

# INTERNATIONAL DEGREE PROGRAMME SHIP MANAGEMENT – NAUTICAL SCIENCES B.Sc.

## MODULHANDBUCH / MODULE DESCRIPTIONS

Version 2.5 01.10.2023



### Studienverlaufsplan / Curriculum

1. Semester	2. Semester	3. Semester	4. Semester	5. Semester	6. Semester	7. Semester	8. Semester
<b>1.1</b> Navigation Basics Nautical Math. Celestial Nav.  6 ECTS	<b>2.1</b> Navigation Systems / Informatics  6 ECTS	<b>3.1</b> Practical Semester 1  30 ECTS	<b>4.1</b> Applied Navigation  6 ECTS	<b>5.1</b> Human Element Medical Care Human Behaviour  6 ECTS	<b>6.1</b> Practical Semester 2  30 ECTS	<b>7.1</b> Maritime Meteorology  6 ECTS	<b>8.1</b> Ship Command STCW Competencies  6 ECTS
<b>1.2</b> Marine Communication Radio Comm. Mar. English (SMCP)  6 ECTS	<b>2.2</b> Ship Manoeuvring  6 ECTS		<b>4.2</b> Watchkeeping  6 ECTS	<b>5.2</b> ARPA / ECDIS (Simulator)  6 ECTS		<b>7.2</b> Appl. Ship Handling (Simulator)  6 ECTS	<b>8.2</b> Appl. Bridge Mgmt. (Simulator)  6 ECTS
<b>1.3</b> Blue Sciences Introduction Appl. Seamanship  6 ECTS	<b>2.3</b> Tanker Shipping & Operations  6 ECTS		<b>4.3</b> Dangerous Cargo  6 ECTS	<b>5.3</b> Dry Cargo Operations  6 ECTS		<b>7.3</b> Elective I  6 ECTS	<b>8.3</b> Elective II  6 ECTS
<b>1.4</b> Ship Technology Mechanics Ship Design  6 ECTS	<b>2.4</b> Ship Stability, Trim & Strength  6 ECTS		<b>4.4</b> Ship Engineering  6 ECTS	<b>5.4</b> Ship Automation & Digitalization  6 ECTS		<b>7.4</b> Safety & Security Management  6 ECTS	<b>8.4</b> Bachelor Thesis  12 ECTS
<b>1.5</b> Maritime Economics  6 ECTS	<b>2.5</b> Shipping Law & Environm. Liability  6 ECTS		<b>4.5</b> Transport Law & Claim Handling  6 ECTS	<b>5.5</b> Maritime Human Resources  6 ECTS		<b>7.5</b> Fleet Management  6 ECTS	

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## 1. Semester

### 1.1. Navigation Basics

1.1.		Navigation Basics	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 1 <sup>st</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>1</sup> / Lernergebnisse: <sup>2</sup></b>            Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <p><b>Nautical Mathematics</b></p> <ul style="list-style-type: none"> <li>... explain mathematical methods used in navigation (CL 2)</li> <li>... describe chart projections used in navigation (CL 2)</li> </ul> <p><b>Navigation Basics</b></p> <ul style="list-style-type: none"> <li>... explain the coordinate systems of earth and sky and differentiate its parameters and units (CL 2)</li> <li>... Explain sea charts and chart work (CL 2) Explain the basics why tides occur (CL 2)</li> <li>...</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <p><b>Nautical Mathematics</b></p> <ul style="list-style-type: none"> <li>... calculate loxodrome and orthodrome sailings (CL 3)</li> <li>... plot drift by wind and current and visualize the vectors (CL 3)</li> <li>... calculate spherical triangles to solve nautical questions (CL 3)</li> </ul> <p><b>Navigation Basics</b></p> <ul style="list-style-type: none"> <li>... identify, name and differentiate buoys and other aids to navigation (CL 3)</li> <li>... use</li> <li>... apply time conversions (CL 3)</li> <li>... determine a position fix by lines of position (CL 3)</li> </ul> <p><i>(regarding communication and co-operation)</i></p>			

<sup>1</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>2</sup> consider STCW table A-II/1 (operational level) as amended

... **participate** in cooperative communication about nautical mathematical questions (CL 2)

*(regarding reflection of academic and professional identity)*

... **consider** the mathematical basis of navigation (CL 1)

... **identify** the system of the Earth, celestial sphere and the time (CL 1)

**Course Content / Lehrinhalte :**

**Nautical Mathematics**

- Algebra: equations
- Geometry: plane geometry analytical geometry
- Spherical geometry: spherical triangles
- Sailings
  - Loxodrome sailing (mean latitude, Mercator sailing, day's work)
  - Orthodrome sailing (great circle, composite sailing)
- Vector calculations and coordinate systems
  - Wind and current vectors
  - Drift plotting (*Stromdreiecke*)

**Navigation Basics**

- Celestial coordinate system, horizon coordinate system, nautical almanac
- Time and time conversion
- Position lines
- Tide and astronomical fundamentals
- **Navigational aids and symbols**
  - Navigational aids and lights, incl. lighthouses, beacons and buoys
  - Water levels and depth
  - Sea chart symbols
- **Sea charts**
  - Sea charts, **chart projections**, scales,
  - Chart datum, geographic coordinates
- 

**Language of teaching:**

*Unterrichtssprache:*

English

**Prerequisites for participation:**

*Teilnahmevoraussetzungen:*

None

**Preparation / Literature**

*Vorbereitung / Literatur*

- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture
- Royal Navy: Admiralty Manual of Navigation Volume 2 – Astro Navigation
- Khaliq, A., 2011. *NAV Basics 2 – Ocean Offshore and Celestial Navigation*, 2<sup>nd</sup>ed. Glasgow: Witherby
- Burch, D.: Celestial Navigation
- UK Hydrographic Office: The Nautical Almanac
- Chart No.1/INT. 1
- Link to full list: <https://refworks.proquest.com/public-share/SCECb93qg4uS3PNr8RQeA6m1cUShgIWUOwW8qxTawjzX>

**Further Information:**

*weitere Informationen:*

- The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) of the STCW Code

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>1.1.1. Navigation Basics</b>	Nautical Math.: Prof. Gruschka  Nav. Basics: Pertiet	4	SU (lecture in seminar form)	<b>Summative exam (Modulprüfung):</b> <ul style="list-style-type: none"> <li>▪ TP (combined examination)                             <ul style="list-style-type: none"> <li>- Nautical Mathematics: KL (written test, 180 min), and</li> <li>- Navigation Basics: KL (written test, 180 min)</li> </ul> </li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examinations</li> <li>▪ Minimum passing grade: 4.0 (each examination ≥ 50%)</li> </ul>
<b>1.1.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

#### Appendix: STCW Requirements (always refer to valid edition!)

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Plan and conduct a passage and determine position	<b>Celestial navigation</b> Ability to use celestial bodies to determine the ship's position
	<b>Terrestrial and coastal navigation</b> Ability to determine the ship's position by use of: .3 dead reckoning, taking into account winds, tides, currents and estimated speed
	<b>Compass – magnetic and gyro</b> Ability to determine errors of the magnetic and gyro-compasses, using celestial and terrestrial means, and to allow for such errors

## 1.2. Marine Communication

1.2.	Marine Communication		
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory Module ISMN 1 <sup>st</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h

<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	7 classes Mar.English; 10 days Telecomm.; offered once a study year	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 30 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>		>no	
<p><b>Learning Outcomes<sup>3</sup> / Lernergebnisse:<sup>4</sup></b>                  Upon successful completion of this module, students are expected to be able to ...                  (regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</p> <p><b>Maritime English (SMCP):</b>                  ... understand the Standard Maritime Communication Phrases (SMCP) (CL 2)                  ... explain the international and national regulations concerning radio communication (CL 2)</p> <p><b>Marine Radio Communication:</b>                  ... understand the systems of radio communication and their limitations (CL 2)</p> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</p> <p><b>Maritime English (SMCP):</b>                  ... use the Standard Maritime Communication Phrases (SMCP) accordingly to the situation (CL 3)</p> <p><b>Marine Radio Communication:</b>                  ... demonstrate the proficiency as GMDSS radio operator (CL 3)                  ... demonstrate establishing radio communication by using and operating the appropriate radio systems in standard and emergency situations (CL 3)                  ... avoid unintentional transmission of false distress alerts and to use procedures to mitigate the effects of false signals (CL 3)                  ... demonstrate sending and receiving of visual and audible Morse signals (CL 3)</p> <p>(regarding communication and co-operation)</p> <p><b>Maritime English (SMCP):</b>                  ... participate in communication, both written and spoken, in English language, for the exchange of information relevant to safety of life at sea (CL 2)</p> <p><b>Marine Radio Communication:</b>                  ... participate in radio communication, for the exchange of information relevant to safety of life at sea (CL 2)                  ... take the primary responsibility to radio communications during distress, urgency, safety and routine incidents</p> <p>(regarding reflection of academic and professional identity)</p> ... have awareness of his/her own role as part to maintain safety at sea (CL 2) ... take responsibility for the crew and the ship (CL 3)			
<b>Course Content / Lehrinhalte:</b> <b>Maritime English (SMCP):</b>			

<sup>3</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>4</sup> consider STCW table A-II/1 (operational level) and A-IV/2 (GMDSS radio operator) as amended

- The Standard Marine Communication Phrases (SMCP)
- External communication: ship – ship, ship – shore (VTS), emergencies
- On board communication: safety related, passenger care, safety equipment

**Marine Radio Communication:**

- International regulatory framework for radio communication
- German regulations and radio operator certificates
- Nautical radio publications as IAMSAR, ITU-Manual and Lists, ALRS, ISB
- Identification of radio stations (ships, earth, coastal)
- Radio traffic (incl. public, private, coastal stations, RCC, ....)
- Ship reporting systems, navigational warnings, Navtex, LRIT, SSAS and similar systems
- Medical service system and operations
- Emergency and SAR systems and operations (e.g. abandoning ship, fire on board, ...)
- Control of SAR operations, tasks as OSC On-Scene-Coordinator
- Operations of radio communication and equipment
- Frequencies, types of operation, ....
- DSC and Radiotelex systems and equipment
- Satellite systems, traffic charges
- EPIRB, SART
- False distress alerts and handling
- International Code of Signals
- Maintenance and avoiding hazards of the radio installations
- Measures to be taken in case of partly or full break down of radio installations

