                                                                                                                                        |
| BEP                          | Vocational Entrance Exam                                                                                                                                                                                 |
| BGB                          | German Civil Code                                                                                                                                                                                        |
| BPO                          | Bachelor's Degree Examination Regulations                                                                                                                                                                |
| BRZ                          | Gross Tonnage                                                                                                                                                                                            |
| BSH                          | Federal Office of Hydrography                                                                                                                                                                            |
| ECDIS                        | Electronic Chart Display and Information System                                                                                                                                                          |
| ECTS                         | European Credit Transfer and Accumulation System                                                                                                                                                         |
| EEDI                         | Energy Efficiency Design Index                                                                                                                                                                           |
| EEOI                         | Energy Efficiency Operating Indicator                                                                                                                                                                    |
| ELCD                         | European Reference Life Cycle Database / Database resulting from an initiative of the European Commission                                                                                                |
| EMAS                         | Voluntary participation of organizations in a Community system for environmental management and environmental auditing                                                                                   |
| GEMIS                        | Global Emissions Model of Integrated Systems                                                                                                                                                             |
| GENCON                       | A charter party form for ships, developed by BIMCO                                                                                                                                                       |
| GMDSS                        | Global Maritime Distress and Safety System                                                                                                                                                               |
| H                            | Homework                                                                                                                                                                                                 |
| IAMSAR                       | International Aeronautical and Maritime Search and Rescue Manual                                                                                                                                         |
| IHM List                     | Inventory of Hazardous Materials - List                                                                                                                                                                  |
| IMARSAT                      | International Maritime Satellite Organization                                                                                                                                                            |
| IMO                          | International Maritime Organization                                                                                                                                                                      |
| ISM                          | International Safety Management                                                                                                                                                                          |
| ISO                          | International Organization for Standardization                                                                                                                                                           |
| K1/eA/H/R                    | 1-hour exam or experimental assignment or term paper or presentation                                                                                                                                     |
| K1+H                         | 1-hour exam and term paper                                                                                                                                                                               |
| K1+R                         | 1-hour exam and presentation                                                                                                                                                                             |
| K2 / H / R                   | 2-hour exam or term paper or presentation                                                                                                                                                                |
| K2 + B                       | 2-hour exam and practical work experience                                                                                                                                                                |
| K2/A                         | 2-hour written exam or multiple-choice exam                                                                                                                                                              |
| K2/H                         | 2-hour written exam or term paper                                                                                                                                                                        |
| K2/H/A                       | 2-hour exam, term paper, or multiple-choice test                                                                                                                                                         |
| K2/M                         | 2-hour written exam or oral exam                                                                                                                                                                         |
| K2/R                         | 2-hour written exam or presentation                                                                                                                                                                      |
| M/A + K2/H                   | Oral exam or multiple-choice test and 2-hour written exam or term paper                                                                                                                                  |
| M/A + K4                     | Oral exam or multiple-choice test and 4-hour written exam                                                                                                                                                |
| MariMedV                     | Maritime Medicine Regulation                                                                                                                                                                             |
| MARPOL                       | International Convention for the Prevention of Pollution from Ships                                                                                                                                      |
| MFAG                         | Medical First Aid Guide/Guidelines for Medical First Aid in Accidents Involving Hazardous Goods                                                                                                          |
| MTSM                         | Maritime Technology and Shipping Management                                                                                                                                                              |
| NEEDS                        | The NEEDS database contains data on the life-cycle costs of future energy supply systems, materials, and transportation services                                                                         |
| P&I                          | Protection and Indemnity/Shipping Insurance                                                                                                                                                              |
| PDCA Cycle                   | Control loop of the continuous improvement process (Plan-Do-Check-Act)                                                                                                                                   |
| PL                           | Exam score                                                                                                                                                                                               |
| PVL + 2 x PL                 | Preliminary exam performance and 2x exam performance                                                                                                                                                     |
| PVL + PL                     | Preliminary exam and exam                                                                                                                                                                                |
| QM                           | Quality Management                                                                                                                                                                                       |
| QMS                          | Quality Management System                                                                                                                                                                                |
| R                            | Department                                                                                                                                                                                               |
| RORO                         | Roll-on/roll-off                                                                                                                                                                                         |
| SAR                          | Search and Rescue                                                                                                                                                                                        |
| Maritime Training Regulation | Seafarers' Qualification Regulations                                                                                                                                                                     |
| SEEMP                        | Ship Energy Efficiency Management Plan                                                                                                                                                                   |
| SL                           | Academic Achievement                                                                                                                                                                                     |
| SL+PL                        | Academic Performance and Examination Results                                                                                                                                                             |
| SOLAS                        | International Convention for the Safety of Life at Sea/International Convention for the Protection of human life at sea                                                                                  |
| SOS                          | Save Our Souls—Emergency Call                                                                                                                                                                            |
| SS/WS                        | Summer Semester and Winter Semester                                                                                                                                                                      |
| SSO                          | Ship Safety Officer                                                                                                                                                                                      |
| STCW (Convention)            | International Convention (IC) on Standards of Training, Certification, and Watchkeeping for Seafarers / International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers |
| SWS                          | Semester-Week Hours                                                                                                                                                                                      |
| Table A-II/1 or /2           | Relevant table in the STCW                                                                                                                                                                               |
| TRB                          | Training Record Book                                                                                                                                                                                     |
| Ü                            | Exercise                                                                                                                                                                                                 |
| V                            | Lecture                                                                                                                                                                                                  |



Semester 1.

## Translation, the German version is binding

Module English

Responsible Walden Type Required module ECTS 5

Recommendation/Prerequisites SWS 4

Self-study hours 53

Profile Classroom instruction hours 72

Exam Type K2/H Navigation ☒ MTSM German ☐ English ☒

Exam Format PL ☒ Attendance required ☐

Semester 1 Course Offering Summer/Winter Foundation Program ☒ Advanced Studies ☐

Learning Outcomes

Students will be able to communicate and collaborate at the B2 proficiency level, as defined by the Common European Framework of Reference for Languages. In doing so, they can understand, summarize, and analyze the main content of complex texts on concrete and abstract topics (e.g., ships and their tasks, cargo and crew, cargo handling, containerization, shipping documents (e.g., Bill of Lading, Charter Parties), safety aboard the ship, illness on board, intercultural awareness).

Furthermore, they can understand and actively participate in specialized discussions within their own field.

In doing so, they can express themselves clearly and in detail on a wide range of topics, explain a point of view on a current issue, and outline the advantages and disadvantages of various options. This reinforces the following key competencies: willingness to learn, perseverance, independence, abstract and interconnected thinking, creativity, communication, and cooperation in the foreign language

Course Content

The instructor teaches students

- Grammar
- Reading Comprehension
- Communication skills (oral)
- Writing skills

Competency Table A-II/1 Use of IMO standard maritime phrases and written and spoken English

Competency Table A-II/2 No relation to A-II/2

Additional remarks

Certificates

| Instructor | Course    | Teaching and Learning Methods |
|------------|-----------|-------------------------------|
| rse        | Cou       |                               |
| Walden     | 4 English | Lecture + Discussion          |

|                              |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--------------------------------------------|-------------------------------------|--|------|--|--|-------------------------------------|--|--------|-------------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|------------------|--|--------------------------|--|--------------------------|
| Semester                     | 1.                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |  |  |  | Translation, the German version is binding |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Module                       | Mathematics 1                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Responsible                  | Bentin                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |  |  |  | Type                                       | Required module                     |  |      |  |  |                                     |  |        |                                     |  | ECTS                                | 5                                   |                                     |                             |                  |  |                          |  |                          |
| Recommendation/Prerequisites |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  | SWS                                 | 4                                   |                                     |                             |                  |  |                          |  |                          |
| Profile                      |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  | Self-study hours                    | 53                                  |                                     |                             |                  |  |                          |  |                          |
| Exam Type                    | K2/H                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |  |  | Navigation                                 | <input checked="" type="checkbox"/> |  | MTSM |  |  | <input checked="" type="checkbox"/> |  | German | <input checked="" type="checkbox"/> |  | English                             | <input checked="" type="checkbox"/> |                                     | Classroom instruction hours | 72               |  |                          |  |                          |
| Exam Format                  | PL                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  | <input checked="" type="checkbox"/> |                                     | Attendance required                 |                             |                  |  | <input type="checkbox"/> |  |                          |
| Semester                     | 1                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |  | Course Offering                            | Summer/Winter                       |  |      |  |  |                                     |  |        |                                     |  | Foundation Program                  |                                     | <input checked="" type="checkbox"/> |                             | Advanced Studies |  |                          |  | <input type="checkbox"/> |
| Learning Outcomes            | Students will be able to solve mathematical models of technical, nautical, and economic problems, taking into account propositional logic, functions and number systems, analytical geometry in vector form, and systems of linear equations.                                                                                                                  |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Course Content               | The instructor teaches students:<br>- Set Theory<br>- Functions<br>- Limits<br>- Continuity<br>- Elementary functions<br>- Coordinate Systems<br>- Conic Sections<br>- Numbers (Real and Complex)<br>- Matrix Algebra and Systems of Equations with Determinants<br>- Vector Algebra<br>These topics can be defined, and computational problems can be solved. |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Competency Table A-II/1      | No relation to A-II/1                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Competency Table A-II/2      | No relation to A-II/2                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Additional Notes             |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Certificates                 |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  |                                            |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Instructor                   |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  | Course                                     |                                     |  |      |  |  |                                     |  |        |                                     |  | Teaching and Learning Methods       |                                     |                                     |                             |                  |  |                          |  |                          |
| rse                          |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  | Cou                                        |                                     |  |      |  |  |                                     |  |        |                                     |  |                                     |                                     |                                     |                             |                  |  |                          |  |                          |
| Göken                        |                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |  | 4                                          | Mathematics 1                       |  |      |  |  |                                     |  |        |                                     |  | Lecture + Discussion                |                                     |                                     |                             |                  |  |                          |  |                          |

# Translation, the German version is binding

Semester 1.

Module Fundamentals of Navigation

Instructor Vahs Type Required module ECTS 10

Recommendation/Prerequisites SWS 8

Profile Self-study hours 92  
Classroom study hours 148

Exam Type K2/A; K1/A; B Navigation ☒ MTSM ☐ German ☒ English ☒

Exam Format SL Attendance required ☐

Semester 1 Course Offering Spring/Fall Foundation Program ☒  
Advanced Studies ☐

Learning Objectives

Students are able to perform bridge watch duties safely, taking into account the relevant procedures and precautions for watchkeeping.  
In doing so, they can perform deck watch duties and identify the relevant conventions, laws, and regulations. Furthermore, they can describe the organizational structure and responsibilities of maritime administration authorities, including the investigation of maritime accidents.

Students can monitor compliance with legal regulations. To this end, they monitor and review the legal provisions and measures designed to ensure the safety of life at sea, security, and the protection of the marine environment.  
In particular, they can identify, understand, and apply the relevant legal provisions (international conventions and national laws), understand the activities of international organizations and their legal and enforcement powers, identify the organizational structure and responsibilities of maritime administration authorities, and understand the functions of the flag state and the ship registry.

Students can contextualize aspects of general ship management and, specifically, green shipping.  
In doing so, they can describe typical processes and identify and evaluate connections to environmental protection, e.g., the advantages of routing methods and the use of specific environmentally friendly ship propulsion systems with regard to climate protection. Furthermore, they can develop specific methods in the form of projects, e.g., the collection, processing, and interpretation of nautical data.

Course Content

The instructor provides students with basic knowledge and insights in the following areas:  
Knowledge and skills in the areas of navigation and meteorology:

- Knowledge of buoyage and lighting systems
- familiarity with nautical instruments and publications
- Understanding of meteorological parameters and units
- Ability to observe the weather and use meteorological instruments
- Ability to read and interpret weather charts
- Knowledge of relevant technical terms in German and English

Knowledge and skills in the area of watchkeeping and occupational safety:

- Knowledge of watchkeeping procedures and structures in port and at sea
- Steering a ship
- Familiar with the duties of a lookout
- Understand the aspects of a safe bridge watch

## Module

## Fundamentals of

## Navigation

- Be familiar with occupational safety and accident prevention regulations
- are familiar with emergency plans
- understand the procedures for mooring and unmooring a ship
- be familiar with relevant technical terms in German and English Knowledge and skills in the field of marine engineering:
- General knowledge of marine engineering systems
- Basic knowledge of shipbuilding
- Basic knowledge of cargo handling
- Relevant technical terms in German and English

The instructor teaches students

- the history and legal sources of international maritime law
- Spatial Planning under the United Nations Convention on the Law of the Sea
- Freedom of navigation and the flag state principle—dispute resolution by the International Tribunal for the Law of the Sea
- The structure and functions of the IMO
- Lawmaking by international organizations
- International Conventions on Ship Safety and Marine Environmental Protection
- Flag and Registry Law, Responsibilities of the Flag State
- Functions and Activities of Classification Societies
- Organizational Structure and Jurisdiction in Maritime Administration

The instructor teaches students the fundamentals in the following areas:

- project-based work
- ship handling
- Collection and processing of nautical data
- Fundamentals of voyage planning
- Green shipping (selected topics)
- Basic principles of climate-neutral shipping

## Table A-II/1 Qualifications

Conducting a Safe Watch; Monitoring Compliance with Legal Requirements

## Qualification Table A-II/2

Establishing procedures and arrangements for watchkeeping; monitoring and verifying compliance with statutory requirements and measures to ensure the safety of life at sea, security, and the protection of the marine environment

## Additional Notes

## Certificates

## Instructor

## Course

Teaching and Learning  
Methods

rse

Cou

Vahs

2

Maritime Project

Ü

Beelmann

4

Nautical Fundamentals

V + Ü

Müller

2

Public Maritime Law

V + Ü

Semester 1.

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Module Navigation

|                              |       |                 |                                          |                             |                                             |
|------------------------------|-------|-----------------|------------------------------------------|-----------------------------|---------------------------------------------|
| Instructor                   | Knoop | Type            | Required module                          | ECTS                        | 5                                           |
| Recommendation/Prerequisites |       |                 |                                          | SWS                         | 4                                           |
| Profile                      |       |                 |                                          | Self-study hours            | 53                                          |
| Exam Type                    |       |                 |                                          | Classroom instruction hours | 72                                          |
| Exam Type                    | K2/H  | Navigation      | <input checked="" type="checkbox"/> MTSM | German                      | <input checked="" type="checkbox"/> English |
| Exam Format                  | PL    |                 | <input checked="" type="checkbox"/>      | Attendance required         | <input type="checkbox"/>                    |
| Semester                     | 1     | Course Offering | Summer/Winter                            | Foundation Program          | <input checked="" type="checkbox"/>         |
|                              |       |                 |                                          | Advanced Studies            | <input type="checkbox"/>                    |

**Learning Outcomes**

Students will be able to plan and carry out a voyage and determine their nautical position by applying and using terrestrial navigation methods, navigational information systems, and control procedures. In doing so, they will be able to evaluate the accuracy of the position determination.

**Course Content**

The instructor teaches students:

- How to perform course/bearing measurements and terrestrial compass checks
- Determine a vessel's position using terrestrial methods
- Evaluate the accuracy of position determination
- Perform coastal navigation using nautical charts (paper charts and ECDIS)
- Carry out navigational trip planning
- Understand map projections and geographic coordinate systems
- Use charts in Mercator projection and spherical projection
- Use nautical documents (charts, nautical publications, and their corrections)
- Determine tidal values and tidal currents, and navigate while taking currents and wind into account

Qualification Table A-II/1 Planning and Executing a Voyage and Determining Position

Qualification Table A-II/2 Voyage planning and navigation; position determination and accuracy—additional notes

Certificates

|            |              |                               |
|------------|--------------|-------------------------------|
| Instructor | Course       | Teaching and learning methods |
| rse        | Cou          |                               |
| Knoop      | 4 Navigation | V + Ü                         |

# Translation, the German version is binding

Semester 1.

Module Physics

Responsible Göken Type Required module ECTS 5

Recommendation/Prerequisites SWS 4

Profile Self-study hours 53

Exam Type K2/H Navigation ☒ MTSM Classroom instruction hours 72

Exam Format PL ☒ German ☒ English ☒

Semester 1 Course Offering Summer/Winter Attendance required ☐

Foundation Program ☒ Advanced Studies ☐

Learning Objectives Students will be able to apply abstract scientific thinking to nautical examples based on a fundamental understanding of forces and motion in nature and technology, as well as basic skills in quantitative, problem-solving thinking. In doing so, they learn to apply their knowledge and understanding of physics to their work or profession in order to develop and refine solutions and arguments in their field, draw scientifically sound conclusions, take social, scientific, and ethical insights into account, exchange information, ideas, problems, and solutions with experts and laypeople, and assume responsibility within a team.

Course Content The instructor teaches students the fundamentals in the following areas:

- physical quantities and measurement errors
- Dynamics, the concept of force
- Work and energy
- Conservation of energy
- Collisions
- Potential diagrams
- Kinematics of Translational Motion
- Dynamics of Rotational Motion
- Rigid bodies, their center of mass, and moment of inertia
- Oscillations

Competency Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional notes

Certificates

|            |           |                               |
|------------|-----------|-------------------------------|
| Instructor | Course    | Teaching and Learning Methods |
| rse        | Cou       |                               |
| Meyer      | 4 Physics | Lecture + Discussion          |

|            |                         |                                            |                 |      |    |  |
|------------|-------------------------|--------------------------------------------|-----------------|------|----|--|
| Semester   | 2.                      | Translation, the German version is binding |                 |      |    |  |
| Module     | Practicum<br>Semester 1 |                                            |                 |      |    |  |
| Instructor | Beelmann                | Type                                       | Required module | ECTS | 30 |  |

|                                  |                                                                 |     |          |  |  |  |
|----------------------------------|-----------------------------------------------------------------|-----|----------|--|--|--|
| Recommendation/<br>Prerequisites | Valid seafarer's medical certificate; valid Basic Safety Course | SWS | 26 weeks |  |  |  |
|----------------------------------|-----------------------------------------------------------------|-----|----------|--|--|--|

|             |             |            |                                     |                     |                          |                                     |
|-------------|-------------|------------|-------------------------------------|---------------------|--------------------------|-------------------------------------|
| Profile     |             |            | Self-study hours                    | 750                 |                          |                                     |
| Exam Type   | Certificate | Navigation | <input checked="" type="checkbox"/> | MTSM                | <input type="checkbox"/> |                                     |
| Exam Format | SL          |            |                                     | German              | <input type="checkbox"/> | English <input type="checkbox"/>    |
|             |             |            |                                     | Attendance Required | <input type="checkbox"/> |                                     |
| Semester    | 2nd         | Course     |                                     |                     | Undergraduate Program    | <input checked="" type="checkbox"/> |
|             |             |            |                                     |                     | Advanced Studies         | <input type="checkbox"/>            |

**Learning Objectives**

The goal of the first practical semester is to become familiar with the maritime profession. The aim is to gain as much practical professional experience and related skills as possible, which will form the foundation for the subsequent theoretical training. The qualification objectives are specified by the STCW Convention and the Seafarers' Qualification Ordinance, as amended.