<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	English
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	None
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<p>For Maritime English:</p> <ul style="list-style-type: none"> <li>▪ IMO: Standard Marine Communication Phrases (SMCP)</li> <li>▪ SMCP computer-based training</li> </ul> <p>For Marine Radio Communication (a complete list is provided in the supplement of this module)</p> <ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Nautical Radio Publications (ALRS, ITU Manual &amp; Lists)</li> <li>▪ IAMSAR I, II, III, ISB</li> <li>▪ AMSA GMDSS Handbook (2018 Ed)</li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Practical exercises take place in the radio communication lab and in the ECDIS/RADAR simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and STCW table A-IV/2 (GMDSS radio operator) of the STCW Code.</li> <li>▪ After successful completion of 1.2.2 Marine Radio Communication (GMDSS) course and final completion of studies the students can apply at the German authority for a Certificate of Competency “GMDSS General Operator’s Certificate”. It can be issued by the BSH if all further prerequisites are fulfilled (refer to <a href="http://www.deutsche-flagge.de">www.deutsche-flagge.de</a>).</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Details of education and training framework can be found in the supplement “Berufsrechtliche Ergänzung zum Modul 1.2.2. Marine Communication (GMDSS)”.</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/TZz38BQGqapSKzMOXLJpu71avWWXllyfrb9o5UMVQBoD">https://refworks.proquest.com/public-share/TZz38BQGqapSKzMOXLJpu71avWWXllyfrb9o5UMVQBoD</a></li> </ul>
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Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>1.2.1. Maritime English (SMCP)</b>	Pertiet	1	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ MP (oral exam, 20min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>1.2.2. Marine Radio Communication</b>	Pertiet	3	ÜL (lecture and exercises in teams of 12 students)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written exam, 60min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0 Minimum Score to pass 80/100</li> </ul> <u>Formative exam (Studienleistungen):</u> <ul style="list-style-type: none"> <li>▪ PÜ: practical test (practical exercise, 20 min)</li> <li>▪ MP: transmitting / receiving messages MP (oral test, 25 min)</li> <li>▪ PÜ: Morse signals (practical exercise, 15 min)</li> <li>▪ all passed or failed</li> </ul>
<b>1.2.3. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(2)	MÜ (module related exercises)	<ul style="list-style-type: none"> <li>▪ for exercises the radio communication laboratory can be used in teams of 12 students in maximum</li> </ul>

For further details to module “1.2.2. Marine Radio Communication” refer also to chapter 9.1., use link: [Ergänzung Modul 1.2.2 GMDSS](#)

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency



Function: Navigation at the operational level	
Use the IMO Standard Marine Communication Phrases and use English in written and oral form	<p><b>English language</b>                      Adequate knowledge of the English language to enable the officer to use charts and other nautical publications, to understand meteorological information and messages concerning ship's safety and operation, to communicate with other ships, coast stations and VTS centres and to perform the officer's duties also with a multilingual crew, including the ability to use and understand the IMO Standard Marine Communication Phrases (IMO SMCP)</p>
Transmit and receive information by visual signalling	<p><b>Visual signalling</b>                      Ability to use the International Code of Signals</p> <p>Ability to transmit and receive, by Morse light, distress signal SOS as specified in Annex IV of the International Regulations for Preventing Collisions at Sea, 1972, as amended, and appendix 1 of the International Code of Signals, and visual signalling of single-letter signals as also specified in the International Code of Signals</p>

Table A-IV/2 Mandatory minimum requirements for certification of GMDSS radio operators	
Competence	Knowledge, understanding competence and proficiency
Function: Radiocommunication at the operational level	
Transmit and receive information using GMDSS subsystems and equipment and fulfilling the functional requirements of GMDSS	<p>In addition to the requirements of the Radio Regulations, a knowledge of:</p> <ul style="list-style-type: none"> <li>.1 search and rescue radiocommunications, including procedures in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual</li> <li>.2 the means to prevent the transmission of false distress alerts and the procedures to mitigate the effects of such alerts</li> <li>.3 ship reporting systems</li> <li>.4 radio medical services</li> <li>.5 use of the International Code of Signals and the IMO Standard Marine Communication Phrases</li> <li>.6 the English language, both written and spoken, for the communication of information relevant to safety of life at sea</li> </ul>
Provide radio services in emergencies	<p>The provision of radio services in emergencies such as:</p> <ul style="list-style-type: none"> <li>.1 abandon ship</li> <li>.2 fire on board ship</li> <li>.3 partial or full breakdown of radio installations</li> </ul> <p>Preventive measures for the safety of ship and personnel in connection with hazards related to radio equipment, including electrical and non-ionizing radiation hazards</p>

### 1.3. Blue Sciences

1.3.	Blue Sciences		
<b>Module Leader:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS credit points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory Module ISMN, 1 <sup>st</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and frequency of teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	block seminars and excursions, winter semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	>ISMN and ISSC, >Minor "Blue Sciences" as common introduction in the 1 <sup>st</sup> semester		
<p><b>Learning Outcomes / Lernergebnisse <sup>5</sup>:</b>                      Upon successful completion of this module, students are expected to be able to ...                      (regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</p> <p><b>Blue Sciences:</b>                      ... demonstrate an understanding of the scope of Blue Sciences (CL 2)                      ... classify the contents and objectives of the minor study in the cluster "Blue Sciences" within the context of the main studies (CL 2)</p> <p><b>Seamanship:</b>                      ... explain the layout and parts of a seagoing ship (CL 2)                      ... describe physical effects in ship operations (CL 2)                      ... summarize tasks in maintaining a ship and safety equipment (CL 2)</p> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</p> <p><b>Blue Sciences:</b>                      ... explain the importance of the English language in the field of maritime studies (CL 2)                      ... apply academic working (CL 3)</p> <p><b>Seamanship:</b>                      ... use lines and wires appropriately (CL 3)                      ... carry out operational tasks on board safely (personal safety) (CL 3)                      ... steer a ship on commands and carry out the tasks of an outlook (CL 3)                      ... identify navigational aids as buoys and lights, and nautical symbols (CL 3)</p>			

<sup>5</sup> CL: Competence level (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

*(regarding communication and co-operation)*

**Blue Sciences:**

- ... **develop** skills in critical thinking and problem-solving by systematically reflecting on their motivations and personal interests towards a profession or career in Blue Sciences (CL 3)
- ... **describe** and **understand** the requirements of professional practice (CL 2)
- ... **demonstrate** an understanding of their personal interests, abilities, strengths, and weaknesses with respect to their chosen studies (CL 3)
- ... **demonstrate** German language skills on level B1 (CL 3)

**Seamanship:**

- ... **agree** to be a team member and part of a crew (CL 2)
- ... **participate** in a professional communication in seamanship matters (CL 2)

*(regarding reflection of academic and professional identity)*

**Blue Sciences:**

- ... **organize** and **conduct** the own studies in personal responsibility (CL 3)
- ... **evaluate** his/her personal decision on the minor's own professional orientation
- ... **develop** an appreciation of the international and global nature of professional opportunities in Blue Sciences study programs, including appreciation of English as language of studies and professional development (CL 3)
- ... **develop** professionalism and take ownership of growth and learning by organizing and implementing their studies (CL 3)
- ... **develop** an awareness of the importance of scientific work to their studies (CL 3)

**Seamanship:**

- ... **have awareness** of his/her own role as part of a professional ship's crew (CL 2)
- ... **take responsibility** for the crew and the ship (CL 3)

**Course Content / Lehrinhalte:**

**Blue Sciences (for all BS students)**

- Introduction to the concept of Blue Sciences
- Overview of the contents and requirements of the main studies
- Learning goals and study approaches and how to achieve them
- Introduction to the minor subjects
- Explore the various professional and technical areas and opportunities of the study programs
- Introduction to scientific work, library research and development of presentation and research skills
- Excursions or study visits
- German language requirements

**Project "Seamanship" (specific for students in Nautical Sciences):**

- Excursion „Seamanship“
- Introduction into ship operations (seamanship terms, parts of the ship, living on board)
- Watch duties (steering, outlook, commands, weather observations)
- Navigation (navigational aids, sea charts and publications, courses)
- Seamanship (lines and wires, knots, splices, mooring operations, ship maintenance)
- Safety (safety equipment, drills, safe working)
- Teamwork (leadership, communication, Standard Marine Communication Phrases - SMCP English)
- Introduction to internships on merchant vessels (requirements, TRB NOA, cadets' tasks, STCW requirements)
- TRB NOA content on demand (e.g. working with sextants, ship manoeuvres)

<b>Language of Teaching:</b> <i>Unterrichtssprache:</i>	German, English for nautical vocabulary
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	None
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Specific literature will be named at commence of lecture</li> <li>▪ IMO: Standard Marine Communication Phrases</li> <li>▪ Sea Chart INT 1, NP 5011</li> <li>▪ BG-Verkehr: Handbuch See</li> <li>▪ TRB Training Record Book for Navigational Officer Assistants</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/rChy6libw6lWPtYfztOYEP7imPAgD4Ucrzfpxu0W2PZ">https://refworks.proquest.com/public-share/rChy6libw6lWPtYfztOYEP7imPAgD4Ucrzfpxu0W2PZ</a></li> </ul>
<b>Further information:</b> <i>weitere Informationen:</i>	<ul style="list-style-type: none"> <li>▪ Lectures by a team of Professors of the Blue Science Study Courses</li> <li>▪ Diverse presentations and excursions</li> <li>▪ Exercises takes place on board of the training ship</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>1.3.1. Blue Sciences Introduction</b>	Prof. Dr. Colmorn, Prof. Gruschka, Pertiet	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ B (written report, 10 pg)</li> <li>▪ related to entire content of lecture</li> <li>▪ Report must be written partially in German</li> <li>▪ passed or failed</li> </ul>
<b>1.3.2. Blue Sciences Project</b>	Pertiet	2	P (project)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ participation in a Blue Science project or excursion, for ISMN: 'Applied Seamanship' on board of a training vessel</li> <li>▪ MP "Seamanship": (oral test 15min)</li> <li>▪ related to entire content of lecture</li> <li>▪ passed or failed</li> </ul>
<b>1.3.3. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	<u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ EP "Nautical Fundamentals": (electronic test, 60 min)</li> <li>▪ passed or failed Minimum Score to pass 80/100</li> </ul>

## 1.4. Ship Technology

1.4.		Ship Technology	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Student's Workload [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 1 <sup>st</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	>no		
<p><b>Learning Outcomes <sup>6</sup> / <i>Lernergebnisse</i>: <sup>7</sup></b>                      Upon successful completion of this module, students are expected to be able to ...                      (<i>regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge)</i>)</p> <ul style="list-style-type: none"> <li>... <b>describe</b> the principal structural members of a ship and the proper names for the parts (CL 2)</li> <li>... <b>describe</b> the most important longitudinal and traverse strengthening components of a ship (CL 2)</li> <li>... <b>explain</b> ship specific relation figures of different ship types (CL 2)</li> <li>... <b>explain</b> how to maintain seaworthiness of a ship (CL 2)</li> <li>... <b>describe</b> which parts of a ship shall be inspected regularly (CL 2)</li> <li>... <b>explain</b> causes of corrosion and how to prevent (CL 2)</li> <li>... <b>differentiate</b> with basic knowledge steel qualities, material combinations and electrochemical corrosion (CL 2)</li> </ul> <p>(<i>regarding using, applying, generating of knowledge (applying and transferring, scientific innovation)</i>)</p> <ul style="list-style-type: none"> <li>... <b>use</b> physical values, formulas, indices and measurement units (CL 3)</li> <li>... <b>apply</b> the basic principles of mechanics based on simple examples from shipping and geoscience (CL 3)</li> <li>... <b>state</b> the design and components of a ship and <b>apply</b> the technical terminology (CL 3)</li> <li>... <b>determine</b> naval parameters by specific facts (CL 3)</li> <li>... <b>determine</b> non-destructive testing methods (CL 3)</li> <li>... <b>discuss</b> technical quality management and welding procedures (CL 3)</li> </ul> <p>(<i>regarding communication and co-operation</i>)</p> <ul style="list-style-type: none"> <li>... n/a</li> </ul> <p>(<i>regarding reflection of academic and professional identity</i>)</p> <ul style="list-style-type: none"> <li>... n/a</li> </ul>			

<sup>6</sup> Competence levels: 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>7</sup> consider STCW table A-II/1 (operational level) as amended

**Course Content / Lehrinhalte:**

**Mechanics**

- Dynamics
  - Concept of energy (kinetic energy, potential energy, conservation of energy)
  - Forces (Principle of Transmissibility, Addition and equivalent system of forces, Newton's laws, Weight and Normal Force, Friction)
  - Kinematics (Equation of motion, Inertia & moment of inertia)
  - Oscillations (harmonic oscillation, pendulum, damping and resonance)
  - Mechanical vibrations
- Statics
  - Center of Gravity
  - Static of rigid bodies (External forces: forces and torque in beams and cables, supports, equilibrium of forces, free-body-diagram, reactions at supports and connections; internal forces: Normal and shear force, bending moments)
  - Stability (strength of materials, section modulus, tension, bendline, tilting stability)
- Basics and mathematics
  - System of units and SI prefixes
  - Fractional arithmetic
  - Trigonometry
  - Equation conversion and solving
  - Vector calculation
  - Differential and integral calculus

**Ship Design**

- Basic knowledge of ship building and ship components, terms of the different parts of a ship
- Proficiency in reading of drawings and plans
- Ship types
- Maintenance and repair
- Classification Society and Flag State
- Corrosion (chemical process, protection, corrosion control and detection)
- Supervising of shipbuilding and repair

<p><b>Language of teaching:</b> <i>Unterrichtssprache:</i></p>	English
<p><b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i></p>	None
<p><b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Beer, Johnston, Mazurek, Eisenberg: Vector mechanics for engineers statics and dynamics</li> <li>▪ Young, Freedman: University Physics with Modern Physics</li> <li>▪ Croft, Davison: Mathematics for Engineers</li> <li>▪ Betram, Schneekluth: Ship Design for efficiency and economy</li> <li>▪ Papanikolaou: Ship Design: Methodologies of Preliminary Design</li> <li>▪ Tupper: Introduction to Naval Architecture</li> <li>▪ Barras: Ship Design and Performance for Masters and Mates</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/fCdu9Hphu0rpAHMmGsUUdSG6Ukyl4IEVGHXF4YnFJWTs">https://refworks.proquest.com/public-share/fCdu9Hphu0rpAHMmGsUUdSG6Ukyl4IEVGHXF4YnFJWTs</a></li> </ul>
<p><b>Further information:</b> <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) of the STCW Code</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>1.4.1. Ship Technology</b>	Prof. Gruschka	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ TP (combined examination)                             <ul style="list-style-type: none"> <li>- Mechanics: KL (written test, 120 min) and</li> <li>- Ship Design: R (written essay, 15 pg)</li> </ul> </li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Related to entire content of lecture</li> <li>▪ Minimum passing grade: 4.0 (each examination <math>\geq</math> 50%)</li> </ul>
<b>1.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks	Knowledge* and ability to explain where to look for damage and defects most commonly encountered due to: <ul style="list-style-type: none"> <li>.1 loading and unloading operations</li> <li>.2 corrosion</li> <li>.3 severe weather conditions</li> </ul>
	Ability to state which parts of the ship shall be inspected each time in order to cover all parts within a given period of time  Identify those elements of the ship structure which are critical to the safety of the ship  State the causes of corrosion in cargo spaces and ballast tanks and how corrosion can be identified and prevented  Knowledge of procedures on how the inspections shall be carried out  Ability to explain how to ensure reliable detection of defects and damages  Understanding of the purpose of the "enhanced survey programme" * it should be understood that deck officers need not to be qualified in the survey of ships
Maintain seaworthiness of the ship	Ship construction General knowledge of the principal structural members of a ship and the proper names for the various parts

## 1.5. Maritime Economics

1.5.		Maritime Economics	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Economics" Prof. Dr. Burkhard Lemper		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN and ISSC 1 <sup>st</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	>ISSC mandatory module		
<p><b>Learning Outcomes<sup>8</sup> / Lernergebnisse :</b>            Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>            ... <b>list</b> and <b>use</b> basic principles of economic thinking (CL 3)            ... <b>summarize</b> the way shipping markets are organized commercially (CL 3)            ... <b>predict</b> how shipping market participants will respond to different freight rates in the short, medium and long-term (CL 5)            ... <b>list</b> and <b>identify</b> stages of shipping cycles (CL 4)            ... <b>classify</b> differences between shipping markets and other industries (CL 4)            ... <b>classify</b> different types of organisation of shipping companies (CL 4)            ... <b>assess</b> the particular elements that shape today's general cargo shipping industry (CL 5)</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>            ... <b>carry out</b> simple demand and supply-side analyses for shipping markets and judge the future market outlook (CL 3)</p> <p><i>(regarding communication and co-operation)</i>            ... n/a</p> <p><i>(regarding reflection of academic and professional identity)</i>            ... <b>reflect</b> on the relevance of the shipping industry (CL 5)</p>			

<sup>8</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create



<b>Course Content / Lehrinhalte:</b>	
<ul style="list-style-type: none"> <li>▪ Basics in Economic theory</li> <li>▪ Sea Transport and the Global Economy</li> <li>▪ The Organization of the Shipping Market</li> <li>▪ Shipping Market Cycles</li> <li>▪ Supply, Demand and Freight Rates</li> <li>▪ The four shipping markets</li> <li>▪ The transport of general cargoes                             <ul style="list-style-type: none"> <li>&gt; Project cargo shipping</li> <li>&gt; Container shipping</li> </ul> </li> </ul>	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	None
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	Lecture notes, specific literature, most recent reading materials will be named at commence of lecture; some indicative literature proposals are: <ul style="list-style-type: none"> <li>▪ Maritime Economics; Stopford, M.; 3rd edition 2009</li> <li>▪ The Blackwell Companion to Maritime Economics; Talley, W.T.; 2012</li> <li>▪ The Handbook of Maritime Economics and Business; Grammenos, C. T.; 2<sup>nd</sup> edition, 2010</li> <li>▪ Slides and exercises surrounding the lecture units will be provided in pdf-format via the online classroom</li> <li>▪ Contemporary and easily accessible reading materials (e.g. UNCTAD studies) may be announced by teacher via online class-room to reflect up to date developments shaping the discipline of maritime economics</li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	n/a

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>1.5.1 Maritime Economics</b>	Prof. Dr. Lemper	4	SU (lecture in seminar form)	<b>Summative exam (Modulprüfung):</b> <ul style="list-style-type: none"> <li>▪ R (essay, 10 pg) or KL (written test, 120 min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Series of mandatory exercises to be passed before summative exam; type will be defined by lecturer at semester start.</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>1.5.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

## 2. Semester

### 2.1. Navigation Systems / Informatics

2.1.		Navigation Systems / Informatics	
<b>Module Responsibility:</b> <i>Modulverantwortliche*<sup>r</sup>:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Student's Workload [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 2 <sup>nd</sup> Semester	<b>Contact Hours: [h]</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	./.		
<p><b>Learning Outcomes<sup>9</sup> / Lernergebnisse:</b> <sup>10</sup></p> <p>Upon successful completion of this module, students are expected to be able to ...</p> <p><i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>explain</b> the different navigational equipment according the technical systems, principles and operations (CL 2)</li> <li>... <b>describe</b> the functions, interfaces and complexity of integrated navigation and bridge systems (CL 2)</li> <li>... <b>explain</b> on-board computer networks regarding hardware architecture, software, operation systems (CL 2)</li> <li>... <b>illustrate</b> data management on integrated networks (CL 2)</li> <li>... <b>understand technical documentation and manuals (CL 2)</b></li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>determine</b> the reliability and limitations and sources of errors of specific navigational equipment (CL 3)</li> <li>... <b>determine</b> the performance limitations of specific navigational equipment (CL 3)</li> <li>... <b>perform</b> compass error checks (CL 3 + 4)</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>discuss</b> questions and challenges of navigational systems and computer networks with technicians and colleagues (CL 3)</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>being prepared</b> to take navigational equipment and bridge systems under own account (CL 3)</li> </ul>			

<sup>9</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>10</sup> consider STCW table A-II/1 (operational level) as amended