**Curriculum**

The training during the first 6-month internship is intended to familiarize students with all aspects of ship operations; particular emphasis should be placed on hands-on practical training during this period. In addition to routine tasks, students should be given the opportunity to participate in all training-intensive maintenance and repair work. Although training in bridge watch should also be provided during the first semester, this should not be the sole focus. In particular, students should be familiarized with work procedures on deck and in the engine room, with the operation of systems and equipment, with safety and firefighting procedures, as well as with cargo-related activities and duties during bridge watch and watch duty. During their time on board, students will document these topics under the supervision of the captain and the training officer in the training logbook published by the BSH, the "On Board Training Record Book for Navigational Officer's Assistant." The basis for practical training on board is provided by §30 of the German Maritime Training Regulations (See-BV) and the "Guidelines for Practical Training and Sea Service as a Nautical Officer's Assistant."

Qualification Table A-II/1

Qualification Table A-II/2

Additional Notes

Certificates

|            |                                |                               |
|------------|--------------------------------|-------------------------------|
| Instructor | Course                         | Teaching and Learning Methods |
| rse        | Cou                            |                               |
| Beelmann   | Practicum Semester 1, 26 weeks | Internship                    |

# Translation, the German version is binding

Semester 3.

Module Business Administration

|                              |          |                 |                                     |                     |                                     |
|------------------------------|----------|-----------------|-------------------------------------|---------------------|-------------------------------------|
| Instructor                   | Heilmann | Type            | Required module                     | ECTS                | 5                                   |
| Recommendation/Prerequisites |          |                 |                                     | SWS                 | 4                                   |
| Profile                      |          |                 |                                     | Self-study hours    | 53                                  |
| Exam Type                    | K2/H     | Navigation      | <input checked="" type="checkbox"/> | MTSM                |                                     |
| Exam Format                  | PL       |                 | <input checked="" type="checkbox"/> | German              | <input checked="" type="checkbox"/> |
|                              |          |                 |                                     | English             | <input checked="" type="checkbox"/> |
|                              |          |                 |                                     | Attendance required | <input type="checkbox"/>            |
| Semester                     | 3        | Course Offering | Summer/Winter                       | Foundation Program  | <input checked="" type="checkbox"/> |
|                              |          |                 |                                     | Advanced Studies    | <input type="checkbox"/>            |

**Learning Objectives**

Students will be able to understand, analyze, and evaluate the fundamental economic relationships within a company.

To this end, they can organize, plan, and independently perform management functions in maritime companies, as well as independently acquire new knowledge and skills in the field of business administration fundamentals.

This strengthens the following key competencies: analytical skills, willingness to learn, perseverance, independence, and flexibility.

**Course Content**

The instructor teaches students the fundamentals in the following areas:

- Accounting
- Financial Reporting
- Cost Accounting
- Financing
- Investment
- Legal Structures
- Specifics of Maritime Businesses and Maritime Markets
- Principles of Economics (Price Formation in Markets)

Qualification Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No relation to A-II/2

Additional notes

Certificates

| Instructor | Course                    | Teaching and Learning Methods |
|------------|---------------------------|-------------------------------|
| rse        | Cou                       |                               |
| Heilmann   | 4 Business Administration | V + Ü                         |

Semester 3.

## Translation, the German version is binding

Module Computer Science

Responsible Werning

Type Required module

ECTS 5

Recommendation/Prerequisites

SWS 4

Profile

Self-study hours 53

Classroom instruction hours 72

Exam Type K2/H

Navigation ☒

MTSM

German ☒ English ☒

Exam Format PL

☒

Attendance required ☐

Semester 3.

Course Offering Summer/Winter

Foundation Program ☒

Advanced Studies ☐

Learning Objectives

Students can describe the hardware and software configurations of a PC and its peripherals. To this end, they can use general and subject-specific applications, develop simple programs, and understand them. This strengthens the following key competencies: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, and creativity.

Course Content

The instructor teaches students the fundamentals in the following areas:

- History and subfields of computer science
  - Storage and interpretation of information
  - Hardware components of a computer
  - Basic functions, architecture, and services of operating systems
  - Fundamentals of computer networking
- In addition, the following topics are taught and applied in Java programming:
- Data types, operators, and loop structures
  - Formulation of algorithms
  - Object-oriented programming
  - Development of simple maritime application programs

Qualification Table A-II/1

No reference to A-II/1

Qualification Table A-II/2

No reference to A-

II/2 Additional Notes

Certificates

Instructor

Course  
Cou

Teaching and Learning  
Methods

rse

Werning

4 Computer Science

Lecture + Seminar

Semester 3.

## Translation, the German version is binding

Module Mathematics 2

|                              |        |                 |                                          |                                     |                                             |
|------------------------------|--------|-----------------|------------------------------------------|-------------------------------------|---------------------------------------------|
| Responsible                  | Bentin | Type            | Required module                          | ECTS                                | 5                                           |
| Recommendation/Prerequisites |        |                 |                                          | SWS                                 | 4                                           |
| Profile                      |        |                 |                                          | Self-study hours                    | 53                                          |
| Exam Type                    | K2/H   | Navigation      | <input checked="" type="checkbox"/> MTSM | Classroom instruction hours         | 72                                          |
| Exam Format                  | PL     |                 | <input checked="" type="checkbox"/>      | German                              | <input checked="" type="checkbox"/> English |
| Semester                     | 3      | Course Offering | Summer/Winter                            | Attendance required                 | <input type="checkbox"/>                    |
|                              |        |                 | Foundation Program                       | <input checked="" type="checkbox"/> |                                             |
|                              |        |                 |                                          | Advanced Studies                    | <input type="checkbox"/>                    |

**Learning Objectives**

Students will be able to formulate the fundamentals of differential and integral calculus and apply them to specific problems.  
To this end, they can fit discrete data using polynomials, exponential, and trigonometric functions—i.e., reconstruct them—and mathematically interpret the behavior of physical and technical measurement curves.  
This strengthens the following key competencies: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, and creativity

**Course Content**

The instructor teaches students how to perform calculations in the following areas:

- Differential calculus for functions of one and multiple variables (partial differential, total differential, logarithmic differentiation, implicit differentiation)
- Extreme value problems with error analysis
- Approximation methods
- Integral calculus (definite and indefinite integrals, integration by parts, partial fraction decomposition)
- Improper integrals (area calculations, solids of revolution, arc lengths)
- Multiple integrals
- Differential Equations (ordinary, partial, linear, and exact differential equations; higher-order differential equations; solution methods, including those of Lagrange and Bernoulli)

Qualification Table A-II/1 No reference to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional notes

Certificates

|            |                 |                               |
|------------|-----------------|-------------------------------|
| Instructor | Course          | Teaching and Learning Methods |
| rse        | Cou             |                               |
| Göken      | 4 Mathematics 2 | Lecture + Discussion          |

Semester 3.

## Translation, the German version is binding

Module Meteorology

Instructor Göken

Type Required  
module

ECTS 5

Recommendation/Prerequisites

SWS 4

Self-study hours 53

Profile

On-campus course, 72 hours:

Exam Type K2/H

Navigation ☒

MTSM

German ☒ English ☒

Exam Format PL

☒

Attendance is required ☐

Semester 3

Course Offering Summer/Winter

Foundation Program ☒

Specialized Studies ☐

Learning Objectives

Students will be able to incorporate meteorological and oceanographic factors into the planning and execution of a voyage.  
To this end, they develop a deeper understanding of the physical conditions and processes of the atmosphere, can explain the structure of meteorological instruments, and acquire the ability to use and interpret information from shipboard meteorological instruments. In addition, they gain fundamental knowledge of the characteristics of various weather systems, can develop meteorological reporting procedures and recording systems, and can identify and differentiate meteorological parameters to make route-related decisions based on them.  
Students are able to exchange information, ideas, problems, and solutions with experts and laypeople alike, and take on responsibility within a team.

Course Content

The instructor teaches students

- the fundamentals of meteorology and how meteorological measuring instruments work
- the chemical composition of the atmosphere
- the thermodynamic properties of the atmosphere
- the vertical structure of the atmosphere
- the forces in a rotating reference frame
- horizontal air movements
- Air masses and their classification
- General circulation and the westerly drift
- Weather in the tropics and the polar regions
- Reading, understanding, and analyzing weather information
- the basics of oceanography
- The danger posed by tropical cyclones and how to navigate around affected areas
- Meteorological trip planning

Competency Table A-II/1

Planning and conducting a voyage, as well as determining position

Competency Table A-II/2

Voyage planning and navigation; forecasting meteorological and oceanographic conditions

Additional Notes

Certificates

# Translation, the German version is binding

Semester

Module 3r

Instructor

rse

Göken

Meteorology

Course

Cou

Teaching and Learning  
Methods

4 Meteorology

Lecture + Lab

Semester 3.

## Translation, the German version is binding

Module Ship Theory

Instructor Bentin

Type Required  
module

ECTS 5

Recommendation/Prerequisites

SWS 4

Self-study hours 53

Profile

Classroom study hours 72

Exam Type K2/H

Navigation ☒ MTSM ☐

German ☒ English ☒

Exam Format PL

Attendance required ☐

Semester 3  
Advanced Studies

Course  
☐

Summer/Winter

Undergraduate Program ☒

Learning Objectives

Students are able to maintain a ship's seaworthiness by monitoring and complying with legal regulations, particularly by managing trim, stability, and tension. In doing so, they take into account legal regulations and measures designed to ensure the safety of human life at sea, as well as security and the protection of the marine environment.

To this end, students can apply fundamental principles of naval architecture, calculate, analyze, and evaluate a ship's buoyancy, stability, and trim, and apply international regulations for calculating stability. They can understand and evaluate a ship's longitudinal strength under calm-water conditions.

In addition, the following key competencies are strengthened: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, creativity, and decision-making.

Course Content

The instructor teaches students

- how to read line drawings of ships
- how to calculate buoyancy according to Archimedes
- how to calculate buoyancy and displacement
- Determining the initial stability of a ship
- a ship's stability (including at greater angles of heel)
- Stability loads, such as free surfaces
- Shifting of cargo
- Wind effects
- National and international stability regulations
- Calculation of trim

Table A-II/1

Maintaining the ship's seaworthiness; monitoring compliance with legal regulations

Qualification Table A-II/2

Influence on trim, stability, and stress; monitoring and verifying compliance with legal requirements and measures to ensure the safety of life at sea, security, and the protection of the marine environment

Additional Notes

Certificates

Semester 3.

Module

Instructor

rse

Plawenn

## Translation, the German version is binding

Ship Theory

Course

Cou

Teaching and Learning  
Methods

4

Ship Theory

Lecture + Lab

Semester 3.

# Translation, the German version is binding

Module System Monitoring

Instructor Meyer

Type Required  
module

ECTS 5

Recommendation/Prerequisites

SWS 4

Profile

Self-study hours 53

Classroom instruction hours 72

Exam Type K2/H

Navigation ☒

MTSM

German ☒ English ☒

Exam Format PL

☒Attendance required ☐

Semester 3.

Course Offering Summer/Winter

Foundation Program ☒Advanced Studies ☐

Learning Objectives

Students will be able to understand the remote control systems for the propulsion system as well as for other machinery-driven systems and service facilities in order to ensure the maneuvering and handling of the ship under all conceivable circumstances. To this end, they have acquired general knowledge of the operation of marine engineering systems and can apply their knowledge of the proper use of propulsion and maneuvering systems. In addition, they are familiar with the fundamentals of auxiliary machinery on ships and can discuss and analyze applied ship operation problems in English.

Course Content

The instructor teaches students content from the following areas:

1. Diesel Engines
  - Two-stroke and four-stroke diesel engines
  - Operating principles and timing of diesel engines
  - Main engine parameters and performance
2. Design and operation of marine systems
  - Power and Work Machines
  - Propulsion, Propeller, and Rudder System
  - Electrical Machinery and Systems
  - Marine Automation
  - Operating fluids
  - Pumps
3. Operation of a Ship Propulsion System
  - Supply Systems
  - Dynamic Behavior During Maneuvering
  - Emergency Stop, Emergency Maneuvers, and Emergency Control
4. Remote Control of the Engine
  - Bridge remote control system
  - Machine control room and local control system
5. Alarm systems

Qualification Table A-II/1

Not applicable to A-II/1

Qualification Table A-II/2

Maneuvering and handling a ship under all conceivable circumstances; operating the remote control for the propulsion system and for other machinery-driven systems and service equipment

Additional Notes

Certificates

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# Translation, the German version is binding

Semester 3.

Module System Monitoring

Instructor Course Teaching and Learning  
rse Cou Methods

Meyer 4 System Monitoring V + Ü

# Translation, the German version is binding

Semester

Module  
n

4t

Health Care

Responsible

Mattausch

Type Required  
module

ECTS

5

Recommendation/Prerequisites

SWS

4

Self-study hours

53

Profile

Classroom instruction hours 72

Exam Type

B + K2/H

Navigation



MTSM



German ☒ English ☒

Exam Format

SL + PL

Attendance required



Semester

4

Course Offering

Spring/Fall

Foundation Program



Advanced Studies



Learning Objectives

Students will be able to provide medical first aid on board and to plan and manage medical care on board.

To this end, they understand and can apply basic knowledge of maritime medicine, can seek medical advice via radio, and can translate this advice into effective measures.

This strengthens the following key competencies: decision-making ability, teamwork, empathy, ability to cooperate, emotional intelligence, independence, systems thinking, and decision-making.

Course Content

The instructor teaches students in accordance with Appendix 4, "Advanced Course," of the MariMedV:

- Ability to use a first-aid kit
- Knowledge of the structure and functions of the human body
- Knowledge of toxicological hazards on board, as well as, in particular, knowledge of the "Guidelines for Medical First Aid Measures in Accidents Involving Dangerous Goods" (MFAG) or the corresponding national publication
- Ability to conduct a competent physical examination of an injured or ill person
- Knowledge of spinal injuries
- Knowledge of burns and scalds, as well as the effects of heat and cold on the human body
- Knowledge of fractures, dislocations, and muscle injuries
- Ability to provide medical care to rescued persons
- Ability to seek medical advice via radio communication, along with the associated clinical examination
- Pharmacological knowledge
- Ability to sterilize medical instruments
- Knowledge of cardiac arrest, drowning, respiratory arrest, and respiratory distress
- Ability to care for injured persons with various types of injuries
- Knowledge of various aspects of patient care
- Knowledge of diseases
- Ability to recognize the misuse of medications, addictive substances, and alcohol
- Knowledge of dental care
- Knowledge of gynecology, prenatal care, and obstetrics
- Ability to provide medical care to persons rescued from the water
- Knowledge of death at sea
- Knowledge of hygiene
- Knowledge of health protection
- Ability to maintain records and archive relevant

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|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                               |  |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--|
| Module                     | Health care                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               |  |
|                            | <p>Regulations</p> <ul style="list-style-type: none"> <li>- Ability to seek external assistance</li> <li>- Ability to assess the risk situation</li> <li>- Ability to rescue patients with minimal physical strain</li> <li>- Ability to perform emergency measures in the event of accidents and illnesses, taking into account basic anatomical and physiological knowledge</li> <li>- Ability to reposition and transport patients with minimal physical strain</li> <li>- Ability to provide treatment for specific medical conditions in accordance with medical guidelines pursuant to Section 107(2)(3) of the Maritime Labor Act (SeeArbG) and the MFAG guidelines</li> <li>- Knowledge of additional treatment measures, e.g., pain management and nursing care</li> <li>- Thorough knowledge of the composition of the ship's medicine cabinet and the administration of the medications it contains</li> <li>- Thorough knowledge of the medical guidelines in accordance with § 107(2)(3) of the SeeArbG</li> <li>- Thorough knowledge of the forms and records</li> <li>- Thorough knowledge of the relevant legal provisions</li> </ul> <p>A hospital internship of at least 80 hours (14 days) must be completed. This internship should provide (as recommended by the MariMedV and the STCW Convention) insights into the following areas:<br/>Rescue, consciousness, cardiac arrest, respiratory distress / measures for airway obstruction, ventilation / maintaining a clear airway, positioning for respiratory distress, external / internal bleeding, eye injuries, burns/scalds/electric shock injuries/frostbite, repositioning/transport, examination techniques, spinal injuries, treatment of fractures, dislocations, muscle injuries, sprains, and strains, wound care, minor surgical procedures, treatment of acute abdominal conditions, treatment of dental conditions, pain management. As proof, the "Hospital Internship Form (Nautical)" must be signed by the internship provider.</p> |                               |  |
| Qualification Table A-II/1 | Administration of medical first aid on board Qualification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               |  |
| Table A-II/2               | Planning and managing medical care on board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                               |  |
| Additional Notes first     | <p>Qualifications in accordance with STCW Regulations, Tables: A-VI/4-1: Administration of immediate in the event of an accident or illness on board; A-VI/4-2: Providing medical care for sick and injured persons while they remain on board; participating in coordinated medical assistance measures for ships</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                               |  |
| Certificates               | Medical Care                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |  |
| Instructor                 | Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Teaching and Learning Methods |  |
| rse                        | Cou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                               |  |
|                            | 2-week hospital internship                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Internship                    |  |
| Winter                     | 4 Health Care                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | V + Ü                         |  |

Semester 4.

# Translation, the German version is binding

Module Maritime English

|                              |            |            |                                          |                             |                                                                      |
|------------------------------|------------|------------|------------------------------------------|-----------------------------|----------------------------------------------------------------------|
| Responsible                  | Walden     | Type       | Required module                          | ECTS                        | 5                                                                    |
| Recommendation/Prerequisites |            |            |                                          | SWS                         | 4                                                                    |
| Profile                      |            |            |                                          | Self-study hours            | 53                                                                   |
| Exam Type                    | M/A + K2/H | Navigation | <input checked="" type="checkbox"/> MTSM | Classroom instruction hours | 72                                                                   |
| Exam Format                  | PVL + PL   |            | <input checked="" type="checkbox"/>      | German                      | <input type="checkbox"/> English <input checked="" type="checkbox"/> |
| Semester                     | 4          | Offered    | Spring/Fall                              | Attendance is mandatory     | <input type="checkbox"/>                                             |
|                              |            |            |                                          | Undergraduate Program       | <input type="checkbox"/>                                             |
|                              |            |            |                                          | Specialized Studies         | <input checked="" type="checkbox"/>                                  |

**Learning Objectives**

Students are able to apply IMO standard maritime phrases and use them in both spoken and written communication.

To this end, they can communicate and collaborate at the C1 proficiency level as defined by the Common European Framework of Reference:

1. They can understand a wide range of demanding, longer texts on maritime topics (e.g., The Weather, Pilot on Board, Leaving and Entering Ports, Radio and Telex Messages, The Note of Protest, Port Regulations, Cargo Damage Reports) and also grasp implied meanings
2. They can express themselves spontaneously and quite fluently without having to search for words noticeably on a frequent basis. They can use the language effectively and flexibly in social and professional contexts.
3. You can express yourself clearly, coherently, and in detail on complex topics, using a variety of cohesive devices appropriately.
4. You can understand and apply the Standard Marine Communication Phrases (SMCP).

The following key competencies are reinforced: willingness to learn, perseverance, independence, abstract and interconnected thinking, creativity, communication, and cooperation in the foreign language

**Course Content**

The instructor teaches students

- Grammar (Learning Objectives 1–4)
- Reading Comprehension (Learning Outcome 1)
- Communication skills (oral) (Learning Outcomes 2–4)
- Writing Skills (Learning Outcome 3)
- Standard Marine Communication Phrases (Learning Outcome 4)

Competency Table A-II/1 Use of IMO Standard Marine Communication Phrases and written and spoken English

Competency Table A-II/2 No relation to A-II/2

Additional remarks

Certificates

| Instructor | Course             | Teaching and Learning Methods |
|------------|--------------------|-------------------------------|
| rse        | Cou                |                               |
| Walden     | 4 Maritime English | Lecture + Discussion          |

Semester 4.

## Translation, the German version is binding

Module Personnel Management

|                              |                  |                                                                              |                                                                                        |                                                |
|------------------------------|------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------|
| Instructor                   | Kreutzer         | Type Required module                                                         | ECTS                                                                                   | 5                                              |
| Recommendation/Prerequisites |                  |                                                                              | SWS                                                                                    | 4                                              |
| Profile                      |                  |                                                                              | Self-study hours                                                                       | 28                                             |
|                              |                  |                                                                              | Classroom study hours                                                                  | 72                                             |
| Exam Type                    | K2/H             | Navigation <input checked="" type="checkbox"/> MTSM <input type="checkbox"/> | German <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |                                                |
| Exam Format                  | PL               | Attendance required <input type="checkbox"/>                                 |                                                                                        |                                                |
| Semester                     | 4.               | Course                                                                       | Summer/Winter                                                                          | Undergraduate Program <input type="checkbox"/> |
|                              | Advanced Studies | <input checked="" type="checkbox"/>                                          |                                                                                        |                                                |

**Learning Outcomes**

Students will be able to apply leadership skills and teamwork abilities in conjunction with business management skills. To this end, they can effectively lead crew members and apply human resource management principles in the areas of leadership, teamwork, managerial skills, communication, and cultural awareness; recognize and evaluate psychological processes and interpersonal relationships; and identify, assess, analyze, and appropriately resolve conflicts and potential for conflict. Furthermore, they can apply relevant maritime labor law regulations as they pertain to personnel management. This reinforces the following key competencies: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, decision-making, motivation, conflict management, public speaking, teamwork, assuming social responsibility, and dealing with intercultural aspects.

**Course Content**

- Leading Employees
- Leading people in emergencies
- Team building and working in a team
- Performance evaluation
- On-the-Job Training and Instructional Techniques
- Appropriate Conflict Management and Conflict Resolution Strategies
- Aspects of Communication
- Measures for Alcohol Abuse and Addictive Behavior
- Establishing and Maintaining Onboard Hygiene and a Humane Work Environment
- Basic Concepts and Foundations of General Psychology and Sociology
- Specific aspects of maritime sociology and psychology
- Knowledge of labor law as it relates to personnel management (Maritime Labor Act)
- Intercultural competencies

Qualification Table A-II/1 Application of leadership skills and teamwork abilities

Qualification Table A-II/2 Leadership skills and business management skills—additional notes

The module is also assigned a Social Credit Point

Certificates

|            |                        |                               |
|------------|------------------------|-------------------------------|
| Instructor | Course                 | Teaching and Learning Methods |
| rse        | Cou                    |                               |
| Beelmann   | 4 Personnel Management | V + Ü                         |

Semester 4.

# Translation, the German version is binding

Module

Human Resources Management

Social Credit Point

Semester 4.

## Translation, the German version is binding

Module Technical Navigation 1 & Radar Technology

|                              |                                                                    |                 |                                     |                                       |                                     |
|------------------------------|--------------------------------------------------------------------|-----------------|-------------------------------------|---------------------------------------|-------------------------------------|
| Instructor                   | Vahs                                                               | Type            | Required module                     | ECTS                                  | 5                                   |
| Recommendation/Prerequisites | Fundamentals of Nautical Science, Navigation, Practical Semester 1 |                 |                                     | SWS                                   | 4                                   |
| Profile                      |                                                                    |                 |                                     | Self-study hours, classroom hours: 72 |                                     |
| Exam Type                    | K1/H + B                                                           | Navigation      | <input checked="" type="checkbox"/> | MTSM                                  | <input type="checkbox"/>            |
| Exam Format                  | PL/SL                                                              |                 |                                     | German                                | <input checked="" type="checkbox"/> |
|                              |                                                                    |                 |                                     | English                               | <input checked="" type="checkbox"/> |
|                              |                                                                    |                 |                                     | Attendance Required                   | <input type="checkbox"/>            |
| Semester                     | 4.                                                                 | Course Offering | Summer/Winter                       | Undergraduate Program                 | <input type="checkbox"/>            |
|                              |                                                                    |                 |                                     | Advanced Studies                      | <input checked="" type="checkbox"/> |

**Learning Objectives**

Students are able to maintain safe navigation by using data from navigation devices and systems to support the officer on watch's decision-making. To this end, they use radar equipment for navigation and collision avoidance, including the application of standard plotting procedures. This supports the planning and execution of a voyage, as well as position determination, the safe conduct of a bridge watch, and the use of radar equipment to ensure maritime safety.

**Course Content**

Structure and operation of radar systems, radar image analysis in various display modes, Methods for position determination and track monitoring using radar (bearings, PI, synthetic image information, and overlays), Methods of collision avoidance using radar and plotting techniques, performance limits, and errors

**Qualification Table A-II/1**

Planning and executing a voyage as well as determining position; conducting a safe bridge watch; using radar and ARPA systems to maintain navigational safety;

**Competency Table A-II/2**

Maintaining safe navigation by using data from navigational instruments and equipment to support the watch officer's decision-making;

**Additional Notes**

Attendance is mandatory for exercises on the radar simulator (radar simulator course).

**Certificates**

| Instructor | Course                   | Teaching and Learning Methods |
|------------|--------------------------|-------------------------------|
|            | Cou                      |                               |
| Plawenn    | 2 Radar                  | Ü                             |
| Knoop      | 2 Technical Navigation 1 | V                             |

Semester 4.

## Translation, the German version is binding

Module Security Duty

|                               |                                                  |                                                                                         |                                                                                        |                                     |
|-------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------|
| Responsible                   | Kreutzer                                         | Type Required module                                                                    | ECTS                                                                                   | 5                                   |
| Recommendation/ Prerequisites | Fundamentals of Navigation, Practical Semester 1 |                                                                                         | SWS                                                                                    | 4                                   |
|                               |                                                  |                                                                                         | Self-study hours                                                                       | 53                                  |
| Profile                       |                                                  |                                                                                         | Classroom hours:                                                                       | 72                                  |
| Exam Type                     | K2/M                                             | Navigation <input checked="" type="checkbox"/> MTSM <input checked="" type="checkbox"/> | German <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |                                     |
| Exam Format                   | PL                                               |                                                                                         | Attendance Required                                                                    | <input type="checkbox"/>            |
| Semester 4.                   | Course Offering                                  | Summer/Winter                                                                           | Undergraduate Program                                                                  | <input type="checkbox"/>            |
|                               |                                                  |                                                                                         | Advanced Studies                                                                       | <input checked="" type="checkbox"/> |

**Learning Objectives**

Students will be able to perform bridge watch duties safely by establishing procedures and precautions for watchkeeping.

To this end, they can interpret traffic conditions and take measures to ensure safe navigation by applying the International Regulations for Preventing Collisions at Sea (COLREGS) and the Maritime Traffic Regulations.

This reinforces the following key competencies: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, decision-making, and motivation.

**Course Content**

The instructor teaches students the content, application, and purpose of the

- international rules for the prevention of collisions at sea
- the national rules for the prevention of collisions at sea and the navigation regulations for national waters
- principles of bridge watchkeeping and the resulting effective cooperation among the bridge crew

**Table A-II/1 Competency** Conducting a Safe Watch on the Bridge

**Qualification Table A-II/2** Establishing Procedures and Precautions for Watchkeeping—

**Additional Notes**

**Certificates**

|            |                |                               |
|------------|----------------|-------------------------------|
| Instructor | Course         | Teaching and Learning Methods |
| rse        | Cou            |                               |
| Plawenn    | 4 On-call duty | L + P                         |

Semester 4.

## Translation, the German version is binding

Module Private Commercial Law

Instructor Münchau

Type Required  
module

ECTS 5

Recommendation/Prerequisites

SWS 4

Self-study hours 53

Profile

Classroom instruction hours 72

Exam Type K2/H

Navigation ☒

MTSM

German ☒ English ☒

Exam Format SL

☒

Attendance required ☐

Semester 4.

Course Offerings Summer/Winter

Foundation Program ☐

Advanced Studies ☒

Learning Outcomes

Students will be able to monitor and verify compliance with legal regulations and measures designed to ensure the protection of human life at sea, security, and the protection of the marine environment.

To this end, they develop an understanding of the structure and functioning of the legal system, grasp the fundamentals of civil and public law, acquire general knowledge of labor law as well as specific knowledge of maritime labor law, and are able to apply this knowledge in practice (ashore/on board).

In doing so, the following key competencies are reinforced: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, and motivation.

Course Content

The instructor teaches students

1. Fundamentals of public law: constitutional law; administrative law; international and European law; criminal law.

2. Fundamentals of civil law: the structure and organization of the German Civil Code (BGB); the formation and content of contracts; breaches of contract and damages; types of contracts; possession and ownership.

3. Fundamentals of individual labor law and collective labor law.

4. Legal Foundations of Maritime Labor Law: Maritime Labor Act, international conventions, collective bargaining agreements; rights and duties of the captain and the crew; employment relationship and employment contract; rights and duties arising from the employment relationship; working time regulations and occupational safety; the shipowner's duty of care (food, lodging, vacation, medical care); Termination of the employment relationship; order on board, complaint procedures; monitoring of working conditions on board through flag state and port state control.

5. Fundamentals of Commercial and Corporate Law: Merchant, Commercial Register, Business Name, and Power of Attorney; Special Features of Commercial Transactions; Partnerships and Corporations.

Qualification Table A-II/1

Monitoring compliance with legal regulations

Qualification Table A-II/2

Monitoring and verification of compliance with legal regulations and measures to ensure the safety of life at sea, security, and the protection of the marine environment

Additional Notes

Certificates

Semester 4.

## Translation, the German version is binding

|            |                        |                               |                   |
|------------|------------------------|-------------------------------|-------------------|
| Module     | Private Commercial Law |                               |                   |
| Instructor | Course                 | Teaching and Learning Methods |                   |
| rse        | Cou                    |                               |                   |
| Münchau    | 4                      | Private Commercial Law        | Lecture + Seminar |

# Translation, the German version is binding

Semester

Module  
n

5t

Astronomical Navigation

Instructor

Kreutzer

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Fundamentals of Navigation, Practical  
Semester 1

SWS

4

Self-study hours

53

Profile

Classroom hours: 72

Exam Type

K2

Navigation ☒

MTSM

☒

German ☒ English ☒

Exam Format

PL

Attendance is required ☐

Semester 5.

Course Offering

Summer/Winter

Undergraduate Program ☐

Advanced Studies ☒

Learning Objectives

Students are able to perform navigation and route planning by determining their position. To this end, they can determine their position using a sextant and are familiar with celestial bodies important for navigation and their movements. Furthermore, they can represent astronomical coordinate systems, apply methods of astronomical position determination, apply methods of astronomical compass calibration, apply methods of great circle navigation—including mixed sailing—and recognize the relevance of navigational conditions in relation to weather and ice conditions.

In addition, the following key competencies are reinforced: analytical skills, willingness to learn, perseverance, independence, abstract and interconnected thinking, and decision-making

Course Content

The instructor teaches students:

- Celestial bodies important for navigation and their movements
- Astronomical coordinate systems
- Methods of astronomical positioning
- Methods of astronomical compass calibration
- Trigonometric calculations based on mean latitude and augmented latitude
- Methods of great circle navigation

Qualification Table A-II/1

Planning and conducting a voyage and determining position; performing a safe bridge watch

Qualification Table A-II/2

Voyage planning and navigation; position determination and accuracy; additional notes

Certificates

Instructor

Course

Teaching and learning  
methods

re

Cou

Tomaschek

4

Astronomical Navigation

Lecture + Lab

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# Translation, the German version is binding

Semester

Module  
n

5t

Hazardous Cargo

Responsible

Kreutzer

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

1st Practical Semester, Fundamentals of Navigation, Mathematics 1,  
Physics, English

SWS

4

Self-study hours

53

Profile

Classroom hours: 72

Exam Type

K2/A

Navigation



MTSM



German ☒ English ☒

Exam Format

PL

Attendance Required



Semester

5.

Course Offering

Summer/Winter

Undergraduate Program



Advanced Studies



Learning Objectives

Students will be able to transport dangerous goods.

To this end, they can describe dangerous goods and their risks to people, the environment, and the ship. In the event of accidents or emergencies, they can take the appropriate measures, classify dangerous goods and identify their correct technical names, describe the proper packaging of dangerous goods and apply packaging regulations, as well as correctly mark, label, and stow packages and cargo transport units (CTUs). In addition, they can apply regulations for the transport of dangerous goods, particularly stowage and segregation regulations; implement precautionary measures during loading and unloading as well as cargo supervision during the voyage; apply exceptions and special provisions; and distinguish between and determine exempted and limited quantities.

The following key competencies are reinforced: analytical skills, willingness to learn, independence, abstract and interconnected thinking, decision-making, motivation, and taking responsibility

Course Content

- Classification and properties of dangerous goods
- International regulations, standards, codes, and recommendations regarding the transport of dangerous goods, in particular the International Maritime Dangerous Goods (IMDG) Code, the International Maritime Solid Bulk Cargoes (IMSBC) Code, and Annex III of the MARPOL Convention
- Design and equipment of oil, chemical, and liquefied gas tankers

Qualification Table A-II/1

Ensuring compliance with pollution prevention regulations; prevention, containment, and suppression of fires on board

Qualification Table A-II/2

Response to emergency situations during the operation of the ship; planning and ensuring the safe loading, stowage, securing, and unloading of cargo, as well as safe cargo management during the voyage; carriage of dangerous goods

Additional Notes

It is recommended that students also take the course "Cargo Handling" during the same semester to better follow this module.

Certificates

Instructor

Course

Teaching and Learning  
Methods

rse

Cou

Bankovics

4

Hazardous Cargo

Lecture + Lab

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# Translation, the German version is binding

Semester

Module  
n

5t

Cargo Handling

Responsible

Kreutzer

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Fundamentals of Navigation, Practical Semester 1, Mathematics 1,  
Physics, English

SWS

4

Self-study hours

53

Profile

Classroom study hours 72

Exam Type

K2/H

Navigation ☒

MTSM ☒

German ☒ English ☒

Exam Format

PL

Attendance Required

☐

Semester

5.

Offered

Summer/Winter

Undergraduate Program ☐

Advanced Studies ☒

Learning Objectives

Students are able to supervise the loading, stowage, securing, and unloading of cargo, as well as manage the cargo during the voyage. They can inspect cargo holds, hatch covers, and ballast tanks and, if necessary, document any defects or damage to these components. To this end, they can plan and monitor the loading process, taking into account freeboard, stability, trim, and strength of the vessel in accordance with the relevant international cargo-specific regulations (IMO regulations); carry out cargo handling, stowage, and securing in accordance with the relevant IMO regulations; operate and evaluate cargo calculation software safely; and interpret the results correctly.

In addition, the following key competencies are reinforced: communication skills, analytical skills, perseverance, decision-making, systems thinking, performance, and independence.