**Course Content / Lehrinhalte:**

- Compasses
  - ship and earth magnetism
  - Magnetic-compass – principles, use, limitations, compensation, compass error check
  - Gyro-compass – principles, use, limitations
  - Deviation control, compass deviation logbook
- Steering control systems
  - principles, course and track control, performance limits and adjustment
  - operational procedures, change-over from manual to automatic control
- Echosounders
  - principles, operations, performance, and limitations
- Log systems
  - principles, operations, performance, and limitations
- Satellite positioning systems (GPS)
  - systems, principles, performance, and limitations
  - operations, reliability
- Radar
  - theory of electromagnetic (radar) waves
  - systems, operations, settings, control of performance
  - operation, interpretation of echo's
- ECDIS (Electronic Chart Display and Information System)
  - systems, principles
- Integrated Navigation Systems
  - systems, integrity
- Integrated Bridge Systems
  - networks, integration of all systems
  - VDR (Voyage Data Recorder), navigation lights, communication and other systems
  - alarm systems, BNWAS (Bridge Navigational Watch Alarm System), SSAS (Ship Security Alert System)
- Computer networks
  - hardware, software
  - administration tasks
  - maintenance, data securing, updates
  - cyber security
- Data management
  - data bases
  - data analysing
- Human-Machine-Interaction
  - awareness, resilience, hazards
  - ergonomics, operations

**Language of teaching:**

*Unterrichtssprache:*

English

**Prerequisites for participation:**

*Teilnahmevoraussetzungen:*

No prerequisites

<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Hecht, Berking, Jonas, Alexander: The Electronic Chart, 2017</li> <li>▪ Becker-Heins: ECDIS Basics, 2014</li> <li>▪ Tetley and Calcutt: Electronic Navigation Systems, 2015</li> <li>▪ Hofmann-Wellenhof, Lichtenegger and Wasle: GNSS – Global Navigation Satellite Systems, 2008</li> <li>▪ Norris: Integrated Bridge Systems Vol. 1 – Radar and AIS, 2008</li> <li>▪ Norris: Integrated Bridge Systems Vol. 2 – ECDIS and Positioning, 2010</li> <li>▪ Technical specifications of manufacturers</li> </ul>
<p><b>Further information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) of the STCW Code</li> <li>▪ Exercises take place in the classroom, covering theory and practical calculations.</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/MURHuoXieZt0KEFUe3Mm0GHZt6b9zDzlmShHyJZ501G">https://refworks.proquest.com/public-share/MURHuoXieZt0KEFUe3Mm0GHZt6b9zDzlmShHyJZ501G</a></li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>2.1.1. Navigation Systems / Informatics</b>	Pertiet / Prof. Dr. Colmorn	4	SU (lecture in seminar form)	Summative exam ( <i>Modulprüfung</i> ): <ul style="list-style-type: none"> <li>▪ KL (written test, 180min) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>2.1.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1</b>	
<b>Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the operational level	
Plan and conduct a passage and determine position	<b>Electronic systems of position fixing and navigation</b> Ability to determine the ship's position by use of electronic navigational aids
	<b>Echo-sounders</b> Ability to operate the equipment and apply the information correctly
	Thorough knowledge of and ability to use nautical charts, and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routeing information
	<b>Compass – magnetic and gyro</b> Knowledge of the principles of magnetic- and gyro-compasses
	<b>Steering control system</b> Knowledge of steering control systems, operational procedures and change-over from manual to automatic control and vice versa. Adjustment of controls for optimum performance
Use of radar and ARPA to maintain safety of navigation	<b>Radar navigation</b> Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA) Ability to operate and to interpret and analyse information obtained from radar, including the following:  <b>Performance</b> , including: .1 factors affecting performance and accuracy .2 setting up and maintaining displays .3 detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs
	<b>Principal types of ARPA</b> , their display characteristics, performance standards and the dangers of over-reliance on ARPA Ability to operate and to interpret and analyse information obtained from ARPA, including: .1 system performance and accuracy, tracking capabilities and limitations, and processing delays

## 2.2. Ship Manoeuvring

2.2.		Ship Manoeuvring	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Student's Workload [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 2 <sup>nd</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, summer semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>11</sup> / <i>Lernergebnisse</i>: <sup>12</sup></b>                      Upon successful completion of this module, students are expected to be able to ...                      (<i>regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge)</i>)</p> <ul style="list-style-type: none"> <li>... <b>explain</b> hydrodynamic theory affecting ship behaviour (CL 2)</li> <li>... <b>describe</b> propulsion systems and manoeuvring equipment and its use (CL 2)</li> <li>... <b>explain</b> manoeuvres in standard and abnormal situations (CL 2)</li> </ul> <p>(<i>regarding using, applying, generating of knowledge (applying and transferring, scientific innovation)</i>)</p> <ul style="list-style-type: none"> <li>... <b>interpret</b> trial manoeuvres and the gained parameters (CL 4)</li> <li>... <b>outline</b> the parameters of economic sailing (CL 4)</li> <li>... <b>recognize</b> external influences on manoeuvring behaviour of ships (CL 4)</li> <li>... <b>appraise</b> manoeuvres in standard and abnormal situations (CL 4)</li> </ul> <p>(<i>regarding communication and co-operation</i>)</p> <ul style="list-style-type: none"> <li>... <b>discuss</b> manoeuvres in the bridge and station teams (CL 3)</li> </ul> <p>(<i>regarding reflection of academic and professional identity</i>)</p> <ul style="list-style-type: none"> <li>... <b>take the responsibility</b> of good seamanship in manoeuvring (CL 3)</li> </ul>			
<p><b>Course Content / <i>Lehrinhalte</i>:</b></p> <p><b>Hydrodynamics</b></p> <ul style="list-style-type: none"> <li>▪ Hydrodynamic fundamentals (as Bernoulli equation, laminar and turbulent flow, law of similarity, continuity equation)</li> <li>▪ Hydrodynamic effects when manoeuvring a ship</li> <li>▪ Squat, ship-ship interactions</li> </ul> <p><b>Manoeuvring Basics</b></p>			

<sup>11</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>12</sup> consider STCW table A-II/1 (operational level) as amended

<ul style="list-style-type: none"> <li>▪ Propulsion systems (types, principles, limitations), as for fixed and pitch propeller, azimuth propulsion (POD), Voith systems</li> <li>▪ Propulsion systems on ship types, as for cargo ships, passenger ships, offshore supply vessels and tugs</li> <li>▪ Operation of propulsion systems (controls, procedures)</li> <li>▪ Assistance by DP (dynamic positioning) systems</li> <li>▪ Manoeuvring equipment (anchors, winches, bollards, lines)</li> <li>▪ Trial manoeuvres and manoeuvring table</li> <li>▪ Economic sailing, EEDI/EEOI (Energy Efficiency Design Index / Energy Efficiency Operating Indicator), SEEMP (Ship Energy Efficiency Management Plan)</li> </ul> <p><b>Manoeuvres in standard situations (considering speed, wind and current)</b></p> <ul style="list-style-type: none"> <li>▪ Encounter and overtaking</li> <li>▪ Shallow, narrow and restricted waters</li> <li>▪ Driving of turns, radius constant turning</li> <li>▪ Anchoring, embarkation of pilot</li> <li>▪ Berthing and unberthing, mooring, use of tugs</li> <li>▪ Docking</li> </ul> <p><b>Abnormal and emergency situations</b></p> <ul style="list-style-type: none"> <li>▪ Waves, swell and wind sea (periods, resonance)</li> <li>▪ Heavy weather manoeuvres, parametric rolling</li> <li>▪ Search and Rescue (IAMSAR)</li> <li>▪ Emergency manoeuvres (person over board, lost of propulsion or steering gear, rescue boat launching)</li> <li>▪ Manoeuvres in ice</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	English
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	No prerequisites
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Barrass, Dr. C. B.: <i>Ship Design and Performance for Masters and Mates</i>, Oxford: Elsevier Butterworth-Heinemann 2004</li> <li>▪ Clark, I. C.: <i>Ship Dynamics for Mariners</i>, London: The Nautical Institute 2005</li> <li>▪ House, David J.: <i>Ship Handling</i>, Theory and practice, Oxford: Elsevier Butterworth-Heinemann 2007</li> <li>▪ IMO: IAMSAR</li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Practical exercises in Radar/ECDIS – Simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) of the STCW Code</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>2.2.1. Ship Manoeuvring</b>	Capt. Ebert	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written exam, 180min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises in simulator to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>2.2.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	<ul style="list-style-type: none"> <li>▪ practical exercises</li> <li>▪ the ECDIS and Radar simulator (instructorless training) is used in teams of 8 students in maximum</li> </ul>

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Respond to a distress signal at sea	<b>Search and rescue</b> Knowledge of the contents of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual
Manoeuvre the ship	<b>Ship manoeuvring and handling</b> Knowledge of: .1 the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances .2 the effects of wind and current on ship handling .3 manoeuvres and procedures for the rescue of person overboard .4 squat, shallow-water and similar effects .5 proper procedures for anchoring and mooring



## 2.3. Tanker Shipping & Cargo Operations

2.3.		Tanker Shipping & Cargo Operations	
<b>Module Responsibility:</b> <i>Modulverantwortliche*<sup>r</sup>:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 2 <sup>nd</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes or in block, summer semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module > Minor "Blue Sciences" as Elective		
<p><b>Learning Outcomes<sup>13</sup> / Lernergebnisse:</b> <sup>14</sup></p> <p>Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (extension, consolidation and understanding of knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>classify</b> types of tankers and their cargoes (CL 2)</li> <li>... <b>explain</b> the market specific requirements (CL 2)</li> <li>... <b>describe</b> audit and vetting systems (CL 2)</li> <li>... <b>give examples</b> about the properties of specific liquid cargoes (CL 2)</li> <li>... <b>discuss</b> the equipment for carriage, loading and discharging (CL 2)</li> <li>... <b>describe</b> the procedures of safe loading and discharging (CL 2)</li> <li>... <b>state</b> basics of the maintenance requirements for cargo equipment (CL 2)</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>determine</b> the major regulations concerning tanker safety (CL 3)</li> <li>... <b>determine</b> tank atmospheres, tank cleaning and safety issues (CL 3)</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>convinced</b> with requirements to human resources concerning tanker operations (CL 5)</li> <li>... <b>accept</b> tanker specific working procedures (CL 5)</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>agree</b> on the responsibility as part of the crew in tanker operations (CL 5)</li> </ul>			
<p><b>Course Content / Lehrinhalte :</b></p> <p><b>Tanker Business (20 contact hours)</b></p> <ul style="list-style-type: none"> <li>▪ Tanker markets and logistic chain</li> <li>▪ Market specific requirements</li> <li>▪ Economical aspects</li> <li>▪ International organizations</li> </ul>			

<sup>13</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>14</sup> consider STCW table A-II/2, A-V/1.1.1 and 1.2.1.