Course Content

The instructor teaches students

- Freeboard Convention
- IMSBC Code (bulk cargoes)
- BLU Code (Loading Planning)
- Grain Code (grain as bulk cargo)
- Timber Code (timber as deck cargo)
- CSS Code (Cargo Securing);
- Standard Cargo (Containers, Barges)
- Semi-standard cargo (RORO);
- Non-standard cargo (heavy lift/project cargo, forest products, steel products, refrigerated cargo)
- Tank cargo
- Claims handling (procedures for defending against claims against the shipowner/carrier arising from pre- and post-shipment damage to the cargo)

Qualification Table A-II/1

Supervision of loading, stowage, securing, and unloading, as well as care of the cargo during the voyage; inspection of cargo holds, hatch covers, and ballast tanks, and reporting of defects and damage to these; maintenance of the ship's seaworthiness

Qualification Table A-II/2

Planning and ensuring the safe loading, stowage, securing, and unloading of cargo, as well as safe cargo supervision during the voyage; assessing reported defects and damage to cargo holds, hatch covers, and ballast tanks, and taking appropriate measures in such cases

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Semester 5.

Translation, the German version is binding

Module Cargo Handling

Additional Notes

Certificates

| Instructor | Course                | Teaching and Learning Methods |
|------------|-----------------------|-------------------------------|
| rse        | Cou                   |                               |
| Plawenn    | 4 Charging Technology | Lecture + Lab                 |

# Translation, the German version is binding

Semester

Module  
n

5t

Maritime Commercial Law

Responsible

Münchau

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Fundamentals of Navigation, 1st Practical  
Semester

SWS

4

Self-study hours

53

Profile

Classroom hours: 72

Exam Type

K2/H

Navigation ☒

MTSM

☒

German ☒ English ☒

Exam Format

PL

Attendance Required

☐

Semester

5.

Course Offering

Summer/Winter

Undergraduate Program

☐

Advanced Studies

☒

Learning Objectives

Students will be able to understand and apply the content and key provisions of maritime freight contracts and related documents.

In addition, they can identify liability risks and assess their consequences, as well as determine the appropriate course of action in emergency situations (accidents, salvage, collisions). In doing so, the following key competencies are reinforced: analytical skills, willingness to learn, perseverance, independence, interdisciplinary thinking, and motivation

Course Content

The instructor teaches students

- History and legal sources of maritime commercial law
- Key players in maritime commercial law: shipowners, shipfitters, ship operators, captains, pilots, brokers/agents
- Definition and types of the maritime freight contract
- Parties to the maritime freight transaction
- Contents of the maritime freight contract
- Documents in the Maritime Freight Transaction: Bill of Lading, Charter Party
- Liability of the Carrier and the Shipper Under the Maritime Freight Contract
- Contents of a Voyage Charter Party: The GENCON Example
- Determination of Cargo Volume and Loading/Docking Time
- Ship Charter Agreements: Time Charter and Bareboat Charter
- Non-contractual liability of the shipowner and the captain
- Liability for Oil Pollution Damage
- Emergencies at Sea: Collisions, Salvage, and General Average
- Maritime procedural law: ship creditors' rights, arrest, arbitration
- Maritime Property Law: Ship Registers, Acquisition of Ownership of Seagoing Vessels, Mortgages
- Maritime Insurance Law: Cargo Insurance, Hull Insurance, P&I

Qualification Table A-II/1

Qualification Table A-II/2

Response to emergency situations while operating the vessel; carriage of dangerous goods; monitoring and verifying compliance with statutory regulations and measures to ensure the safety of life at sea, security, and the protection of the marine environment

Additional Notes

Certificates

Instructor

Course

Teaching and Learning

se

Cou

Methods

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# Translation, the German version is binding

Semester

Module  
n

5t

Technical Navigation 2 & ECDIS

Instructor

Vahs

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Technical Navigation 1 & Radar Technology, Fundamentals of Navigation, Practical Semester 1

SWS

4

Self-study hours

53

Profile

Classroom hours: 72

Exam Type

K1/H, B

Navigation ☒

MTSM

☒

German ☒ English ☒

Exam Format

PL, SL

Attendance Required ☐

Semester 5.

Offered

Summer/Winter

Undergraduate Program ☐

Advanced Studies ☒

Learning Objectives

Students will be able to maintain safe ship handling by using ECDIS and related navigation systems to support the watch officer's decision-making. To this end, they can use compass systems, satellite navigation systems, speed measurement systems, and echo sounders, and apply integrated navigation systems—including ECDIS—for safe and efficient navigation in typical scenarios. This supports the planning and execution of a voyage, as well as position determination and the performance of a safe bridge watch, through the use of Electronic Chart Display and Information Systems (ECDIS) to maintain maritime safety.

Course Content

Structure, operation, and practical application, taking into account the respective performance limits of navigation systems, in particular:

- Magnetic and gyrocompasses
- Course and track keepers
- Satellite navigation systems
- Integrated navigation systems
- ECDIS
- AIS
- Echo sounders
- Speed measurement systems (logs)

Qualification Table A-II/1

Planning and conducting a voyage and determining position; performing a safe bridge watch; using Electronic Chart Display and Information Systems (ECDIS) to maintain the safety of navigation

Qualification Table A-II/2

Voyage planning and navigation; position determination and accuracy; determination and consideration of compass errors; maintaining safe navigation by using data from navigational instruments and systems to support the watchkeeper's decision-making; Maintaining safe navigation by using ECDIS and related navigational equipment to support the watchkeeper's decision-making

Additional Notes

Attendance is mandatory for the exercises in the ECDIS lab (ECDIS course).

Certificates

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## Translation, the German version is binding

Semester

5t

Module

Technical Navigation 2 & ECDIS

Instructor

Course

Teaching and Learning  
Methods

Knoop

2      Technical Navigation 2

V

Plawenn

2      ECDIS

Ü

# Translation, the German version is binding

Semester

Module  
n

6t

Cargo Care

Responsible

Kreutzer

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Ship Theory; Cargo Handling

SWS

4

Self-study hours

53

Profile

Classroom study hours 72

Exam Type

K2/H

Navigation



MTSM



German☒ English☒

Exam Format

PL

Attendance Required



Semester

6.

Course Offering

Summer/Winter

Undergraduate Program



Advanced Studies



Learning Objectives

Students will be able to supervise the loading, stowage, securing, and unloading of cargo; inspect cargo holds, hatch covers, and ballast tanks; and monitor the cargo during the voyage. To this end, they can plan the loading of dry cargo ships based on specific criteria, determine the lifting equipment and slings required for cargo handling, and conduct a draft survey after loading is complete to determine the amount of cargo loaded.

Course Content

The instructor teaches students

- Loading planning for ships carrying project cargo
- Calculation of the necessary lifting equipment and slings for heavy-lift operations
- handling, planning, and monitoring of the handling process
- Loading planning for container ships
- Loading planning for bulk carriers and draft surveys

Table A-II/1 Qualification

Supervision of loading, stowage, securing, and unloading, as well as care of the cargo during the voyage; inspection of cargo holds, hatch covers, and ballast tanks, and reporting of defects and damage to these

Qualification Table A-II/2

Planning and ensuring the safe loading, stowage, securing, and unloading of cargo, as well as the safe care of cargo during the voyage; assessing reported defects and damage to cargo holds, hatch covers, and ballast tanks, and taking appropriate measures in such cases; Effects on trim, stability, and stress

Additional Notes

Certificates

Instructor

Course

Teaching and Learning  
Methods

re

Cou

Kreutzer

4

Cargo Care

V + Ü

Groen

Cargo Care

Revision Number

202409

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# Translation, the German version is binding

Semester

Module  
n

6t

Maneuvering

Responsible

Vahs

Type Required  
module

ECTS

5

Recommendation/  
Prerequisites

Intermediate Exam, SL Maritime English, SL Navigation 2,  
Watchkeeping

SWS

4

Self-study hours

53

Profile

Classroom hours 72

Exam Type

K2/H

Navigation ☒

MTSM ☒

German ☒ English ☒

Exam Format

PL

Attendance Required ☐

Semester 6.

Course Offering

Summer/Winter

Undergraduate Program ☐

Advanced Studies ☒

Learning Objectives

Students will be able to describe the safe maneuvering of a ship, taking into account ship-specific and external conditions (environment).

To this end, they can define maneuvers in ship operations and explain the technical and physical relationships involved, analyze ship-related and external factors that influence maneuvering, and describe complex maneuver sequences, including their planning and execution.

Course Content

The instructor teaches students

- Basic definitions of maneuvering.
- Maneuvering systems, their operating principles, and performance limits: propellers, rudders, side thrusters, pods, etc.
- Maneuvering characteristics and their parameters: course stability, turning ability, pivot point location, stopping ability.
- Standard maneuvers (including MSC.137): turning maneuvers including turning circles, course behavior including tests (zigzag, pull-out), stopping including crash stop maneuvers, sea trials, man overboard, docking and undocking, anchoring, and pilot handover.
- Influence of environmental factors: wind, sea state, current, hydrodynamic effects during ship-to-ship interactions and in narrow fairways, shallow draft, ice.
- Selected Special Scenarios: Collision avoidance, constant-radius turning, SAR, towing, severe weather.
- Fundamentals of Propulsion and Energy Efficiency.

Qualification Table A-II/1

Maneuvering the vessel

Competency Table A-II/2

Maneuvering and handling a ship under all conceivable circumstances Additional

notes

Certificates

Instructor

Course

Teaching and Learning

rse

Cou

Methods

Vahs

4

Maneuvering

V + Ü

Revision Number

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Semester 6.

# Translation, the German version is binding

Module Emergency Management

|                                  |                        |                 |                                     |                       |                                                                                 |
|----------------------------------|------------------------|-----------------|-------------------------------------|-----------------------|---------------------------------------------------------------------------------|
| Responsible                      | Kreutzer               | Type            | Required module                     | ECTS                  | 10                                                                              |
| Recommendation/<br>Prerequisites | 1st practical semester |                 |                                     | SWS                   | 9                                                                               |
| Profile                          |                        |                 |                                     | Self-study hours      | 106                                                                             |
|                                  |                        |                 |                                     | Classroom study hours | 144                                                                             |
| Exam Type                        | K3(PL) + K1(SL)        | Navigation      | <input checked="" type="checkbox"/> | MTSM                  | <input checked="" type="checkbox"/>                                             |
| Exam Format                      | PL + SL                |                 |                                     | German                | <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |
|                                  |                        |                 |                                     | Attendance Required   | <input type="checkbox"/>                                                        |
| Semester                         | 6.                     | Course Offering | Summer/Winter                       | Undergraduate Program | <input type="checkbox"/>                                                        |
|                                  |                        |                 |                                     | Specialized Studies   | <input checked="" type="checkbox"/>                                             |

Learning Objectives

Students will be able to respond to emergency situations.  
To this end, they acquire problem-solving skills related to emergency management and can apply the national and international regulations relevant to ensuring marine environmental protection and ship safety.

Students can ensure compliance with pollution prevention regulations.  
To this end, they can identify, understand, and apply the relevant (international and national) legal provisions pertaining to ship safety and marine environmental protection; specify the required certificates and documents to be carried on board; apply their ability to comply with the relevant provisions for the prevention of pollution in connection with ship operations, and apply the knowledge required to prepare for and conduct inspections by the flag state, port state, and classification societies. In addition, they understand the structure of regulatory authorities and possess competencies in maritime administration, including marine accident investigation.

Students can identify and assess threats and risks to ships and crews in the area of security and conduct corresponding security assessments (SSAs).  
They are aware of global threats to shipping and assess the potential threat to their ship.  
They can initiate and coordinate security measures in accordance with the Security Security Plan (SSP).  
They can apply national and international regulations regarding onboard security.

And you will gain the ability to:

- to plan and ensure the organization of security on board.
- to prevent fires on board, contain their spread, and organize firefighting efforts.
- to deploy rescue equipment in a manner appropriate to the situation.
- to respond to general emergencies in a manner appropriate to the situation.
- to describe the life-saving, fire-fighting, and other safety systems required to maintain the safety of ship operations.
- Act in accordance with security procedures and organize appropriate measures.
- To develop plans for emergencies and damage control, as well as to manage emergencies.
- Plan and

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module                      | Emergency Management ensure it.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Course Content              | <p>Based on Model Course 3.19 and ISPS Code Element 12.2, the following knowledge in particular is taught.</p> <ul style="list-style-type: none"> <li>- Updating and monitoring the implementation of the ship's security plan</li> <li>- Assessment of risks, threats, and security situations related to ship security</li> <li>- Conducting regular inspections of the ship to ensure that appropriate security measures have been implemented and are being maintained</li> <li>- Coordinating the implementation of the ship's security plan with the company's security officer and the relevant port facility security officer</li> <li>- Coordinating the security-related aspects of the handling of cargo and ship's stores on board</li> <li>- Ensuring that security equipment and systems are properly operated, tested, and calibrated</li> <li>- Promoting awareness of the importance of security and vigilance</li> <li>- Legal basis (in particular, the ISPS Code and the Maritime Security Ordinance)</li> <li>- International conventions and recommendations, as well as European and national legislation regarding environmental protection, ship safety, and security</li> <li>- Measures to protect and ensure the safety of all persons on board in emergencies (firefighting, lifesaving equipment)</li> <li>- Maintenance of the operational readiness of lifesaving, firefighting, and other safety systems</li> <li>- Safe ship operations (risk management, emergency plans)</li> <li>- Leadership, organization, and training of onboard personnel</li> <li>- "Search and Rescue Manual" (IAMSAR)</li> <li>- Measures in the event of oil pollution damage</li> <li>- Onboard security (maritime security procedures, responsibilities, risk assessment, security plan, detection and identification of threats, and countermeasures)</li> </ul> <p>In addition, the instructor teaches students</p> <ul style="list-style-type: none"> <li>- Legislation enacted by international organizations</li> <li>- International Conventions on Ship Safety</li> <li>- International conventions on the protection of the marine environment</li> <li>- Measures and responsibilities in the event of oil pollution damage</li> <li>- Legal foundations and implementation of port state control</li> <li>- Flag State Control, Certificates, and Surveys</li> <li>- Classification and Class Surveys</li> <li>- Structure and Responsibilities of the Maritime Administration</li> <li>- Maritime Police Powers and Marine Accident Investigations</li> <li>- Duties and Responsibilities of Pilots</li> </ul> |
| Qualifications—Table A-II/1 | <p>Response to emergency situations; response to distress signals at sea; ensuring compliance with pollution prevention regulations; prevention, containment, and suppression of fires on board; use of lifesaving equipment; monitoring compliance with legal regulations; application of leadership skills and teamwork; personal contribution to the safety of the ship</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

Semester 6.

## Translation, the German version is binding

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------|
| Module                     | Emergency Management and the persons on board                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                               |       |
| Qualification Table A-II/2 | Response to emergency situations while navigating the ship; monitoring and verifying compliance with statutory requirements and measures to ensure the safety of life at sea, security, and the protection of the marine environment; maintaining the safety of the ship's crew and passengers, security, and the proper operational condition of lifesaving appliances, firefighting equipment, and other safety-related equipment and installations; developing emergency and damage control plans and managing emergency situations; leadership skills and business management abilities |                               |       |
| Additional Notes           | Upon successful completion of the module and proof of 12 months of seagoing service, the BSH will issue a certificate of competency as a shipboard security officer in accordance with STCW A-VI/5                                                                                                                                                                                                                                                                                                                                                                                          |                               |       |
| Certificates               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |       |
| Instructor                 | Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Teaching and learning methods |       |
| rse                        | Cou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               |       |
| Münchau                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Public Maritime Law           | V + Ü |
| Kreutzer                   | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Emergency Management          | V     |
| Knoop                      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SSO Safety Officer            | V + Ü |

Semester 6.

# Translation, the German version is binding

Module Telecommunications

|                                  |                                                                      |            |                                     |                       |                                                                                 |
|----------------------------------|----------------------------------------------------------------------|------------|-------------------------------------|-----------------------|---------------------------------------------------------------------------------|
| Responsible                      | Kreutzer                                                             | Type       | Required module                     | ECTS                  | 5                                                                               |
| Recommendation/<br>Prerequisites | Fundamentals of Navigation, 1st Practical Semester, Maritime English |            |                                     | SWS                   | 4                                                                               |
|                                  |                                                                      |            |                                     | Self-study hours      | 53                                                                              |
| Profile                          |                                                                      |            |                                     | Classroom hours:      | 72                                                                              |
| Exam Type                        | K2 / A + B                                                           | Navigation | <input checked="" type="checkbox"/> | MTSM                  | <input type="checkbox"/>                                                        |
| Exam Format                      | PVL + PL                                                             |            |                                     | German                | <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |
|                                  |                                                                      |            |                                     | Attendance Required   | <input checked="" type="checkbox"/>                                             |
| Semester                         | 6                                                                    | Offered    | Winter/Summer                       | Undergraduate Program | <input type="checkbox"/>                                                        |
|                                  |                                                                      |            |                                     | Advanced Studies      | <input checked="" type="checkbox"/>                                             |

**Learning Objectives**

Students will be able to send and receive messages using GMDSS systems and equipment, as well as comply with the functional regulations for the GMDSS.

To this end, they must have knowledge of the contents of the International Manual on Airborne and Maritime Search and Rescue (IAMSAR), the ability to use the International Code of Signals, the ability to transmit and receive the SOS distress signal in Morse code using light signals, as specified in Annex IV of the 1972 Collision Regulations (as amended) and in Appendix I of the International Signal Book, as well as the ability to transmit and receive single-letter signals using visual signaling, as specified in the International Signal Book.

**Course Content**

Upon successful completion of this module, students will acquire:

- the ability to send and receive messages using GMDSS systems and equipment
- knowledge of the contents of the International Air and Maritime Search and Rescue Manual (IAMSAR)
- the ability to use the International Signal Book
- knowledge of the operational regulations for the GMDSS
- the ability to transmit and receive the SOS distress signal in Morse code using light signals, as specified in Annex IV of the 1972 Collision Regulations, as amended, and in Annex I of the International Signal Book, as well as to transmit and receive single-letter signals using visual signaling, as specified in the International Signal Book

The instructor teaches students

- how to read and transmit SOS and single-letter signals visually
- Knowledge of the structure and use of the Signal Book
- Exercises using the Signal Book in accordance with proper operating procedures
- Emergency, urgency, and safety communication
- Measures to prevent false alarms and procedures for clearing them
- Knowledge of ship reporting systems and the procedures for requesting medical and radiological assistance
- Basic knowledge of the maritime mobile radio service (including satellite communications)
- Practical knowledge and skills in operating a marine radio station and GMDSS equipment
- In-depth application of the IMO Standard Marine Communications Phrases already learned, particularly as they relate to the safety of life at sea
- Safety measures for ship safety and personal safety related to the hazards of radio equipment, including electrical and non-ionizing radiation

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|
| Module                     | Telecommunications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |                      |
|                            | In addition to knowledge of and application of the regulations of the Radio Regulations:                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                      |
|                            | <ul style="list-style-type: none"> <li>- Knowledge of the procedures outlined in the International Air and Maritime Search and Rescue Manual (IAMSAR) and their application in SAR situations</li> <li>- Ability to handle radio communications in emergency situations, including but not limited to abandoning ship, fire on board, and partial or complete failure of radio equipment</li> <li>- Knowledge and application of the skills required to operate a marine radio station, including the use of GMDSS equipment, through simulator exercises</li> </ul> |                       |                      |
| Qualification Table A-II/1 | Responses to emergency situations; responses to distress signals at sea; sending and receiving messages via visual signaling                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                      |
| Qualification Table A-II/2 | Coordination of search and rescue operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |                      |
| Additional Notes           | The module also covers qualifications in accordance with Table A-IV/2 of the STCW Convention: Mandatory minimum requirements for the issuance of certificates of competency for GMDSS radio operators (GOC).                                                                                                                                                                                                                                                                                                                                                         |                       |                      |
| Certificates               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                       |                      |
| Instructor                 | Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Teaching and Learning |                      |
| rese                       | Cou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Methods               |                      |
| Bankovics                  | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Telecommunications    | Lecture + Discussion |

Semester 7.

## Translation, the German version is binding

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      |                  |                          |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------|------------------|--------------------------|
| Module                        | Practicum Semester 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                                                      |                  |                          |
| Responsible                   | Beelmann                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Type                          | Required module                                      | ECTS             | 30                       |
| Recommendation/ Prerequisites | 1st internship semester; valid medical fitness for sea service; valid Basic Safety Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                               |                                                      | SWS              | 26 weeks                 |
| Profile                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      | Self-study hours | 750                      |
| Exam Type                     | Certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Navigation                    | <input checked="" type="checkbox"/>                  | MTSM             | <input type="checkbox"/> |
| Exam Format                   | SL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | German                        |                                                      |                  | <input type="checkbox"/> |
|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Attendance Required           |                                                      |                  | <input type="checkbox"/> |
| Semester                      | 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Course                        | Undergraduate Program <input type="checkbox"/>       |                  |                          |
|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               | Advanced Studies <input checked="" type="checkbox"/> |                  |                          |
| Learning Objectives           | The goal of the second practical semester is to apply the theoretical knowledge acquired thus far in a practical setting and to further expand and deepen the practical knowledge already applied on board. In particular, the student should become familiar with the duties of a nautical watch officer. Using the practical and theoretical knowledge acquired to date, the student should be able to assess his or her own abilities and skills and apply them in greater depth on board.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                               |                                                      |                  |                          |
| Course Content                | The subject areas listed in the "On Board Training Record Book for Navigational Officer's Assistant" are to be completed, and students are to further deepen their chosen profile on board. Thus, the following subject areas are covered: work procedures on deck and in the engine room, operation of systems and equipment, safety and firefighting, as well as cargo-related activities and duties during bridge and watchkeeping duties. In addition, green shipping/maritime and environmental engineering, maritime safety and quality management, and shiphandling. It is particularly important that students have ample opportunity to gain further, additional experience in bridge and watchkeeping duties. Students document these topics during their time on board, under the supervision of the captain and the training officer, in the training logbook published by the BSH, the "On Board Training Record Book for Navigational Officer's Assistant." The basis for practical training on board is provided by §30 of the German Maritime Training Regulations (See-BV) and the "Guidelines for Practical Training and Sea Service as a Nautical Officer's Assistant." |                               |                                                      |                  |                          |
| Qualification Table A-II/1    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      |                  |                          |
| Qualification Table A-II/2    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      |                  |                          |
| Additional Notes              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      |                  |                          |
| Certificates                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                               |                                                      |                  |                          |
| Instructor                    | Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Teaching and Learning Methods |                                                      |                  |                          |
| rse                           | Cou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                               |                                                      |                  |                          |
| Beelmann                      | Practicum Semester 2, 26 weeks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Internship                    |                                                      |                  |                          |

Semester 8.

## Translation, the German version is binding

|                               |                                                                   |                  |                                     |                       |                                     |
|-------------------------------|-------------------------------------------------------------------|------------------|-------------------------------------|-----------------------|-------------------------------------|
| Module                        | Bachelor's Thesis                                                 |                  |                                     |                       |                                     |
| Instructor                    |                                                                   |                  | Type Required module                | ECTS                  | 12                                  |
| Recommendation/ Prerequisites | See the Study Program for Nautical Science and Maritime Transport |                  |                                     | SWS                   | 3 months                            |
|                               |                                                                   |                  |                                     | Self-study hours      | 300                                 |
| Program                       |                                                                   |                  |                                     | in-person study hours |                                     |
| Exam Type                     | BA                                                                | Nautical Studies | <input checked="" type="checkbox"/> | German                | <input checked="" type="checkbox"/> |
|                               | MTSM Exam Format                                                  | PL               | <input type="checkbox"/>            | Attendance Required   | <input type="checkbox"/>            |
| Semester                      | 8.                                                                | Course Offering  | Summer/Winter                       | Undergraduate Program | <input type="checkbox"/>            |
|                               |                                                                   |                  |                                     | Advanced Studies      | <input checked="" type="checkbox"/> |

Learning Objectives

Upon successful completion of this module, students will be able to

- apply fundamental scientific methods to a specific task and thereby arrive at a targeted solution
- critically evaluate the course of the investigation from a scientific perspective
- correctly interpret the results obtained and accurately assess their contribution to the solution
- assess their skills in self-management and time management when working on more complex tasks
- identify the key points of their scientific work and communicate them clearly

Course Content

The following content is covered through discussions and meetings with the supervising professor and through independent study:

- Identify the problem statement and address it through problem analysis
- Developing a strategy for drafting and completing an academic paper
- Plan and adhere to a personal time management schedule
- Conducting literature research, including through the library's resources
- Outlining the topic
- Planning and structuring the project
- Interpretation, evaluation, and visualization of data and information
- Academic guidance on methods and procedures for research projects
- Formal, linguistic, and content-related aspects of writing papers and research reports
- Finding and applying the appropriate style of argumentation

Qualification: Table A-II/1

No relation to A-II/1

Qualification Table A-II/2

No reference to A-

II/2 Additional notes

Certificates

|            |                       |                               |
|------------|-----------------------|-------------------------------|
| Instructor | Course                | Teaching and Learning Methods |
| rse        | Cou                   |                               |
|            | 3 M Bachelor's Thesis |                               |

Semester 8.

# Translation, the German version is binding

Module BEP Practical Ship Handling Simulator

Instructor Kreutzer

Type Required  
module

ECTS 5

Recommendation/  
Prerequisites See §10 BPO and Type-Specific Training for ECDIS "NaviSailor 4000"

SWS 4

Self-study hours 53

Profile

Classroom study hours 72

Exam Type B Navigation ☒ MTSM ☐German ☒ English ☒

Exam Format SL

Attendance Required ☒

Semester 8.

Course Offering Spring/Fall

Undergraduate Program ☐Advanced Studies ☒

Learning Objectives

Students will be able to apply the principles of safe watchkeeping in their role as watch officers under normal conditions as well as under rapidly changing conditions. To this end, they can apply the requirements for safe voyage planning, possess knowledge of ship handling in exceptional situations, and can implement emergency procedures (man overboard, SAR). Furthermore, they are proficient in applying the HELM (Human Element Leadership and Management) principles within the bridge team.

Course Content

- Navigating various types of vessels under different wind and current conditions
- Vessel handling as part of a watch
- Navigation in local waters, anchoring maneuvers, docking and undocking maneuvers
- Emergency procedures, including directing SAR operations
- Working as part of the bridge team (Bridge Resource and Bridge Team Management, Leadership)
- Complex voyage planning

Qualification Table A-II/1

Planning and executing a voyage and determining the ship's position; conducting a safe bridge watch; using radar and ARPA systems to maintain navigational safety; using Electronic Chart Display and Information Systems (ECDIS) to maintain navigational safety; Responding to distress signals at sea; using IMO standard maritime phrases and written and spoken English; maneuvering the ship; applying leadership skills and teamwork abilities

Qualification Table A-II/2

Voyage planning and navigation; position determination and accuracy; establishing procedures and precautions for the watch; maintaining safe ship handling by using data from navigational instruments and equipment to support the watchkeeper's decision-making; Maintaining safe ship handling by using ECDIS and related navigation systems to support the officer on watch's decision-making; forecasting meteorological and oceanographic conditions; responding to emergency situations while handling the ship; Maneuvering and handling a ship under all conceivable circumstances; operating the remote control for the propulsion system and for other machinery-driven systems and service equipment; monitoring and verifying compliance with legal requirements and measures to ensure the safety of life at sea, security, and

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Semester 8.

## Translation, the German version is binding

Module

BEP Practical Ship Handling Simulator

the protection of the marine environment; leadership skills and business management abilities

Additional notes

Certificates

Bridge Team

Instructor

Course

Teaching and Learning

Cou

Methods

rse

Kreutzer

4

BEP Practical Ship Handling, Simulator

Ü

Semester 8.

# Translation, the German version is binding

|                                  |                                                           |                 |                                     |                        |                                                                                 |
|----------------------------------|-----------------------------------------------------------|-----------------|-------------------------------------|------------------------|---------------------------------------------------------------------------------|
| Module                           | BEP Theory: Vessel Operation, Cargo Handling, and Stowage |                 |                                     |                        |                                                                                 |
| Responsible                      | Kreutzer                                                  | Type            | Required module                     | ECTS                   | 8                                                                               |
| Recommendation/<br>Prerequisites | See §10 BPO                                               |                 |                                     | SWS                    | 4                                                                               |
|                                  |                                                           |                 |                                     | Self-study hours       | 128                                                                             |
| Profile                          |                                                           |                 |                                     | Classroom study hours: | 72                                                                              |
| Exam Type                        | M/A + K4                                                  | Navigation      | <input checked="" type="checkbox"/> | MTSM                   | <input type="checkbox"/>                                                        |
| Exam Format                      | PVL + 2 x PL                                              |                 |                                     | German                 | <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |
|                                  |                                                           |                 |                                     | Attendance Required    | <input type="checkbox"/>                                                        |
| Semester                         | 8                                                         | Course Offering | Summer/Winter                       | Undergraduate Program  | <input type="checkbox"/>                                                        |
|                                  |                                                           |                 |                                     | Advanced Studies       | <input checked="" type="checkbox"/>                                             |

**Learning Objectives**

Students will be able to analyze and evaluate ship operations aboard a seagoing vessel. To this end, they can understand the physical phenomena related to stability and ship handling, apply preventive strategies, assess complex situations, develop solutions, and implement them in operational ship handling. In addition, they can plan a ship's loading, prepare for and ensure safe transport, operate the cargo calculator while being aware of its limitations and approval conditions, carry out and evaluate complex voyage planning, as well as apply navigation procedures and describe their limitations.

**Course Content**

- Physical phenomena related to stability and strength
- Cargo Planning and Cargo Management
- Cargo calculator
- Complex interrelationships of ship behavior and maneuvering in severe weather, particularly with regard to stability
- Maneuvering and navigation strategies and methods in safety-critical situations
- Navigation Methods
- Trip Planning

**Qualification Table A-II/1**

Supervising the loading, stowage, securing, and unloading of cargo, as well as the care of the cargo during the voyage; inspecting cargo holds, hatch covers, and ballast tanks, and reporting any defects or damage to them; maintaining the seaworthiness of the ship; ensuring compliance with legal regulations

**Qualification Table A-II/2**

Planning and ensuring the safe loading, stowage, securing, and unloading of cargo, as well as the safe care of cargo during the voyage; assessing reported defects and damage to cargo holds, hatch covers, and ballast tanks, and taking appropriate measures in such cases; transport of dangerous goods; influencing trim, stability, and stress

**Additional Notes**

**Certificates**

|            |        |                               |
|------------|--------|-------------------------------|
| Instructor | Course | Teaching and Learning Methods |
| rse        | Cou    |                               |

Semester 8.

## Translation, the German version is binding

Module

BEP Theory: Vessel Operation, Cargo Handling, and Stowage

Plawenn

Kreutzer

4

BEP Theory: Ship Handling, Cargo Handling, and Stowage

V + Ü

# Translation, the German version is binding

Semester

Module  
ers 1–8

Semest

Offshore Navigation

Instructor

Kreutzer

Type

Elective module

ECTS

5

SWS

4

Recommendation/Prerequisites

Self-study hours

53

Profile

Classroom study hours 72

Exam Type

R

Nautical Studies

☒

☒

German ☐ English ☒

MTSM Exam Format

Attendance required

☒

Semester

Semesters 1–8

Course

Summer Semester

Undergraduate Program ☐

Advanced Studies

☐

Learning Objectives

Students will be able to understand the fundamentals of offshore operations and the necessary planning steps.

This includes distinguishing between the various classes of vessels and the typical tasks they perform.

The operation of offshore vessels differs in many ways from traditional cargo shipping. These differences are explained to students and can serve as a basis for deciding on a professional specialization.

In addition, the following key competencies are strengthened: independence, creativity, flexibility, and safety awareness.

Course Content

The instructor teaches students: - The various types of offshore vessels - The work performed by such vessels - The development of the oil and gas industry in the offshore sector - The development of the offshore wind industry - Planning steps in the development of offshore fields (O&G and wind) - Offshore drilling - Supply operations - Diving operations - Use of underwater robots - Emergency preparedness - Offshore engineering

Qualification Table A-II/1

Qualification Table A-II/2

Additional Notes

EPAS Terminal Field Trip

Certificates

Instructor

Course

Teaching and Learning

Cou

Methods

rse

Plawenn

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Semester Winter 1–8

## Translation, the German version is binding

Module Tanker Basics (Oil/Chemicals/Liquefied Gas)

Instructor Kreutzer

Type Elective

ECTS 3

Recommendation/  
Prerequisites Valid maritime service fitness certification, valid basic safety training

SWS 2

Self-study hours 35

Profile

Classroom study hours 40

Exam Type K2 / H(20) / R

Navigation ☒MTSM ☐German ☒ English ☒

Exam Format SL

Attendance Required ☒

Semester Winter 1–8

Course

Winter

Undergraduate Program ☐Advanced Studies ☐

Learning Objectives

Upon successful completion of this module, students will be able to

- list all loading and unloading processes associated with loading and unloading
- describe the physical and chemical properties of chemical and oil-containing cargoes
- list precautions to avoid hazards
- identify health and safety precautions in the workplace
- identify potential emergencies
- Identify measures to prevent environmental pollution

Course Content

Based on IMO Model Courses 1.01 and 1.04

- Basic knowledge of the various types of tankers
- Physical and chemical properties of oil, chemicals, and liquefied gases
- Safety culture and adherence to safe ship operations on tankers
- Hazards posed by oil, chemicals, and liquefied gases as cargo
- Occupational safety, fire prevention, and firefighting
- Cargo operations
- Emergencies on Oil, Chemical, and Liquefied Gas Tankers
- Prevention of Environmental Pollution

Qualification Table A-II/1

No relation to A-II/1

Qualification Table A-II/2

No relation to A-II/2

Additional Notes

Upon successful completion of the module and participation in the training course "Firefighting Measures for Service on All Tanker Vessels and for Service on Vessels Subject to the IGF Code" Issuance of certificates of competency by the BSH STCW A V/1-1-1 Basic Training in Cargo Handling on Oil and Chemical Tanker Vessels and STCW A V/1-2-1 Basic training in cargo handling on liquefied gas tankers

Certificates

Instructor

Course

Teaching and Learning  
Methods

rse

Cou

Knoop

2

Basic Tanker (Oil/Chemicals/Liquefied Gas)

Lecture + Discussion

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# Translation, the German version is binding

Semester W  
5th/6th/8th

Module Occupational  
Safety

Responsible Meyer

Type Elective module ECTS 5

SWS 4

Recommendation/Prerequisites

Self-study hours 53

Profile Maritime Safety and Quality Management Exam Type K2/ R

Classroom instruction hours 72

Nautical Studies ☒ MTSM Exam

German ☒ English ☐

Format PL



Attendance required ☐

Semester W 5th/6th/8th Course Winter Semester

Foundation Program ☐

Advanced Studies ☒

Learning Objectives

Students will be able to understand and apply the fundamentals of occupational health and safety.

To this end, they understand the fundamentals of workplace health promotion and can apply them at the planning and implementation levels.