<ul style="list-style-type: none"> <li>▪ Human resources and their requirements</li> <li>▪ Audits and Vetting inspection</li> </ul> <p><b>Cargo Operations (40 contact hours)</b></p> <ul style="list-style-type: none"> <li>▪ Tanker types: Oil, Chemical and Liquefied Gas</li> <li>▪ Cargo properties: Oil, Chemical and Liquefied Gas</li> <li>▪ Tanker design</li> <li>▪ Equipment, instruments and systems for carriage, loading and unloading</li> <li>▪ Safe operation and procedures</li> <li>▪ Crew responsibilities</li> <li>▪ Maintenance requirements</li> <li>▪ Tanker Health, Safety, Security and Environment</li> <li>▪ Environmental protection</li> <li>▪ Emergency Management</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	English
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	None
<p><b>Preparation / Literature</b>  <i>Vorbereitung / Literatur</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ International Safety Guide for Oil Tankers and Terminals (ISGOTT)</li> <li>▪ International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code)</li> <li>▪ International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)</li> <li>▪ Oil Companies International Marine Forum (OCIMF) – Marine Injury Reporting Guideline</li> <li>▪ Oil Companies International Marine Forum (OCIMF) – Vessel Inspection Questionnaire</li> <li>▪ IMO Model Courses 1.01 Basic Training For Oil And Chemical Tanker Cargo Operations</li> <li>▪ IMO Model Course 1.04 Basic Training for Liquefied Gas Tanker Cargo Operations</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/4JvVhYQojao7H0u00UyHHWKAl16VxiXdj7XaqPaVyWEw">https://refworks.proquest.com/public-share/4JvVhYQojao7H0u00UyHHWKAl16VxiXdj7XaqPaVyWEw</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Practical exercise by using the Liquid Cargo Simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements of the STCW Code set out in sections A-II/2 (management level) and A-V/1-1-1 (oil and chemical tanker) and A-V/1-2-1 (liquefied gas tanker).</li> <li>▪ The module covers the requirements of “IMO Model Courses 1.01 and 1.04”.</li> <li>▪ The successful completion of 2.3.1 “Tanker Shipping and Cargo Operations” can be used by the students to apply at the German authority for a “Certificate of proficiency in basic training for service on all tankers”. It can be issued by the BSH if all further prerequisites are fulfilled (refer to <a href="http://www.deutsche-flagge.de">www.deutsche-flagge.de</a>).</li> </ul>

		<ul style="list-style-type: none"> <li>Further details of education and training framework can be found in the supplement "Berufsrechtliche Ergänzung zum Modul 2.3. "Tanker Shipping and Cargo Operations".</li> </ul>		
Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lern- methoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>2.3.1. Tanker Shipping and Cargo Operations</b>	Capt. Braun / Prof. Gruschka	4	SU, (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>Tanker Business: R (written essay, 15pg) or KL (written test, 90min)</li> <li>Related to entire content of lecture</li> <li>Minimum passing grade: 4.0</li> </ul> <u>Formative exam (Studienleistungen):</u> <ul style="list-style-type: none"> <li>Cargo Operation: KL (written test, 45min) or EP (electronic test, 45min)</li> <li>Mandatory exercises with Liquid Cargo Simulator</li> <li>Passed or failed – Minimum Score to pass 70/100</li> </ul>
		(1)	MÜ (module related exercises)	Liquid Cargo Simulator will be used for exercises
<b>2.3.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>				

For further details to module "2.3. Tanker Shipping and Cargo Operations" refer also to chapter 9.2., use link: [Ergänzung Modul 2.3. Tanker Shipping & Cargo Operations](#)

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Cargo handling and stowage at the management level	
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	General knowledge of tankers and tanker operations

Table A-V/1-1-1 Specification of minimum standard of competence in basic training for oil and chemical tanker cargo operations	
Competence	Knowledge, understanding competence and proficiency
Contribute to the safe cargo operation of oil and chemical tankers	Basic knowledge of tankers: .1 types of oil and chemical tankers .2 general arrangement and construction  Basic knowledge of cargo operations: .1 piping systems and valves .2 cargo pumps .3 loading and unloading

	<p>.4 tank cleaning, purging, gas-freeing and inerting</p> <p>Basic knowledge of the physical properties of oil and chemicals:</p> <p>.1 pressure and temperature, including vapour pressure/temperature relationship</p> <p>.2 types of electrostatic charge generation</p> <p>.3 chemical symbols</p> <p>Knowledge and understanding of tanker safety culture and safety management</p>
Take precautions to prevent hazards	<p>Basic knowledge of the hazards associated with tanker operations, including:</p> <p>.1 health hazards</p> <p>.2 environmental hazards</p> <p>.3 reactivity hazards</p> <p>.4 corrosion hazards</p> <p>.5 explosion and flammability hazards</p> <p>.6 sources of ignition, including electrostatic hazards</p> <p>.7 toxicity hazards</p> <p>.8 vapour leaks and clouds</p> <p>Basic knowledge of hazard controls:</p> <p>.1 inerting, water padding, drying agents and monitoring techniques</p> <p>.2 anti-static measures</p> <p>.3 ventilation</p> <p>.4 segregation</p> <p>.5 cargo inhibition</p> <p>.6 importance of cargo compatibility</p> <p>.7 atmospheric control</p> <p>.8 gas testing</p> <p>Understanding of information on a Material Safety Data Sheet (MSDS)</p>
<i>Apply occupational health and safety precautions and measures</i>	<i>As information only: -&gt; part of the practical training</i>
<i>Carry out fire-fighting operations</i>	<i>As information only: -&gt; part of the practical training</i>
Respond to emergencies	Basic knowledge of emergency procedures, including emergency shutdown
Take precautions to prevent pollution of the environment from the release of oil or chemicals	<p>Basic knowledge of the effects of oil and chemical pollution on human and marine life</p> <p>Basic knowledge of shipboard procedures to prevent pollution</p> <p>Basic knowledge of measures to be taken in the event of spillage, including the need to:</p> <p>.1 report relevant information to the responsible persons</p> <p>.2 assist in implementing shipboard spill-containment procedures</p>

<b>Table A-V/1-2-1 Specification of minimum standard of competence in basic training for liquefied gas tanker cargo operations</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Contribute to the safe operation of a liquefied gas tanker	<p>Design and operational characteristics of liquefied gas tankers</p> <p>Basic knowledge of liquefied gas tankers</p> <p>.1 types of liquefied gas tankers</p> <p>.2 general arrangement and construction</p> <p>Basic knowledge of cargo operations:</p>

	<p>.1 piping systems and valves                  .2 cargo handling equipment                  .3 loading, unloading and care in transit                  .4 emergency shutdown (ESD) system                  .5 tank cleaning, purging, gas-freeing and inerting</p> <p>Basic knowledge of the physical properties of liquefied gases, including:                  .1 properties and characteristics                  .2 pressure and temperature, including vapour pressure/temperature relationship                  .3 types of electrostatic charge generation                  .4 chemical symbols</p> <p>Knowledge and understanding of tanker safety culture and safety management</p>
Take precautions to prevent hazards	<p>Basic knowledge of the hazards associated with tanker operations, including:                  .1 health hazards                  .2 environmental hazards                  .3 reactivity hazards                  .4 corrosion hazards                  .5 explosion and flammability hazards                  .6 sources of ignition                  .7 electrostatic hazards                  .8 toxicity hazards                  .9 vapour leaks and clouds                  .10 extremely low temperatures                  .11 pressure hazards</p> <p>Basic knowledge of hazard controls:                  .1 inerting, drying and monitoring techniques                  .2 anti-static measures                  .3 ventilation                  .4 segregation                  .5 cargo inhibition                  .6 importance of cargo compatibility                  .7 atmospheric control                  .8 gas testing</p> <p>Understanding of information on a Material Safety Data Sheet (MSDS)</p>
<i>Apply occupational health and safety precautions and measures</i>	<i>As information only: -&gt; part of the practical training</i>
<i>Carry out fire-fighting operations</i>	<i>As information only: -&gt; part of the practical training</i>
Respond to emergencies	Basic knowledge of emergency procedures, including emergency shutdown
Take precautions to prevent pollution of the environment from the release of liquefied gases	<p>Basic knowledge of the effects of pollution on human and marine life</p> <p>Basic knowledge of shipboard procedures to prevent pollution</p> <p>Basic knowledge of measures to be taken in the event of spillage, including the need to:                  .1 report relevant information to the responsible persons                  .2 assist in implementing shipboard spill-containment procedures                  .3 prevent brittle fracture</p>

## 2.4. Ship Stability, Trim & Strength

2.4.		Ship Stability, Trim & Strength	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Student's Workload [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 2 <sup>nd</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	>no		
<p><b>Learning Outcomes<sup>15</sup> / Lernergebniss: <sup>16</sup></b>            Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... explain damage stability and dynamic impacts to stability (CL 2)</li> <li>... explain the effects of strain to the ship (CL 2)</li> <li>... describe methods to calculate stress (CL 2)</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... apply the regulations concerning stability and freeboard (CL 3)</li> <li>... calculate and assess the transverse stability of a ship (CL 5)</li> <li>... calculate and assess the trim and draught of a ship (CL 5)</li> <li>... assess the local and longitudinal strength (CL 5)</li> <li>... apply methods of operational stability planning and control (CL 3)</li> <li>... determine influences on stability and trim (CL 3)</li> <li>... analyze operational and environmental effects on stability (CL 4)</li> <li>... check displacement by draught survey and stability by stability experiments (CL 5)</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... x</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... take responsibility for safe operations of a ship regarding stability and strength and to keep it within all limits (CL 5)</li> </ul>			
<p><b>Course Content / Lehrinhalte:</b></p> <ul style="list-style-type: none"> <li>▪ Legal international and national requirements concerning ship stability, trim, draught</li> <li>▪ Ship Theory fundamentals, hydrostatics of a ship (buoyancy, center of gravity, draught and displacement)</li> <li>▪ Transverse stability (initial stability, righting and heeling levers, angle of loll, free surfaces)</li> </ul>			