Course Content

Teaching the essential content of workplace safety, occupational health and safety, and health protection, taking into account the specific criteria in the maritime industry (=> safety on board ships):

- Safety and Health Protection
- Fundamentals of occupational safety and health
- Understanding the roles and responsibilities of the occupational safety specialist
- Risk factors and health-promoting factors
- Identifying and Assessing Hazards – Setting Goals for Safe and Health-Promoting Work Systems
- Fundamentals of Work System Design (Requirements for work equipment and workplaces, workplace design, work tasks, work organization, working hours and breaks, personal protective equipment, qualifications and behavior, occupational health aspects, and health promotion measures)
- Finding solutions, implementing occupational safety and health measures, and monitoring their effectiveness
- Integration of occupational safety and health into the company's organizational structure
- Roles and responsibilities in planning and conceptual development
- Preventive Measures in Work System Design
- Occupational Safety and Health Management

Qualification Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional Notes

Certificates

Instructor Course  
rse Cou

Teaching and Learning  
Methods

Meyer 4 Workplace Safety

V + Ü

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Semester W  
5th/6th/8th

## Translation, the German version is binding

Auditing

Module

Responsible Kreutzer

Type Elective module

ECTS 5

SWS 4

Recommendation/Prerequisites

Self-study hours 53

Profile Maritime Safety and Quality Management Exam Type K1+R

Classroom instruction hours 72

Nautical Studies ☒

MTSM Exam ☒

German ☒ English ☒

Format PL

Attendance is mandatory ☐

Semester W 5th/6th/8th  
Advanced Studies ☒ Course SS

Undergraduate Studies ☐

Learning Objectives

Students will be able to plan, conduct, and evaluate audits.

To this end, they can classify and distinguish between different types of audits, analyze audit results, identify problem areas, develop proposed solutions, and develop, explain, and evaluate corrective actions.

Course Content

The instructor teaches students

- Terminology, fundamentals, and legal considerations in the field of auditing
- Types of audits and their areas of application
- The benefits of audits in quality management
- The audit process
- Planning and evaluating audits

Qualification Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional Notes

Certificates

Instructor  
rse Course  
Cou

Teaching and Learning  
Methods

Knoop 4 Auditing

V + Ü

Semester W  
5th/6th/8th

## Translation, the German version is binding

### Design and Operation of Marine Engine Systems

#### Module

|                                  |                                                    |            |                                     |                            |                                                                      |
|----------------------------------|----------------------------------------------------|------------|-------------------------------------|----------------------------|----------------------------------------------------------------------|
| Responsible                      | Meyer                                              | Type       | Elective module                     | ECTS                       | 5                                                                    |
| Recommendation/<br>Prerequisites | Undergraduate<br>Studies                           |            |                                     | SWS                        | 4                                                                    |
|                                  |                                                    |            |                                     | Self-study hours           | 53                                                                   |
| Specialization                   | Greenshipping/Marine and Environmental Engineering |            |                                     | In-person course, 72 hours |                                                                      |
| Exam Type                        | K1 + H                                             | Navigation | <input checked="" type="checkbox"/> | MTSM                       | <input checked="" type="checkbox"/>                                  |
| Exam Format                      | PL                                                 |            |                                     | German                     | <input checked="" type="checkbox"/> English <input type="checkbox"/> |
|                                  |                                                    |            |                                     | Attendance required        | <input type="checkbox"/>                                             |
| Semester                         | W 5th/6th/8th                                      | Course     | Winter                              | Undergraduate Program      | <input type="checkbox"/>                                             |
|                                  |                                                    |            |                                     | Advanced Studies           | <input checked="" type="checkbox"/>                                  |

#### Learning Objectives

Students will be able to apply calculation methods for the design of various propulsion components, as well as perform measurements on engine systems, evaluate the measured values, assess errors, and interpret the results.  
To this end, they can evaluate ship propulsion concepts as well as input variables and boundary conditions for the design of ship propulsion systems and select components for ship propulsion systems.

#### Course Content

Preparation of energy balances for ship designs; working with design parameters of engine systems; determination of design parameters for propulsion systems and power generators. Criteria for selecting suitable propulsion and power generation concepts. Calculation and design of individual propulsion components and associated operating systems.

Operating an engine system under supervision. Conducting engine tests at various load levels and operating conditions. Measuring all relevant operating parameters.  
Analysis of the measurement technology used, estimation of achievable measurement accuracies, preparation of a measurement data evaluation, and interpretation of the measurement results.

#### Qualification Table A-II/1

No relation to A-II/1

#### Qualification Table A-II/2

No reference to A-

#### II/2 Additional notes

#### Certificates

#### Instructor

#### Course

#### Teaching and Learning Methods

rse

Cou

#### Stampa

Meyer

4

Design and Operation of Marine Engine Systems

V + Ü

Semester W  
5th/6th/8th

## Translation, the German version is binding

### Energy-Efficient Ship Operation

|                              |                                                           |                  |                                                      |                          |                                                                                        |
|------------------------------|-----------------------------------------------------------|------------------|------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------|
| Module                       |                                                           |                  |                                                      |                          |                                                                                        |
| Responsible                  | Vahs                                                      | Type             | Elective module                                      | ECTS                     | 5                                                                                      |
| Recommendation/Prerequisites |                                                           |                  |                                                      | SWS                      | 4                                                                                      |
|                              |                                                           |                  |                                                      | Self-study hours         | 53                                                                                     |
| Profile                      | Green Shipping/Marine and Environmental Engineering; Ship |                  |                                                      |                          | Classroom instruction hours 72                                                         |
| Handling                     | Exam Type K2/H                                            | Nautical Science | <input checked="" type="checkbox"/>                  | <input type="checkbox"/> | German <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |
|                              | MTSM Exam Format                                          | PL               | Attendance required <input type="checkbox"/>         |                          |                                                                                        |
| Semester                     | W 5th/6th/8th                                             | Course           | Foundation Program <input type="checkbox"/>          |                          |                                                                                        |
|                              |                                                           |                  | Advanced Studies <input checked="" type="checkbox"/> |                          |                                                                                        |

**Learning Objectives**

Students will be able to understand the relationships between navigation decisions and energy consumption, the influence of weather on safety and energy consumption, and the effect of wind propulsion on fuel consumption as well as other ship parameters and ship efficiency. To this end, they can describe physical effects on sails and the hull, perform route optimization for a sail-powered vessel, and monitor voyage planning using modern technical methods (especially ECDIS and weather routing). In addition, they possess advanced skills in voyage planning using nautical charts and nautical publications and can evaluate a voyage plan while taking into account technical, meteorological, and environmental parameters (e.g., consumption, EEOI).

**Course Content**

The instructor teaches students:

- Forces and moments generated by wind propulsion and their effects on the ship.
- Maneuvering characteristics and stability under sail.
- Introduction to route optimization systems.
- IMO conventions and guidelines, such as MARPOL, EEDI, and SEEMP.
- Voyage planning, particularly using technical systems (ECDIS, digital publications, and weather-routing software).

Certification Table A-II/1

Certification Table A-II/2 Additional

Notes

Certificates

|            |                                                        |                               |
|------------|--------------------------------------------------------|-------------------------------|
| Instructor | Course                                                 | Teaching and Learning Methods |
| rse        | Cou                                                    |                               |
| Vahs       | 4 Energy Efficiency in Ship Operations/Sail Propulsion | Lecture + Lab                 |

# Translation, the German version is binding

Semester W  
5th/6th/8th

Enhanced Shiphandling

Module

|                                  |             |      |                 |                  |    |
|----------------------------------|-------------|------|-----------------|------------------|----|
| Instructor                       | Vahs        | Type | Elective module | ECTS             | 5  |
| Recommendation/<br>Prerequisites | Maneuvering |      |                 | SWS              | 4  |
|                                  |             |      |                 | Self-study hours | 53 |

|             |               |            |                                     |                            |                          |                     |                                     |         |                                     |
|-------------|---------------|------------|-------------------------------------|----------------------------|--------------------------|---------------------|-------------------------------------|---------|-------------------------------------|
| Profile     | Ship Handling |            |                                     | In-person course, 72 hours |                          |                     |                                     |         |                                     |
| Exam Type   | K2/H          | Navigation | <input checked="" type="checkbox"/> | MTSM                       | <input type="checkbox"/> | German              | <input checked="" type="checkbox"/> | English | <input checked="" type="checkbox"/> |
| Exam Format | PL            |            |                                     |                            |                          | Attendance required | <input type="checkbox"/>            |         |                                     |
| Semester    | W 5th/6th/8th | Course     |                                     | Undergraduate Program      | <input type="checkbox"/> | Advanced Studies    | <input checked="" type="checkbox"/> |         |                                     |

**Learning Outcomes**

Students will be able to operate maneuvering systems on various specialized vessels. To this end, they can describe the operation of both specialized and innovative maneuvering systems.

**Course Content**

The instructor teaches students

- how to maneuver various specialized vessels, including their characteristic maneuvering behavior and typical maneuvering systems.
- how to maneuver using specialized propulsion systems, e.g., azimuth thrusters (pods).
- innovative propulsion concepts and their distinctive features.

Qualification Table A-II/1

Qualification Table A-II/2

Additional Notes

Certificates

|            |                          |                               |
|------------|--------------------------|-------------------------------|
| Instructor | Course                   | Teaching and Learning Methods |
| rse        | Cou                      |                               |
| Vahs       | 4 Enhanced Ship Handling | L + P                         |

Semester W  
5th/6th/8th

## Translation, the German version is binding

|                                  |                                                                                                                                                                                                                                                                                                                                               |      |                 |      |   |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|------|---|
| Module                           | Advanced Training for Oil and Chemical Tankers                                                                                                                                                                                                                                                                                                |      |                 |      |   |
| Instructor                       | Kreutzer                                                                                                                                                                                                                                                                                                                                      | Type | Elective module | ECTS | 5 |
| Recommendation/<br>Prerequisites | Certificate of Competency in Basic Tanker Training (oil/chemicals or all types of tankers) or the Basic Tanker Training module (all types of tankers and proof of "Firefighting Measures for Service on All Tankers and for Service on Ships Subject to the IGF Code"), valid medical fitness for seagoing service, valid Basic Safety Course |      |                 | SWS  | 4 |

|             |               |                                                                                        |                                     |                                     |
|-------------|---------------|----------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
|             |               | Self-study hours                                                                       |                                     | 53                                  |
| Profile     | Ship Handling | In-person course, 72 hours                                                             |                                     |                                     |
| Exam Type   | K2 / H / R    | Navigation                                                                             | <input checked="" type="checkbox"/> | MTSM <input type="checkbox"/>       |
| Exam Format | PL            | German <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |                                     |                                     |
|             |               | Attendance required                                                                    |                                     | <input checked="" type="checkbox"/> |
| Semester    | W 5th/6th/8th | Course                                                                                 | SS                                  |                                     |
|             |               | Undergraduate Program <input type="checkbox"/>                                         |                                     |                                     |
|             |               | Advanced Studies                                                                       |                                     | <input checked="" type="checkbox"/> |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning Objectives | Upon successful completion of this module, students will be able to <ul style="list-style-type: none"><li>- safely perform and monitor all loading operations</li><li>- describe the physical and chemical properties of chemical and oil-containing cargoes</li><li>- explain safety precautions to prevent hazards</li><li>- identify health and safety precautions in the workplace</li><li>- resolve emergencies as they arise</li><li>- Identify measures to prevent environmental pollution</li></ul> |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Course Content | Based on IMO Model Courses 1.02 and 1.03 <ul style="list-style-type: none"><li>- Introduction to the Topic</li><li>- Properties and characteristics of oils and chemicals</li><li>- Hazards associated with handling oils and chemicals</li><li>- Rules and Regulations</li><li>- Design and Equipment of Oil and Chemical Tankers</li><li>- Inert Gas Systems</li><li>- Cargo and ballast pumps</li><li>- Occupational Safety and Pollution Prevention</li><li>- Cargo Handling and Ballast</li><li>- Tank Cleaning</li><li>- Crude Oil Washing</li><li>- Ship/Shore Interface</li><li>- Emergency Procedures</li></ul> |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Qualification Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No relation to A-II/2

Additional Notes STCW Code Section A-V / 1-1-2 Advanced training in cargo handling on oil tankers,  
STCW Code Section A-V / 1-1-3 Advanced training in cargo handling on chemical tankers

Semester W  
5th/6th/8th

Module  
Certificates

## Translation, the German version is binding

Advanced Training for Oil and Chemical  
Tankers

Instructor

Course  
Cou

Teaching and Learning  
Methods

rse

Kreutzer

4 Advanced Training for Oil and Chemical Tankers

V + Ü

# Translation, the German version is binding

Semester W  
5th/6th/8th

Greenshipping

Module

Responsible Bentin

Type Elective module

ECTS 5

SWS 4

Recommendation/Prerequisites

Self-study hours 53

Profile Green Shipping/Marine and Environmental Engineering

Classroom instruction hours 72

Exam Type H Nautical Science ☒

German ☒ English ☒

MTSM Exam Format

PL

☒

Attendance required ☐

Semester W 5th/6th/8th

Course

Foundation Program ☐

Advanced Studies ☒

Learning Objectives

Students will be able to develop a concept for CO<sub>2</sub> monitoring and assist in the process of creating an IHM list.  
To this end, they possess advanced knowledge of the content of the IMO and EU regulations on CO<sub>2</sub> monitoring and ship recycling, are familiar with various systems for measuring and calculating CO<sub>2</sub> in accordance with the regulations, are aware of the different hazardous substances that may be present in the ship's structure, and know where they might be located on the ship. In addition, they are familiar with the advantages of different CO<sub>2</sub> monitoring concepts, their measurement principles, and the systems and techniques used to monitor the ship's propulsion and operational systems.

Course Content

With the adoption of the EU Regulation on the Monitoring and Reporting of CO<sub>2</sub> Emissions at Sea (MRV Regulation), it is mandatory to measure, document, and certify CO<sub>2</sub> emissions. As of January 1, 2018, shipowners whose vessels call at EU ports are required to report these emissions. A similar regulation was also discussed at the IMO level and was implemented in 2019. Continuous monitoring and regular analysis of operational data can make ship operations more efficient.  
Another important environmental regulation at the international level is the HONG KONG CONVENTION, which sets new requirements for ship recycling, as well as the new European Council regulation that makes the European Ship Recycling Regulation applicable to all ships over 500 GT calling at an EU port. An IHM list is required for these ships.

Qualification Table A-II/1

No relation to A-II/1

Qualification Table A-II/2

No reference to A-

II/2 Additional Notes

Certificates

Instructor

Course

Teaching and Learning  
Methods

rse

Cou

Bentin

4

Greenshipping

V

Semester W  
5th/6th/8th

## Translation, the German version is binding

Oceanography Practicum

|                              |                                                     |                  |                                     |                             |                                     |         |                          |
|------------------------------|-----------------------------------------------------|------------------|-------------------------------------|-----------------------------|-------------------------------------|---------|--------------------------|
| Module                       |                                                     |                  |                                     |                             |                                     |         |                          |
| Responsible                  | Strybny                                             | Type             | Elective module                     | ECTS                        | 5                                   |         |                          |
| Recommendation/Prerequisites |                                                     |                  |                                     | SWS                         | 4                                   |         |                          |
|                              |                                                     |                  |                                     | Self-study hours            | 53                                  |         |                          |
| Profile                      | Green Shipping/Marine and Environmental Engineering |                  |                                     | Classroom instruction hours | 72                                  |         |                          |
| Exam Type                    | K1/eA/H/R                                           | Nautical Science | <input checked="" type="checkbox"/> | German                      | <input checked="" type="checkbox"/> | English | <input type="checkbox"/> |
|                              | MTSM Exam Format                                    | PL               | <input checked="" type="checkbox"/> | Attendance required         | <input type="checkbox"/>            |         |                          |
| Semester                     | W 5th/6th/8th                                       | Course           | SS                                  | Foundation Program          | <input type="checkbox"/>            |         |                          |
|                              |                                                     |                  |                                     | Advanced Studies            | <input checked="" type="checkbox"/> |         |                          |

Learning Outcomes Students will be able to independently plan, conduct, and evaluate engineering and scientific measurement campaigns at and on the sea.

Course Content

Introductory lectures on the physics, chemistry, and biology of the ocean and on the fundamentals of research vessel operations

Preparation of students for oceanographic investigations in the laboratory:

- Technical preparation, calibration, and verification of instruments
- Preparations for sample collection
- Planning of measurement cruises

Conducting measurement cruises in river estuaries and the southern North Sea

- Recording of measurement data and collection of samples, e.g., using
  - an integrating water sampler, bottom grab, plankton net
  - multiparameter probe, Secchi disk
  - flow velocity vanes
  - sonar system, underwater camera

Analysis of the results in the laboratory

- e.g., drying, sieving
- Microscopy, stereoscopy
- Digital photogrammetry methods in microscopy and stereoscopy Computational, graphical, and textual analysis and interpretation of results

Qualification Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional notes

Certificates

|            |                          |                               |
|------------|--------------------------|-------------------------------|
| Instructor | Course                   | Teaching and Learning Methods |
| rse        | Cou                      |                               |
| Strybny    | 4 Oceanography Practicum | Lecture + Lab                 |

# Translation, the German version is binding

Semester W  
5th/6th/8th

Quality Management Systems

Module

|                              |          |      |                 |      |   |
|------------------------------|----------|------|-----------------|------|---|
| Instructor                   | Kreutzer | Type | Elective module | ECTS | 5 |
|                              |          |      |                 | SWS  | 4 |
| Recommendation/Prerequisites |          |      |                 |      |   |

Self-study hours 53

|         |                                                      |           |                                     |                                                                             |                          |
|---------|------------------------------------------------------|-----------|-------------------------------------|-----------------------------------------------------------------------------|--------------------------|
| Profile | Maritime Safety and Quality Management               | Exam Type | R                                   | Classroom study hours                                                       | 72                       |
|         | Nautical Studies <input checked="" type="checkbox"/> | MTSM Exam | <input checked="" type="checkbox"/> | German <input checked="" type="checkbox"/> English <input type="checkbox"/> |                          |
| Format  | PL                                                   |           |                                     | Attendance required                                                         | <input type="checkbox"/> |

|          |                  |                                     |                 |                       |                          |
|----------|------------------|-------------------------------------|-----------------|-----------------------|--------------------------|
| Semester | W 5th/6th/8th    | Course                              | Winter Semester | Undergraduate Program | <input type="checkbox"/> |
|          | Advanced Studies | <input checked="" type="checkbox"/> |                 |                       |                          |

**Learning Objectives**

Students will be able to apply, develop, and optimize QMSs in a purpose-driven manner. To this end, they will be able to compare different QM models, assess the costs and benefits of a QMS, and plan and select the integration of a QMS into an existing management system in a practical, application-oriented manner.

**Course Content**

The instructor teaches students

- Terms and definitions related to QMS
- The fundamentals, functions, and objectives of QMS, particularly in the maritime sector
- Tools and methods for quality control and improvement
- Prerequisites for the successful implementation of QMS
- Overarching aspects such as standardization and certification

Qualification Table A-II/1 No reference to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional Notes

Certificates

|            |                              |                       |
|------------|------------------------------|-----------------------|
| Instructor | Course                       | Teaching and Learning |
| rse        | Cou                          | Methods               |
| Knoop      | 4 Quality Management Systems | V + Ü                 |

# Translation, the German version is binding

Semester W  
5th/6th/8th

Ship Design

Module

Responsible Bentin Type Elective module ECTS 5  
SWS 4  
Recommendation/ Ship Theory  
Prerequisites Self-study hours 78

Profile Greenshipping/Marine and Environmental Engineering In-person course, 72 hours  
Exam Type K1 + H Nautical Science ☒ ☒ German ☒ English ☐  
MTSM Exam Format PL Attendance is mandatory ☐  
Semester W 5th/6th/8th Course SS Undergraduate Program ☐  
Specialized Studies ☒

Learning Objectives Students will be able to identify the design requirements for a ship based on a transportation task and develop a rough design for a ship that meets these requirements.  
To this end, they can interpret the composition of a ship's resistance, explain how a propeller works, and predict the ship's hull resistance in calm water using empirical methods; assess the environmental impact of the ship system as well as its efficiency; and determine relevant contractual figures. This process strengthens the following key competencies: contextual thinking, creativity, analytical skills, willingness to learn, and decision-making

Course Content Resistance and Propulsion: Fundamentals of fluid mechanics, numerical prediction methods, model testing techniques for both the ship's hull and the propeller; Ship Design: Naval architecture design process, economic feasibility analyses, key ship parameters and the effects of their modification, systems engineering

Qualification Table A-II/1 No reference to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional Notes

Certificates

| Instructor | Course                      | Teaching and Learning Methods |
|------------|-----------------------------|-------------------------------|
| Bentin     | 2 Resistance and Propulsion | Lecture + Discussion          |
| Bentin     | 2 Ship Design               | Lecture + Discussion          |

Semester W  
5th/6th/8th

## Translation, the German version is binding

Environmental Management Systems / Environment Protection Management Systems

|                              |                                                                      |                                                 |                  |                                     |    |                                                                             |                          |
|------------------------------|----------------------------------------------------------------------|-------------------------------------------------|------------------|-------------------------------------|----|-----------------------------------------------------------------------------|--------------------------|
| Module                       |                                                                      |                                                 |                  |                                     |    |                                                                             |                          |
| Responsible                  | Strybny                                                              | Type                                            | Elective module  | ECTS                                | 5  |                                                                             |                          |
|                              |                                                                      |                                                 |                  | SWS                                 | 4  |                                                                             |                          |
| Recommendation/Prerequisites |                                                                      |                                                 |                  | Self-study hours                    | 53 |                                                                             |                          |
| Program                      | Green Shipping/Marine and Environmental Engineering; Maritime Safety |                                                 |                  | Classroom study hours               | 72 |                                                                             |                          |
| and... Assessment Type       |                                                                      | K2 / R                                          | Nautical Science | <input checked="" type="checkbox"/> |    | German <input type="checkbox"/> English <input checked="" type="checkbox"/> |                          |
|                              | MTSM                                                                 | <input checked="" type="checkbox"/> Exam Format | PL               |                                     |    | Attendance required                                                         | <input type="checkbox"/> |
| Semester                     | W 5th/6th/8th                                                        | Course                                          | Winter Semester  |                                     |    | Undergraduate Program                                                       | <input type="checkbox"/> |
|                              | Advanced Studies                                                     | <input checked="" type="checkbox"/>             |                  |                                     |    |                                                                             |                          |

**Learning Objectives**

Students will be able to guide environmental awareness within a company through a structured development process.  
To this end, they have gained an understanding of the connections between environmentally friendly products and services and responsible corporate management.

**Course Content**

This course focuses on examining a company's overall environmental impact. The emphasis is on the management tools available for the structured development of environmental awareness within an organization. The course explores the connection between ecology and economics and introduces the concept of eco-efficiency.

- Introduction to the ISO 14000 standards
- Preparing life cycle assessments for companies; distinguishing between material and impact assessments
- Use of life cycle inventory databases such as Ecoinvent, ProBas, ELCD, GEMIS, and NEEDS
- Impact indicators such as cumulative energy consumption, material intensity, carbon footprint, and ecological footprint
- Corporate responsibility for environmental protection and its documentation through eco-audits with the goal of environmental certification; consideration of the EMAS Regulation
- Introduction of key indicators for reviewing and improving operational environmental management

Competency Table A-II/1 No relation to A-II/1

Qualification Table A-II/2 No reference to A-

II/2 Additional notes

Certificates

|            |                                                                 |                       |
|------------|-----------------------------------------------------------------|-----------------------|
| Instructor | Course                                                          | Teaching and Learning |
| rse        | Cou                                                             | Methods               |
| Strybny    | 4 Environmental Management Systems / Environmental Protection M | Lecture + Seminar     |

Semester W 8.

## Translation, the German version is binding

Module Cruise

Instructor: Kreutzer

Type Elective module

ECTS 5

SWS 4

Recommendation/  
Prerequisites 1. PS, Ship Theory, Emergency Management

Self-study hours 53

Profile Ship Handling

On-campus course, 72 hours

Exam Type K2/ H /A

Navigation ☒ MTSM ☐

German ☒ English ☒

Exam Format PL

Attendance required ☒

Semester W 8.  
Advanced Studies

Course Winter Semester  
☒

Undergraduate Program ☐

### Learning Objectives

Upon successful completion of this module, students will be able to:

- describe how to safely handle passengers as they board and disembark from lifeboats
- contribute to the organization of emergency procedures on board
- explain the allocation of resources
- monitor and direct people on board in emergency situations
- explain measures for cargo security and hull integrity
- Describe the monitoring and control of the atmosphere in cargo holds

### Course Content

The instructor teaches students based on IMO Model Courses 1.41, 1.42, 1.44, 1.39, and 1.40, as currently in effect

- Ship design and layout
- Rules and regulations (SOLAS, STCW, relevant codes, national and regional laws, and industry standards)
- Use of resources
- Human Behavior in Emergencies
- Establishing and maintaining effective communication
- Practical exercises
- Loading and embarkation procedures
- Transportation of hazardous materials
- Cargo securing
- Stability, trim, and stress calculations
- Opening, Closing, and Securing Hull Openings
- Occupational Safety
- Emergency plans, procedures, and drills

Qualification Table A-II/1

No relation to A-II/1

Qualification Table A-II/2

No reference to A-

II/2

### Additional Notes

STCW Code Section A-V/2-2 Safety training for persons providing direct provide services to passengers in passenger spaces, STCW Code Section A-V/2-3 Training in crowd management, STCW Code Section A-V/2-4 Training in crisis management and human behavior, STCW Code Section A-V/2-5 Passenger safety, cargo security, and hull integrity.

### Certificates

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Semester W 8.

Module Cruise Shipping

Instructor Course

rse

Cou

Teaching and Learning  
Methods

4

L & D

Translation, the German version is binding

Semester W 8.

# Translation, the German version is binding

Module Safety and Security

|                                  |                                                                                      |                                     |                 |                                                         |                                                                                        |
|----------------------------------|--------------------------------------------------------------------------------------|-------------------------------------|-----------------|---------------------------------------------------------|----------------------------------------------------------------------------------------|
| Responsible                      | Kreutzer                                                                             | Type                                | Elective module | ECTS                                                    | 5                                                                                      |
| Recommendation/<br>Prerequisites | Must have completed at least one of the following:<br>Emergency Management or ISM/QM |                                     |                 | SWS                                                     | 4                                                                                      |
|                                  |                                                                                      |                                     |                 | Self-study hours                                        | 53                                                                                     |
| Program                          | Maritime Safety and Quality Management                                               | Exam Type                           | K1 +            | On-campus course, 72 hours                              |                                                                                        |
| H(10) / R                        | Nautical Studies                                                                     | <input checked="" type="checkbox"/> | MTSM Exam       | <input checked="" type="checkbox"/>                     | German <input checked="" type="checkbox"/> English <input checked="" type="checkbox"/> |
| Format                           | PL                                                                                   |                                     |                 | Attendance required <input checked="" type="checkbox"/> |                                                                                        |
| Semester                         | W 8.                                                                                 | Course                              | SS              | Undergraduate Program <input type="checkbox"/>          |                                                                                        |
|                                  | Advanced Studies                                                                     | <input checked="" type="checkbox"/> |                 |                                                         |                                                                                        |

**Learning Objectives**

Upon successful completion of this module, students will be familiar with various methods for investigating accidents and will be able to apply them.

They will be able to analyze accident reports and identify improvement measures based on the analysis.

They are familiar with the importance of accident investigations for the company's continuous improvement process (CIP) and how these investigations fit into the PDCA cycle.

Students can identify and assess hazards and risks to ships and crews in both areas (safety and security) and conduct corresponding risk assessments or SSAs.

They are aware of global threats (terrorism, piracy, smuggling, cybercrime, etc.) to shipping, independently gather information on these threats, and evaluate the threat potential for individual ships.

They are able to develop SSPs based on an SSA and initiate the approval process.

You can take precautions to ensure the effective implementation of SSPs on board and train the crew accordingly. You are familiar with the necessity and procedures for conducting inspections of security measures and implementing the SSP.

Participants are familiar with the proper use, upkeep, and maintenance of security equipment.

They are familiar with security-related documents and know how to handle them. In general, their awareness of threats to shipping has increased, and they are able to share this knowledge and enhance overall security.

**Course Content**

The instructor achieves the above-mentioned learning objectives for students by teaching the legal fundamentals. In addition, definitions and responsibilities relevant to the areas of safety and security are explained. What has been learned is reinforced through short exercises and review tasks.

Accident investigation methods are discussed theoretically and then practiced using real-world examples. Students work in groups during these exercises. The SSA and the SSP are also first discussed theoretically and then an SSA is conducted for a sample vessel. For this purpose, students conduct their own research on selected maritime areas. Based on the SSA that has been prepared, the creation, implementation, and possible modification of the SSP are discussed. This includes explaining to students how to handle safety-related information and documents.

The identification of hazards and threat scenarios is taught in the lecture, and strategies for dealing with them are discussed. Consequently, the effective implementation of drills and training is also a topic of the lecture. Throughout the lecture, the various security measures and equipment are explained. This includes the

Module

Safety and Security

"Safety and Security" covers the search of ships, persons, and luggage in detail and demonstrates these procedures in videos. Searches of persons and luggage are practiced hands-on.

Qualification Table A-II/1

Qualification Table A-II/2

Additional Notes

Certificates

CSO: Company Security Officer; SO: Shipboard Security Officer

Instructor

Course  
Cou

Teaching and Learning  
Methods

rse

Knoop

4

Safety and Security

Lecture + Discussion

Knoop

4

Safety and Security

V + Ü

| Module            | English |                                |         |               |  |
|-------------------|---------|--------------------------------|---------|---------------|--|
| Author            | Year    | Book Title                     | Edition | Location      |  |
| Van Dokkum, Klass | 2016    | Ship Knowledge                 | 9       | Enkhuizen, NL |  |
| Vince, Michael    | 2009    | Intermediate Language Practice | 1       | Oxford        |  |
| Vince, Michael    | 2009    | Advanced Language Practice     | 1       | Oxford        |  |

| Module                                        | Navigation |                                                        |         |            |  |
|-----------------------------------------------|------------|--------------------------------------------------------|---------|------------|--|
| Author                                        | Year       | Book Title                                             | Edition | City       |  |
| Berking, Bernhard; Huth, Werner               | 2016       | Handbook of Navigation                                 | 2       | Hamburg    |  |
| DSV-Verlag (publisher)                        | 2008       | Accompanying Booklet – Resource for Training and Exams | 2       | Bielefeld  |  |
| International Hydrographic Organization (Ed.) | 2008       | Symbols and Abbreviations Used on Admiralty            | 4       | Taunton    |  |
| Wallin, Börje                                 | 2021       | Ship Navigation                                        | 2       | Vlissingen |  |

| Module                                          | Nautical Fundamentals |                                                                                                                       |         |           |  |
|-------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|---------|-----------|--|
| Author                                          | Year                  | Book Title Ship                                                                                                       | Edition | Location: |  |
| Baudu, Herve                                    | 2014                  | Handling                                                                                                              |         | Enkhuizen |  |
| BG-Verkehr (publisher)                          | 2012                  | Maritime Handbook: Occupational Safety and Health in Maritime Shipping and Fishing                                    |         | Hamburg   |  |
| Clissold, Peter                                 | 1998                  | Basic Seamanship                                                                                                      | 7       | Glasgow   |  |
| German Weather Service (ed.)                    | 1993                  | Cloud Atlas for Weather Observation at Sea                                                                            | 2       | Hamburg   |  |
| Kropp, Björn; Peters, Reinhard; Wand, Christoph | 2012                  | Life and Learning on Board: Textbook for the Training of Trainees (Nautical Science), Marine Engineers, NOA, and SBTA | 2       | Herne     |  |
| Sakautzky, Detlev                               | 2006                  | Basic Knowledge of Ship Safety, Study Guide                                                                           |         | Berlin    |  |
| Sakautzky, Detlev; Geitmann, Peter              | 2012                  | Labor and Social Security Law: Basic Knowledge, Study Guide                                                           | 2       | Berlin    |  |

|                                                                                                                      |             |                                          |                                                                       |                             |               |
|----------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------|-----------------------------------------------------------------------|-----------------------------|---------------|
| Sakautzky, Detlev; Geitmann, Peter; MacDonald, James                                                                 |             | 2014                                     | Working with Ropes: Basic Knowledge for Marine Mechanics, Study Guide | Berlin                      |               |
| Sakautzky, Detlev; Geitmann, Peter; Ruhnke, Gisbert; Falke, Thorsten; Seidel, Karl-Heinz; Benecke, Friedrich Wilhelm |             | 2008                                     | Ship and Cargo: Basic Knowledge, Study Guide                          | Berlin                      |               |
| Sakautzky, Detlev; Geitmann, Peter; Wullekopf, Harm; Falke, Thorsten                                                 |             | 2007                                     | Bridge and Watch Duty: Basic Knowledge, Study Guide                   | Berlin                      |               |
| Marine Weather Service (ed.)                                                                                         |             | 2002                                     | Marine Weather                                                        | 2                           | Hamburg       |
| Van Dokkum, Klass                                                                                                    |             | 2016                                     | Ship Knowledge                                                        | 9                           | Enkhuizen, NL |
| Association of German Shipowners e.V.; Central Association of German Shipbrokers e.V. (eds.)                         |             | 2013                                     | Sea, Ship, Cargo: A Textbook for Maritime Business Professionals      | Lüneburg                    |               |
| Association for Shipbuilding and Marine Technology (ed.)                                                             |             | 2006                                     | Marine Engineering and Shipbuilding Technology                        | 2                           | Hamburg       |
| Module                                                                                                               | Meteorology |                                          |                                                                       |                             |               |
| Author                                                                                                               | Year        | Book Title                               | Edition                                                               | City                        |               |
| Bock, Karl-Heinz, Brauner, Ralf, Dentler, Frank-Ulrich                                                               | 2009        | Marine Weather                           | 2                                                                     | Hamburg                     |               |
| Häckel, Hans                                                                                                         | 2021        | Meteorology                              | 9                                                                     | Stuttgart                   |               |
| Liljequist, Gösta H., Cehak, Konrad                                                                                  | 2006        | General Meteorology                      | 3                                                                     | Berlin                      |               |
| Malberg, Horst                                                                                                       | 2007        | Meteorology and Climatology              | 5                                                                     | Berlin                      |               |
| Salby, Murry L.                                                                                                      | 1996        | Fundamentals of Atmospheric Physics      |                                                                       | San Diego                   |               |
| Scharnow, Ulrich, Berth, Werner, Keller, Werner                                                                      | 1990        | Maritime Meteorology                     | 7                                                                     | Berlin                      |               |
| Watts, Alan                                                                                                          |             | 2002                                     | The Weather in Pictures: Weather Forecasting Based on Cloud Photos    | Bielefeld                   |               |
| Module                                                                                                               | Ship Theory |                                          |                                                                       |                             |               |
| Author                                                                                                               | Year        | Book Title                               | Edition                                                               | City                        |               |
| Barrass, C. Bryan; Derrett, D.R.                                                                                     | 2012        | Ship Stability for Captains and Officers | 7                                                                     | Amsterdam/Boston/Heidelberg |               |

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| Clark, Ian C.                                            | 2002                    | Translation, the German version is binding like Management of Merchant Ship Stability, Trim, and Strength          | London              |
| Dokkum, Klaas van                                        | 2008                    | Ship Stability                                                                                                     | 3 Enkhuizen, NL     |
| Dokkum, Klaas van                                        | 2012                    | Ship knowledge                                                                                                     | 7 Enkhuizen, NL     |
| Association for Shipbuilding and Marine Technology (Ed.) | 2006                    | Marine Engineering and Shipbuilding Technology                                                                     | 2 Hamburg           |
| Module                                                   | Business Administration |                                                                                                                    |                     |
| Author                                                   | Year                    | Book Title                                                                                                         | Edition City        |
| Biebig, Peter; Althof, Wolfgang; Wagener, Norbert        | 2008                    | Maritime Transport Industry                                                                                        | 4 Munich/Vienna     |
| Büter, Clemens                                           | 2013                    | Foreign Trade – Fundamentals of International Trade Relations                                                      | 3 Berlin/Heidelberg |
| Däumler, Klaus-Dieter; Grabe, Jürgen                     | 2009                    | Cost Accounting 2                                                                                                  | 8 Herne/Berlin      |
| Eckardt, Gordon H.                                       | 2011                    | Business Management – Applied Business Administration (Conceptual and Methodological Foundations and Case Studies) | 3 Göttingen         |
| Stopford, Martin                                         | 2009                    | Maritime Economics                                                                                                 | 3 New York          |
| Association of German Shipowners (ed.)                   | 2008                    | Common Chart of Accounts for the German Merchant Marine                                                            | Hamburg             |
| by Känel, Siegfried                                      | 2008                    | Business Administration for Engineers                                                                              | Herne               |
| Wöltje, Jörg                                             | 2009                    | Collection of Business Administration Formulas                                                                     | 4 Munich            |
| Module                                                   | Security Services       |                                                                                                                    |                     |
| Author                                                   | Year                    | Book Title                                                                                                         | Edition Location    |
| International Chamber of Shipping (publisher)            | 2022                    | Bridge Procedures Guide                                                                                            | 6 : London          |
| Module                                                   | Personnel Management    |                                                                                                                    |                     |
| Author                                                   | Year                    | Book Title                                                                                                         | Edition City        |