<sup>15</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>16</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

<ul style="list-style-type: none"> <li>▪ Longitudinal stability (trim, draught)</li> <li>▪ Effects on stability (cargo, crane operations, wind, ice, turns)</li> <li>▪ Dynamic stability, effects in seaway</li> <li>▪ Damage stability</li> <li>▪ Strength (fundamentals, local and longitudinal strength, torsion, calculation methods)</li> <li>▪ Management of stability (assessing stability, stability experiments, pre-calculation, draught survey)</li> </ul>	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i>	Module 1.4 Ship Technology recommended
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Barras, B.; Derret, D.R.: Ship Stability for Masters and Mates, 7.ed., 2012</li> <li>▪ Clark, I. C.: Stability, Trim and Strength for Merchant Ships, 2.ed., Nautical Institute, 2008</li> <li>▪ Rhodes, M.: Ship Stability for Masters, 2012</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/mQBqZSvy3t1CtBjogbt6vWlExTWZAY64g3HNM6lvYACn">https://refworks.proquest.com/public-share/mQBqZSvy3t1CtBjogbt6vWlExTWZAY64g3HNM6lvYACn</a></li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>2.4.1. Ship Stability, Trim, Strength</b>	Prof. Gruschka	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written test, 180min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>2.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1</b> <b>Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Maintain seaworthiness of the ship	<p><b>Ship stability</b>                      Working knowledge and application of stability, trim and stress tables, diagrams and stress-calculating equipment</p> <p>Understanding of fundamental actions to be taken in the event of partial loss of intact buoyancy</p> <p>Understanding of the fundamentals of watertight integrity</p>

<b>Table A-II/2</b> <b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Controlling the operation of the ship and care for persons on board at the management level	
Control trim, stability and stress	<p>Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to reserve trim and stability</p> <p>Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken</p> <p>Knowledge of IMO recommendations concerning ship stability</p>
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment	<p>Knowledge of international maritime law embodied in international agreements and conventions</p> <p>Regard shall be paid especially to the following subjects:                      .2 responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended</p>



## 2.5. Shipping Law & Environmental Liability

2.5.		Shipping Law & Environmental Liability	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Law" Prof. Dr. Suzette Suarez		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 2 <sup>nd</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module		
<p><b>Learning Outcomes<sup>17</sup> / Lernergebnisse:</b> <sup>18</sup></p> <p>Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <p>... <b>differentiate</b> the national and international shipping regulations to be applied.(CL 2)</p> <p>... <b>describe</b> the spectrum of administration and environmental protection in vessel operations (CL 2).</p> <p>... <b>explain</b> the main Management Systems for the ship and shipping company (CL 2).</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <p>... <b>monitor</b> and <b>control</b> compliance with legislative requirement and measures to ensure life at sea, security and the protection of the marine environment (CL 3).</p> <p>... <b>ensure</b> compliance with pollution-prevention requirements (CL 3).</p> <p><i>(regarding communication and co-operation)</i></p> <p>... <b>agree on</b> the administrative and environmental responsibilities on board and ashore (CL 3).</p> <p><i>(regarding reflection of academic and professional identity)</i></p> <p>... <b>outline</b> the objectives of shipping law and environmental liability (CL 3).</p> <p>... <b>make use of</b> of the ship Master's obligations concerning national and international regulations (CL 3).</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <p><b>International shipping legislation and regulations</b></p> <ul style="list-style-type: none"> <li>▪ International Law of the Sea (UNCLOS)</li> <li>▪ SOLAS with application of ISM and ISPS Code</li> <li>▪ MLC and health regulations</li> <li>▪ MARPOL and its annexes</li> <li>▪ STCW</li> <li>▪ Required ship documents and certificates</li> </ul>			

<sup>17</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>18</sup> For ISMN: consider STCW table A-II/1 (operational level) as amended

<ul style="list-style-type: none"> <li>▪ Flag state and port state requirements (incl. Port State Control)</li> <li>▪ National Single Window</li> </ul> <p><b>Nationaler Rechtsrahmen / Deutsches Seeschiffahrtsrecht<sup>19</sup></b></p> <ul style="list-style-type: none"> <li>▪ Rechtssystem der Bundesrepublik Deutschland</li> <li>▪ Schiffsbesetzung</li> <li>▪ Strafrecht und Ordnungswidrigkeiten</li> <li>▪ Zivilrechtliche Vorschriften mit Bezügen zum Seerecht</li> <li>▪ Öffentlich-rechtliche Vorschriften mit Bezügen zum Seerecht</li> </ul> <p><b>Management Systems, Standards in Shipping</b></p> <ul style="list-style-type: none"> <li>▪ Quality Management (ISO)</li> <li>▪ Environmental and Energy Management (ISO)</li> <li>▪ Safety Management (ISM, ISPS)</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache</i></p>	English and German for National German Legislation
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	For formative examination (Deutsches Seeschiffahrtsrecht) German Level B1 is mandatory
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>- Lecture notes, specific literature, most recent reading materials will be assigned at the start of the semester</li> <li>- Bruhns: Schiffahrtsrecht- Seerechtliche Gesetze, Verordnungen, Übereinkommen</li> <li>- Link to full list: <a href="https://refworks.proquest.com/public-share/Z3P2qNSdrhqrCCc5MCGMAowGnzqB8LmQqWeAvI9Ybxu">https://refworks.proquest.com/public-share/Z3P2qNSdrhqrCCc5MCGMAowGnzqB8LmQqWeAvI9Ybxu</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) of the STCW Code

<sup>19</sup> Vgl. See-BV Anlage 2 (zu § 5) Zulassung von Lehrgängen im deutschen Seeschiffahrtsrecht und Wahlpflichtfach „Deutsches Seeschiffahrtsrecht“

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>2.5.1. Shipping Law &amp; Environmental Liability</b>	Prof. Dr. Suarez	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written test, 120min) or PF (portfolio)</li> <li>▪ Related to the entire course content.</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ 'Deutsches Seeschiffahrtsrecht': KL (written test, 45min) or EP (electronic test, 45min), in German, level B1 mandatory</li> <li>▪ passed or failed – Minimum Score to pass 70/100</li> </ul>
<b>2.5.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Ensure compliance with pollution-prevention requirements	<b>Prevention of pollution of the marine environment and anti-pollution procedures</b> Knowledge of the precautions to be taken to prevent pollution of the marine environment  Anti-pollution procedures and all associated equipment  Importance of proactive measures to protect the marine environment
Monitor compliance with legislative requirements	Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment

### 3. Semester

#### 3.1. Practical Semester 1

3.1.		Practical Semester 1	
<b>Module Responsibility:</b> <i>Modulverantwortliche*<sup>r</sup>:</i>	Internship Coordinator / <i>Praxissemesterbeauftragter</i> Malte Pertiet		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	30 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	900 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 3 <sup>rd</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	0 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	6 months sea training, in winter semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	900 h
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	>no		
<p><b>Learning Outcomes<sup>20</sup> / <i>Lernergebnisse:</i></b>                      Upon successful completion of this module, students are expected to be able to ...                      (<i>regarding knowledge and understanding (knowledge enlargement, knowledge deepening, knowledge understanding)</i>)</p> <p>... <b>describe</b> the operational tasks according the TRB NOA (Training Record Book for Navigational Officer Assistants) on board of a seagoing ship (CL 2)</p> <p>(<i>regarding using, applying, generating of knowledge (applying and transferring, scientific innovation)</i>)</p> <p>... <b>apply</b> theoretical contents of modules (previous studies) to the reality of everyday working life on board of a seagoing ship and to determine missing theoretical knowledge by reflecting the work experience (CL 3)</p> <p>... <b>apply</b> the systematics of operational end emergency procedures (CL 3)</p> <p>(<i>regarding communication and co-operation</i>)</p> <p>... <b>convinced</b> to work in groups and to head small teams (CL 5)</p> <p>(<i>regarding reflection of academic and professional identity</i>)</p> <p>... <b>take responsibility</b> on tasks on board of seagoing ships (CL 5)</p>			
<p><b>Course Content / <i>Lehrinhalte:</i></b>                      The content is according to the ‘On-Board Training Record Book for Navigational Officer’s Assistants (TRB NOA)’:</p> <ul style="list-style-type: none"> <li>▪ Navigation at the support level</li> </ul> <p>Navigation at the operational level Cargo handling and stowage at the operational level Controlling the operation of the ship and care of persons onboard at the operational level Details are specified in the TRB NOA of BSH</p>			
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English (or German, depending to working language on board)		
<b>Prerequisites for participation:</b>	<ul style="list-style-type: none"> <li>▪ As cadet: internship contract (student – shipping company – HSB)</li> </ul>		

<sup>20</sup> Competence levels: 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<b>Teilnahmevoraussetzungen:</b>	<ul style="list-style-type: none"> <li>▪ As Navigational Officer Assistant (NOA): training contract (apprentice – shipping company) controlled by Berufsbildungsstelle See (BBS)</li> <li>▪ All other services acceptance by BSH required</li> </ul>
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Bundesamt für Seeschifffahrt und Hydrographie (BSH): On-Board Training Record Book for Navigational Officer Assistants (TRB NOA)</li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	<ul style="list-style-type: none"> <li>▪ A proper evidence of sea training according ISMN form F--33 “Bestätigung Fahrtzeit / Confirmation Internship” is mandatory, as:                             <ul style="list-style-type: none"> <li>&gt; confirmation of successful on-board training by BBS (time, content)</li> <li>&gt; properly kept ‘Training Record Book for Navigational Officer’s Assistants’ (TRB NOA)</li> <li>&gt; project reports (two per month) according TRB NOA and form F-37</li> <li>&gt; internship report (one per contract) according to F-38</li> <li>&gt; shipmasters appraisal with a minimum of a pass grade</li> </ul> </li> <li>▪ The regulations for the practical semester (<i>Praxissemesterordnung</i>) are to consider</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in regulation II/1 of the STCW Convention</li> </ul>

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>3.1. Practical Semester</b>	assigned officer on board	n/a	Practical On-board Training	Formative exam (Studienleistung): <ul style="list-style-type: none"> <li>▪ minimum 6 months sea training acc. BSH time calculation sheet (units in month and days)</li> <li>▪ Completed documentation acc. to Form F-33 “Bestätigung Fahrtzeit” and Form-34 “Anerkennung Praxissemester / Approval Internship”, or a confirmation of BSH</li> <li>▪ passed or failed</li> </ul>

**For further details to module “3.1. Practical Semester 1” refer also to chapter 9.3., use link: [Ergänzung Modul 3.1./6.1. Practical Semester \(Praxissemesterordnung\)](#)**

## 4. Semester

### 4.1. Applied Navigation

4.1.		Applied Navigation	
<b>Module Responsibility:</b> <i>Modulverantwortliche*:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory Module ISMN 4 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>21</sup> / Lernergebnisse: <sup>22</sup></b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>Explain</b> sea charts and chart work (CL 2)</li> <li>... <b>Describe</b> procedures and requirements according passage planning, ocean and coastal navigation, and pilotage (CL 2)</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>appraise</b> all available information and <b>prepare</b> a passage plan by considering specific conditions (CL 3 + 4)</li> <li>... <b>check</b> compasses safely (CL 4)</li> <li>... <b>determine</b> tides by height and time (CL 3)</li> <li>... <b>apply</b> nautical publications and information systems and to use them safely (CL 3)</li> <li>... <b>determine and fix</b> the ship's position by use of terrestrial, electronic and <b>celestial</b> methods safely (CL 3)</li> <li>... <b>demonstrate</b> the correct use of a sextant and <b>determine</b> a position fix by calculation and <b>visualizing</b> astronomical lines of position (CL 3)</li> <li>... <b>assess</b> the reliability and accuracy of position fixes (CL 5)</li> <li>...</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>participate</b> in a navigational team by professional communication of navigational challenges (CL 3)</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>being convinced</b> of safe navigation and <b>challenging</b> him/herself when navigating (CL 5)</li> </ul>			

<sup>21</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>22</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

**Course Content / Lehrinhalte :**

**Basics**

- **Sea charts**
  - Correction of sea charts and publications
  - Chart work (ECDIS and paper charts)
- **Courses**
  - Courses, course conversion including
  - Effects by wind, currents and tidal streams
  - Effects of compass errors
- **Tide planning**
  - Tidal values and tidal current
  - Tide tables, tide atlas, tide calculation
- **Passage Planning**
  - Appraisal, Planning, Monitoring and Executing
  - Under keel clearance, safety contour and safety depth
  - Nautical publications, navigational warnings, notices to mariners
  - Meteorological navigation, weather routing, considering ice, restricted visibility

**Navigation**

- **Ocean Navigation**
  - Electronic position fixes
  - Celestial position fixes
  - Accuracy of position fixes on oceans
- **Coastal Navigation**
  - Position fixing by bearings
  - Virtual nav aids
  - Accuracy of position fixes in coastal navigation
- **Pilotage, restricted waters**
  - Visual and Blind Pilotage
  - Safety and clearing lines
  - Parallel Indexing
  - Turning radius, abort points, berthing and anchoring

**Language of teaching:**

*Unterrichtssprache:*

English

**Prerequisites for participation:**

*Teilnahmevoraussetzungen:*

Module 1.1 'Navigation Basics' mandatory  
 Module 2.1 'Navigation Systems / Informatics' recommended  
 Module 3.1 'Practical Semester' mandatory

**Preparation / Literature:**

*Vorbereitung / Literatur:*

- Admiralty NP 100: Mariners Handbook.
- Admiralty NP 5011: Guide to Symbols and Abbreviations on Paper Charts (INT 1)
- Admiralty NP 5012: Guide to ENC Symbols.
- Nautical Publications as Sailing Directions, Tide Tables, List of Lights, Radio Signals.
- Appropriate sea charts
- Admiralty: The Principles of Navigation Vol 1 and 2
- Witherby (ed.): Passage Planning Guide Line
- H.O.: Sight Reduction Tables; Pub. No 249
- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture

	<ul style="list-style-type: none"> <li>Link to full list: <a href="https://refworks.proquest.com/public-share/FjkHVcYsu9xtGf6OI9QnS4skHfl15oifz1O9BUdAGF0L">https://refworks.proquest.com/public-share/FjkHVcYsu9xtGf6OI9QnS4skHfl15oifz1O9BUdAGF0L</a></li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	<ul style="list-style-type: none"> <li>Tutorial "Applied Navigation" to exercise paper chart work</li> <li>The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>4.1.1. Applied Navigation</b>	Prof. Dr. Colmorn, Pertiet	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>KL (written test, 180min) or PF (portfolio)</li> <li>Related to entire content of lecture</li> <li>mandatory exercises to be passed to participate in summative examination</li> <li>Minimum passing grade: 4.0</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>SL: PÜ 'paper chart exercises' (practical exercises)</li> <li>Passed or failed</li> </ul>
<b>4.1.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Plan and conduct a passage and determine position	<b>Celestial navigation</b> Ability to use celestial bodies to determine the ship's position
	<b>Terrestrial and coastal navigation</b> Ability to determine the ship's position by use of: .1 landmarks .2 aids to navigation, including lighthouses, beacons and buoys .3 dead reckoning, taking into account winds, tides, currents and estimated speed
	Thorough knowledge of and ability to use nautical charts, and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ships' routing information



	<p><b>Electronic systems of position fixing and navigation</b>                  Ability to determine the ship's position by use of electronic navigational aids</p> <p><b>Compass – magnetic and gyro</b>                  Ability to determine errors of the magnetic and gyro-compasses, using celestial and terrestrial means, and to allow for such errors</p>
Maintain a safe navigational watch	<p><b>Watchkeeping</b>                  Knowledge of blind pilotage techniques</p>
Use of radar and ARPA to maintain safety of navigation	<p><b>Radar navigation</b>                  Use, including:                  .5 parallel indexing</p>

Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the management level	
Plan a voyage and conduct navigation	<p>Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.:</p> <ul style="list-style-type: none"> <li>.1 restricted waters</li> <li>.2 meteorological conditions</li> <li>.3 ice</li> <li>.4 restricted visibility</li> <li>.5 traffic separation schemes</li> <li>.6 vessel traffic service (VTS) areas</li> <li>.7 areas of extensive tidal effects</li> </ul> <p>Routeing in accordance with the General Provisions on Ships' Routeing</p> <p>Reporting in accordance with the General principles for Ship Reporting Systems and with VTS procedures</p>
Determine position and the accuracy of resultant position fix by any means	<p>Position determination in all conditions:</p> <ul style="list-style-type: none"> <li>.1 by celestial observations</li> <li>.2 by terrestrial observations, including the ability to use appropriate charts, notices to mariners and other publications to assess the accuracy of the resulting position fix</li> <li>.3 using modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction to obtain accurate position fixing</li> </ul>
Determine and allow for compass errors	<p>Ability to determine and allow for errors of the magnetic and gyro-compasses</p> <p>Knowledge of the principles of magnetic and gyro-compasses</p> <p>An understanding of systems under the control of the master gyro and a knowledge of the operation and care of the main types of gyro-compass</p>

## 4.2. Watchkeeping

4.2.		Watchkeeping	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory Module ISMN 4 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>23</sup> / Lernergebnisse: <sup>24</sup></b>                      Upon successful completion of this module, students are expected to be able to ...                      (<i>regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge)</i>)                      ... <b>Explain</b> the international regulations in content and intend (CL 2)                      ... <b>Explain</b> the national regulations in content and intend (CL 2)                      (<i>regarding using, applying, generating of knowledge (applying and transferring, scientific innovation)</i>)                      ... <b>apply</b> the international regulations for preventing collisions safe and correct (CL 3)                      ... <b>apply</b> the national regulations for preventing collisions safe and correct (CL 3)                      ... <b>assess</b> traffic by use of plotting techniques (CL 4)                      ... <b>identify</b> critical traffic situations and <b>decide</b> on appropriate manoeuvres (CL 4)                      ... <b>evaluate</b> all required activities to <b>assess</b> traffic situations and <b>maintaining</b> a safe navigational watch (CL 4)                      ... <b>apply</b> the International Code of Signals (CL 3)                      (<i>regarding communication and co-operation</i>)                      ... <b>maintain</b> a navigational watch in a bridge team (CL 4)                      (<i>regarding reflection of academic and professional identity</i>)                      ... <b>take the responsibility</b> as an officer of the watch (CL 4)</p>			
<p><b>Course Content / Lehrinhalte:</b>  <b>International Regulations</b></p> <ul style="list-style-type: none"> <li>▪ International Regulations for Preventing Collisions at Sea</li> <li>▪ Regulations in STCW-Code about Watchkeeping</li> <li>▪ Collision avoidance – radar plotting</li> <li>▪ Incident and Accident Investigation</li> </ul>			

<sup>23</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>24</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

<p><b>National Regulations / Deutsches Allgemeines Seeverkehrsrecht</b> <sup>25</sup></p> <ul style="list-style-type: none"> <li>▪ Deutsche Seeschiffahrtsstraßen-Ordnung</li> <li>▪ Anlaufbedingungs-Verordnung</li> <li>▪ Seesicherheits-Untersuchungs-Gesetz</li> </ul> <p><b>Watchkeeping</b></p> <ul style="list-style-type: none"> <li>▪ Keeping a safe navigational watch</li> <li>▪ Log Book</li> <li>▪ Navigation in VTS areas</li> <li>▪ International Code of Signals</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English,          national regulations in German (including test)</p>
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module 3.1 ‘Practical Semester’ mandatory;</li> <li>▪ For formative examination (Deutsches Seeschiffahrtsrecht) German Level B2 is mandatory</li> </ul>
<p><b>Preparation / Literature</b>  <i>Vorbereitung / Literatur</i></p>	<ul style="list-style-type: none"> <li>▪ IMO: COLREG</li> <li>▪ SeeSchStrO</li> <li>▪ IMO: STCW</li> <li>▪ IMO: Int. Code of Signals</li> <li>▪ Cockroft: A guide to the Collision Avoidance Rules</li> <li>▪ Specific accident investigations from BSU and MAIB</li> <li>▪ Lecture notes, further specific literature and most recent reading materials will be named at commence of lecture</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/FS04wPQr35v9usRC6ePRf682YueFMJ1JSDYohrddyUDoN">https://refworks.proquest.com/public-share/FS04wPQr35v9usRC6ePRf682YueFMJ1JSDYohrddyUDoN</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ tutorial for mandatory exercises, case studies, signals and light test, radar plotting</li> <li>▪ exercises take place in the classroom, particular use of ECDIS-simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> <li>▪ After finishing the Practical Semester 1 with 6 months and completion of this module it is possible to apply for the certificate acc. STCW A-II/4 “Mandatory minimum requirements for certification of ratings forming part of a navigational watch” (“Wachbefähigung Brücke NWB”) issued by BSH. For requirements see <a href="http://www.deutsche-flagge.de">www.deutsche-flagge.de</a> .</li> </ul>