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| Berthel, Jürgen; Becker, Fred G.                               | 2010 | Human Resource Management: Fundamentals for Concepts in Organizational Human Resources Management                | 9 | Stuttgart |
| BG-Verkehr (Ed.)                                               | 2018 | Guide to Implementing Maritime Labor Laws Under the German Flag                                                  |   | Hamburg   |
| Covey, Stephen R.                                              | 1997 | Principle-Centered Leadership                                                                                    |   | London    |
| Dekker, Sidney                                                 | 2015 | Safety Differently: Human Factors for a New Era                                                                  |   | London    |
| Diestel, Hans-Hermann                                          | 2005 | Compendium on Seamanship & Sea Accidents: A Practical Guide to Improving Seamanship and Preventing Sea Accidents |   | Hamburg   |
| Gregory, Dik; Shanahan, Paul                                   | 2017 | Being Human in Safety-Critical Organizations                                                                     |   | London    |
| Hentze, Joachim; Graf, Andrea; Kammel, Andreas; Lindert, Klaus | 2005 | Human Resource Management                                                                                        | 4 | Vienna    |
| International Labour Office (ed.)                              | 2008 | Compendium of Maritime Labor Instruments                                                                         |   |           |
| Jeffery, Richard                                               | 2007 | Leadership Throughout: How to Create a Successful Enterprise                                                     |   | London    |
| Le Goubin, Andre L.                                            | 2012 | Mentoring at Sea: The 10-Minute Challenge                                                                        |   | London    |
| Reason, James                                                  | 1997 | Managing the Risks of Organizational Accidents                                                                   |   | London    |
| Weber, Emma                                                    | 2014 | Turning Learning into Action: A Proven Methodology for Effective Transfer of Learning                            |   | London    |

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| Module                                         | Maritime English       |                                                                      |         |                 |
| Author                                         | Year                   | Book Title                                                           | Edition | Place           |
| Federal Maritime and Hydrographic Agency (ed.) | 2014                   | IMO Standard Marine Communication Phrases (IMO SMCP): English–German |         | Hamburg/Rostock |
| Dr. Mercedes Herrera Arnaiz                    | 2014                   | Use of English for Maritime Students                                 | 1       | Almería, Spain  |
| Van Kluijven, P.C.                             | 2013                   | The International Maritime Language Program                          | 5       | Alkmaar, NL     |
| Module                                         | Private Commercial Law |                                                                      |         |                 |
| Author                                         | Year                   | Book Title                                                           | Edition | Place           |
| Ahlers & Vogel (eds.)                          | 2019                   | Basic Texts on Maritime Law                                          | 2       | Bremen/Hamburg  |

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| Beck-Texte (eds.)                                                  | 2022 | Landfill Laws                                         | 100 | Munich          |
| Beck-Texte (eds.)                                                  | 2022 | Civil Code                                            | 89  | Munich          |
| Benedict, Knuth; Wand, Christoph                                   | 2018 | Handbook of Nautical Science II                       | 2   | Hamburg         |
| Führich, Ernst                                                     | 2017 | Private Commercial Law                                | 13  | Munich          |
| Jörgens, Runa; Bubenzer, Christian                                 | 2015 | Practical Handbook on Maritime Labor Law              |     | Berlin/New York |
| Mallach, Esther; Noltin, Jörg; Bubenzer, Christian; Preetz, Robert | 2015 | SeearbG                                               |     | Munich          |
| Schnauder, Franz                                                   | 2020 | Fundamentals of Private Law for the Bachelor’s Degree | 5   | Heidelberg      |

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| Module                            | Technical Navigation 1 & Radar Technology |                       |         |           |
| Author                            | Year                                      | Book Title            | Edition | City      |
| Alan Bole; Alan Wall; Andy Norris | 2013                                      | Radar and ARPA Manual | 3       | Amsterdam |

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| Module                             | Technical Navigation 2 & ECDIS |                                                                                                                                                                                                      |         |                      |
| Author                             | Year                           | Book Title                                                                                                                                                                                           | Edition | City                 |
| Becker-Heins, Ralph                | 2014                           | ECDIS Basics: A Guide to the Operational Use of Electronic Chart Display and Information Systems                                                                                                     | 1       | Lemmer, NL           |
| Berking, Bernhard; Huth, Werner    | 2016                           | Nautical Handbook                                                                                                                                                                                    | 2       | Hamburg              |
| Broster, Mark                      | 2018                           | ECDIS Procedures Guide                                                                                                                                                                               | 2       | Livingston, Scotland |
| Broster, Mark                      | 2020                           | ECDIS Procedures Guide                                                                                                                                                                               | 4       | Livingston, Scotland |
| Gale, Harry                        | 2009                           | From Paper Charts to ECDIS: A Practical Voyage Plan ; guidance for the shipping industry on the transition from paper chart navigation to an electronic chart display and information system (ECDIS) |         | London               |
| Hecht, Horst                       | 2011                           | The Electronic Chart: Fundamentals, Functions, Data, and Other Essentials; A Textbook for ECDIS Use and Training                                                                                     | 3       | Lemmer, NL           |
| Merchant Navy Training Board (ed.) | 2018                           | Electronic Chart Display and Information Systems (ECDIS) Simulator Training                                                                                                                          | 2       | Livingston, Scotland |
| Thornton, Peter                    | 2019                           | The ECDIS Manual                                                                                                                                                                                     | 2       | Livingston, Scotland |

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| Wallin, Börje                                      | 2021 | Ship Navigation                                                                                                              | 2 | Vlissingen           |
| Weintrit, Adam                                     | 2009 | The Electronic Chart Display and Information System (ECDIS): An Operational Handbook                                         |   | Boca Raton, FL       |
| Witherby Publishing Group Ltd (publisher)          | 2021 | ECDIS Passage Planning and Watchkeeping                                                                                      | 7 | Livingston, Scotland |
| Witherby Publishing Group Ltd. (Ed.)               | 2019 | ECDIS CPD: A Personal Record of Qualifications, Service, and Training, Including Preparation for ECDIS Exams and Assessments |   | Livingston, Scotland |
| Witherby Publishing Group Ltd. (Ed.)               | 2020 | ECDIS Passage Planning and Watchkeeping                                                                                      | 6 | Livingston, Scotland |
| Witherby Publishing Group Ltd. (Ed.)               | 2020 | ECDIS Safety Settings and UKC Management                                                                                     |   | Livingston, Scotland |
| Witherby Seamanship International Ltd. (publisher) | 2019 | ECDIS Passage Planning and Watchkeeping                                                                                      | 5 | Livingston, Scotland |

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| Module                                                         | Dangerous Cargo |                                                                                     |         |          |
| Author                                                         | Year            | Book Title                                                                          | Edition | City     |
| Federal Ministry of Transport and Digital Infrastructure (ed.) | 2016            | IMDG Code 2016: Including Amendment 38-16: Official German Translation              |         | Dortmund |
| Storck GmbH (publisher)                                        | 2019            | EmS and MFAG: Supplementary Regulations for the Transport of Dangerous Goods by Sea |         | Hamburg  |

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| Module                           | Cargo Handling |                           |         |         |
| Technology Author                | Year           | Book Title                | Edition | City    |
| Benedict, Knuth; Wand, Christoph | 2018           | Handbook of Navigation II | 2       | Hamburg |

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| Module                              | Maritime Trade |                                |         |                |
| Law Author                          | Year           | Book Title: Basic              | Edition | Location       |
| Ahlers & Vogel (eds.)               | 2019           | Texts on Maritime Law          | 2       | Bremen/Hamburg |
| Beck-Texte (ed.)                    | 2022           | Commercial Code                | 67      | Munich         |
| Benedict, Knuth; Wand, Christoph    | 2018           | Handbook of Navigation II      | 2       | Hamburg        |
| Drews, Kai-Holger                   | 2020           | Maritime Commercial Law        | 5       | Hagen          |
| Geisler, Alexander; Johns, Dirk Max | 2018           | Maritime Law – Vessels – Cargo | 2       | Lüneburg       |

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| Herber, Rolf                                                                                                               |  | 2015 | Maritime Commercial Law                                                            | 2       | Berlin/New York |
| Munich Commentary on the German Commercial Code (ed.)                                                                      |  | 2020 | Volume 7, Transport Law (2020)                                                     | 4       | Munich          |
| Rabe, Dieter; Bahnsen, Kay Uwe                                                                                             |  | 2018 | Maritime Commercial Law                                                            | 5       | Munich          |
| Ramming, Klaus                                                                                                             |  | 2017 | Maritime Commercial Law, Volume 1                                                  |         | Berlin/Boston   |
| Module Telecommunications                                                                                                  |  |      |                                                                                    |         |                 |
| Author                                                                                                                     |  | Year | Book Title                                                                         | Edition | City            |
| Bergmann, Michael; Brauner, Ralf; Callsen-Bracker, Hans-Heinrich; Hilmer, Hartmut H.; Korte, Holger; Majohr, Jürgen et al. |  | 2016 | Handbook of Navigation 1: Navigational Ship Handling                               | 2       | Hamburg         |
| Braun, Andreas                                                                                                             |  | 2011 | Marine Radio (LRC): With a Question-and-Answer Guide                               | 4       | Bielefeld       |
| Module Maneuvering                                                                                                         |  |      |                                                                                    |         |                 |
| Author                                                                                                                     |  | Year | Book Title                                                                         | Edition | City:           |
| Benedict, Knuth; Wand, Christoph                                                                                           |  | 2018 | Handbook of Nautical Science II                                                    | 2       | Hamburg         |
| Bertram, V.                                                                                                                |  | 2012 | Practical Ship Hydrodynamics                                                       | 2       | Oxford          |
| Groenhuis, S.                                                                                                              |  | 2018 | Ship Maneuvering                                                                   | 1       | Rotterdam       |
| Molland, A.                                                                                                                |  | 2007 | Marine Rudders and Control Surfaces: Principles, Data, Design, and Applications    |         |                 |
| Rowe, R.                                                                                                                   |  | 1997 | Shiphandler's Guide for Captains and Navigation Officers, Pilots, and Tug Captains |         | London          |
| Module Emergency                                                                                                           |  |      |                                                                                    |         |                 |
| Management Author                                                                                                          |  | Year | Book Title                                                                         | Edition | City            |
| Benedict, Knuth; Wand, Christoph                                                                                           |  | 2018 | Nautical Handbook II                                                               | 2       | Hamburg         |
| Module Cargo Care                                                                                                          |  |      |                                                                                    |         |                 |
| Author                                                                                                                     |  | Year | Book Title                                                                         | Edition | City            |
| Benedict, Knuth; Wand, Christoph                                                                                           |  | 2018 | Nautical Handbook II                                                               | 2       | Hamburg         |

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Taylor, Leslie G.

1992

Cargo Work: The Care, Handling, and Stowage of cargoes; including the management of marine cargo transportation

12 Glasgow

Module

BEP Theory: Ship Handling, Cargo Handling, and Stowage Author

Year

Book Title

Edition City

Bergmann, Michael; Brauner, Ralf; Callsen-Bracker, Hans-Heinrich; Hilmer, Hartmut H.; Korte, Holger; Majohr, Jürgen, et al.

2016

Handbook of Navigation 1: Navigational Ship Handling

2 Hamburg

Module

BEP Practical Ship Handling Simulator

Author

Year

Book Title

Edition Location:

Baudu, Herve

2014

Ship Handling

Enkhuizen

Bergmann, Michael; Brauner, Ralf; Callsen-Handling Bracker, Hans-Heinrich; Hilmer, Hartmut H.; Korte, Holger; Majohr, Jürgen, et al.

2016

Handbook of Nautical Science 1: Navigational Ship

2 Hamburg

Federal Maritime and Hydrography (ed.)

2014

IMO Standard Marine Communication Phrases (IMO SMCP), IMO Standard Phrases for maritime navigation: English – German

Hamburg/Rostock

Culjak, Anna

2015

Organization and Deviance: An Empirical Case Study of the Costa Concordia Shipwreck

Hamburg

Groenhuis, S.

2018

Ship Maneuvering

1 Rotterdam

Hecht, Horst

2011

The Electronic Chart: Fundamentals, Functions, Data, and Other Essentials; A Textbook for ECDIS Use and Training

3 Lemmer, NL

Rowe, R.

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Shiphandler's Guide for Captains and Navigation Officers, Pilots, and Tug Captains

London

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Witherby Publishing Group Ltd. (Ed.)

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| Module                                        | Quality Management Systems                  |                                                                                                                                                                             |         |                      |  |
| Author                                        | Year                                        | Book Title                                                                                                                                                                  | Edition | City                 |  |
| Chauvel, Alain-Michel                         | 1997                                        | Managing Safety and Quality in Shipping; The Key to Success; A Guide to ISM, ISO 9002; TQM                                                                                  |         | London               |  |
| Module                                        | Cruise Travel                               |                                                                                                                                                                             |         |                      |  |
| Author                                        | Year                                        | Book Title                                                                                                                                                                  | Edition | City:                |  |
| Covey, Stephen R.                             | 1997                                        | Principle-Centered Leadership                                                                                                                                               |         | London               |  |
| Culjak, Anna                                  | 2015                                        | Organization and Deviance: An Empirical Case Study of the Costa Concordia Shipwreck                                                                                         |         | Hamburg              |  |
| Dekker, Sidney                                | 2015                                        | Safety Differently: Human Factors for a New Era                                                                                                                             |         | London               |  |
| Gregory, Dik; Shanahan, Paul                  | 2017                                        | Being Human in Safety-Critical Organizations                                                                                                                                |         | London               |  |
| Hopkins, Andrew                               | 2012                                        | Disastrous Decisions: The Human and Organizational Causes of the Gulf of Mexico Blowout                                                                                     |         | North Ryde           |  |
| Kristiansen, Svein                            | 2013                                        | Maritime Transportation: Safety Management and Risk Analysis                                                                                                                |         | Oxon                 |  |
| Reason, James                                 | 1997                                        | Managing the Risks of Organizational Accidents                                                                                                                              |         | London               |  |
| Weber, Emma                                   | 2014                                        | Turning Learning into Action: A Proven Methodology for Effective Transfer of Learning                                                                                       |         | London               |  |
| Module                                        | Tanker Basics (Oil/Chemicals/Liquefied Gas) |                                                                                                                                                                             |         |                      |  |
| Author                                        | Year                                        | Book Title                                                                                                                                                                  | Edition | City                 |  |
| Chemical Distribution Institute (Ed.)         | 2018                                        | Chemical Tanker Operations for the STCW Advanced Training Course: A Practical Guide to Chemical Tanker Operations                                                           | 1       | Livingston, Scotland |  |
| Paul Moehlke OHG Printing Company (publisher) | 2018                                        | Oil Record Book: in accordance with the 1973 International Convention for the Prevention of Pollution from Ships and the 1978 Protocol to that Convention (MARPOL 73/78)... |         | Hamburg              |  |

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| International Association of Independent Tanker Owners (publisher)    | 2014 | A Guide to Correct Entries... / p. 2, Cargo/Ballast operations                                                                                                                               | 1  |                      |
| International Association of Independent Tanker Owners (Ed.)          | 2014 | A guide for correct entries ... / p. 1, Machinery space operations                                                                                                                           | 3  |                      |
| International Association of Independent Tanker Owners (Ed.)          | 2016 | Safety Management Initiatives in Shipping                                                                                                                                                    | 1  | London               |
| International Association of Independent Tanker Owners (Ed.)          | 2017 | A Guide to the Vetting Process                                                                                                                                                               | 12 | London               |
| International Chamber of Shipping (ed.)                               | 2020 | ISGOTT International Safety Guide for Oil Tankers and Terminals                                                                                                                              | 6  | Livingston, Scotland |
| Merchant Navy Training Board (ed.)                                    | 2015 | Tanker Training Course Criteria: Basic Training for Oil, Chemical, and Liquefied Gas Tanker Cargo Operations; Advanced Training for Oil, Chemical, and Liquefied Gas Tanker Cargo Operations |    | Edinburgh            |
| Oil Companies International Marine Forum (Ed.)                        | 2017 | Recommendations for Oil and Chemical Tanker Manifolds: and Associated Equipment                                                                                                              | 1  | Livingston, Scotland |
| Oil Companies International Marine Forum (Ed.)                        | 2017 | Tanker Management and Self-Assessment: A Best Practice Guide                                                                                                                                 | 1  | Livingston, Scotland |
| Oil Companies International Marine Forum (Ed.)                        | 2018 | Guidelines for Offshore Tanker Operations                                                                                                                                                    | 1  | Livingston, Scotland |
| Oil Companies International Marine Forum (Ed.)                        | 2018 | Guidelines for Offshore Tanker Operations                                                                                                                                                    | 1  | Livingston, Scotland |
| Society of International Gas Tanker and Terminal Operators Ltd. (Ed.) | 2018 | Ship/shore interface for LNG and chemical gas carriers and terminals                                                                                                                         | 1  | Livingston, Scotland |
| Society of International Gas Tanker and Terminal Operators Ltd. (Ed.) | 2019 | SIGTTO Information Papers (2019)                                                                                                                                                             | 1  | Livingston, Scotland |