<sup>25</sup> Vgl. See-BV Anlage 2 (zu § 5) Zulassung von Lehrgängen im deutschen Seeschiffahrtsrecht und Wahlpflichtfach „Deutsches Seeschiffahrtsrecht“

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>4.2.1. Watchkeeping</b>	Pertiet	4	SU (lecture in seminar form)	<p><u>Summative exam (Modulprüfung):</u></p> <ul style="list-style-type: none"> <li>▪ KL (written test, 180min)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> <li>▪ Exceeded safety limits will cause a fail</li> </ul> <p><u>Formative exam (Studienleistung):</u></p> <ul style="list-style-type: none"> <li>▪ SL 'Signals and Lights': EP (electronic test, 60 min)</li> <li>▪ SL 'Deutsches Seeschiffahrtsrecht': KL (written test, 45 min) or EP (electronic test, 45 min), in German, level B2 mandatory</li> <li>▪ passed or failed – Minimum Score to pass 70/100</li> </ul>
<b>4.2.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1</b> <b>Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the operational level	
Maintain a safe navigational watch	<p><b>Watchkeeping</b></p> <p>Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended</p> <p>Thorough knowledge of the Principles to be observed in keeping a navigational watch</p> <p>The use of routeing in accordance with the General Provisions on Ships' Routeing</p>
Use of radar and ARPA to maintain safety of navigation	<p><b>Radar navigation</b></p> <p>Use, including:</p> <ul style="list-style-type: none"> <li>.3 application of the International Regulations for Preventing Collisions at Sea, 1972, as amended</li> <li>.4 plotting techniques and relative- and true motion concepts</li> </ul>

<b>Table A-II/2</b> <b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Establish watchkeeping arrangements and procedures	<p>Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended</p> <p>Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch</p>

### 4.3 Dangerous Cargo

4.3.		Dangerous Cargo	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN, 4 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and frequency of teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in summer semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module > Minor "Blue Sciences" as elective		
<p><b>Learning Outcomes <sup>26</sup> / Lernergebnisse:</b>                      Upon successful completion of this module, students are expected to be able to ... <sup>27</sup>  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>outline</b> basics of chemistry with focus to chemical hazards (CL 1);</li> <li>... <b>explain</b> the most important national and international regulations for the transport of dangerous cargoes at sea (CL 2);</li> <li>... <b>describe</b> precautionary measures during loading, discharging and care during the voyage (CL 2);</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>apply</b> international rules, standards, codes and guidelines on shipping dangerous goods (CL 3);</li> <li>... <b>demonstrate</b> stowage planning under the observance of handling, stowage and segregation regulations (CL 3);</li> <li>... <b>determine / plan</b> emergency procedures, preparation for emergency situations and actions in the case of an incident (CL 3);</li> <li>... <b>categorize / classify</b> the classification regulations, packing regulations and carriage documents to recognize any irregularities in the transport (CL 4);</li> <li>... <b>check</b> consignments of dangerous goods and related transport documents to <b>identify</b> any irregularities (CL 4 and 5).</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>participate</b> in organized ship/ship, ship/shore, shore/shore communication in operations with dangerous cargo (CL 3);</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>agree</b> on the importance of regulations for the carriage of dangerous cargo (CL 3).</li> </ul>			

<sup>26</sup> CL Competence Levels: 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>27</sup> consider STCW table A-II/1 (operational level) and table A-II/2 (management level)

<p><b>Course Content / Lehrinhalte:</b></p> <ul style="list-style-type: none"> <li>&gt; Fundamentals concerning chemical hazards, chemicals on board.</li> <li>&gt; Hazard classes and related provisions.</li> <li>&gt; International regulations as           <ul style="list-style-type: none"> <li>&gt; SOLAS (International Convention for the Safety of Life at Sea), especially SOLAS II-2 Regel 19 and SOLAS Chapter VII.</li> <li>&gt; IMDG-Code (International Maritime Dangerous Goods Code).</li> <li>&gt; IMSBC-Code (International Maritime Solid Bulk Cargoes Code).</li> <li>&gt; CSC (Convention for Safe Containers).</li> </ul> </li> <li>&gt; Handling, stowage and segregation of dangerous cargoes.</li> <li>&gt; Documentation</li> <li>&gt; National laws, regulations and guidelines on classification, packing, documentation.           <ul style="list-style-type: none"> <li>&gt; Gefahrgutverordnung See (GGV See)</li> </ul> </li> <li>&gt; Procedures and communication in operations with dangerous cargo.</li> <li>&gt; Emergency response (MFAG, EmS)</li> </ul>	
<p><b>Language of Teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English</p>
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<p>Module 3.1 'Practical Semester' mandatory</p>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ IMO: SOLAS</li> <li>▪ IMO: IMDG-Code and IMSBC-Code</li> <li>▪ IMO: CSC-Convention</li> <li>▪ Gefahrgutverordnung See</li> <li>▪ Lecture notes, further specific regulations and literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/Kr7w2csrT27jmdIN4YoAd0edJ1DT9UUY2uk9jr5KYdVW">https://refworks.proquest.com/public-share/Kr7w2csrT27jmdIN4YoAd0edJ1DT9UUY2uk9jr5KYdVW</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> <li>▪ Issued after successful completion: Certificate of Participation "Erstunterweisung zur Beförderung gefährlicher Güter über See (GGVSee)" and "Training of Transport of Dangerous Goods at Sea (HAZMAT Employees)"</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>4.3.1. Dangerous Cargo</b>	Capt. Kraft	4	SU (lecture in seminar form)	<b>Summative exam (<i>Modulprüfung</i>):</b> <ul style="list-style-type: none"> <li>▪ KL (written test 180min) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>4.3.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Cargo handling and stowage at the operational level	
Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes	<p><b><i>Cargo handling, stowage and securing</i></b></p> <p>Knowledge of the effect of cargo, including heavy lifts, on the seaworthiness and stability of the ship</p> <p>Knowledge of safe handling, stowage and securing of cargoes, including dangerous, hazardous and harmful cargoes, and their effect on the safety of life and of the ship</p> <p>Ability to establish and maintain effective communications during loading and unloading</p>

Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Cargo handling and stowage at the management level	
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	Ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as IMDG Code, IMSBC Code, MARPOL 73/78 Annexes III and V and other relevant information
Carriage of dangerous goods	<p>International regulations, standards, codes and recommendations on the carriage of dangerous cargoes, including the International Maritime Dangerous Goods (IMDG) Code and the International Maritime Solid Bulk Cargoes (IMSBC) Code</p> <p>Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage</p>



## 4.4. Ship Engineering

4.4.		Ship Engineering	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 4 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>28</sup> / <i>Lernergebnis</i>: <sup>29</sup></b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>explain</b> the principles of marine propulsion systems, auxiliary equipment and power plants (CL 2)</li> <li>... <b>discuss</b> the performance and limits of propulsion systems (CL 2)</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>establish</b> operational principles for safe and efficient operations of ship's machinery and equipment (CL 3)</li> <li>... <b>determine</b> different modes of operation of machinery and equipment (CL 3)</li> <li>... <b>differentiate</b> functionality and performance of machinery on board (CL 4)</li> <li>... <b>break down</b> the operating principles of different propulsion systems (CL 4)</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>participate</b> in efficient and safe technical ship operations (CL 3)</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>take responsibility</b> in efficient and safe technical ship operations (CL 4)</li> </ul>			
<p><b>Course Content / <i>Lehrinhalte</i>:</b></p> <p><b>Thermodynamics</b>                      Thermodynamic fundamentals / laws of thermodynamics, thermodynamic cycle processes, refrigeration circuit, heat transfer</p> <p><b>Electrotechnics</b>                      Basics of direct and alternating current, measurement of electrical quantities, calculation of linear direct current networks, electric field, electrical machines and devices</p>			

<sup>28</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>29</sup> consider STCW table A-II/2 (management level) as amended

<p><b>Work machines</b> Pumps, compressors, hydraulic motors</p> <p><b>Marine Combustion engines</b> Slow, medium and high speed engines, 2 and 4-stroke, for fuels as Diesel, HFO (Heavy Fuel Oil), LNG (Liquid Natural Gas), Methanol</p> <p><b>Propulsion Systems</b> Shaftline, gearbox, propeller, rudderpropellers, azimuth thruster, Voith Schneider propeller, maneuvering equipment (steering gear, transverse thrust systems)</p> <p><b>Auxiliary machinery</b> Cooling water systems, fuel oil systems, lubrication oil systems, fire-fighting and bilge systems, ballast systems, potable water systems, heating, ventilation and air condition (HVAC), sanitary black and grey water systems</p> <p><b>Electrical systems</b> Power generation, power distribution, fuel cells, battery systems</p>	
<p><b>Language of teaching:</b> <i>Unterrichtssprache:</i></p>	English
<p><b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i></p>	Module 3.1 'Practical Semester 1' mandatory
<p><b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes,</li> <li>▪ specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Meier-Peter, Hansheinrich; Bernhardt, Frank (ed.): Compendium Marine Engineering, Hamburg; 2009</li> <li>▪ Kees Kuiken, Gas- and dual-fuel engines for ship propulsion, power plants and cogeneration : from 0 to 100,000 kW</li> <li>▪ Kees Kuiken 3th ed, Diesel engines for ship propulsion and power plants from 0 to 100,000 kW</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/3GHorLMwXu3cL8cs6bgoWmICfwkhiKsDT6kfKw3mZP8b">https://refworks.proquest.com/public-share/3GHorLMwXu3cL8cs6bgoWmICfwkhiKsDT6kfKw3mZP8b</a></li> </ul>
<p><b>Further Information:</b> <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in section A-II/2 (management level) of the STCW Code.</li> <li>▪ Exercises take place with the Ship Engine Simulator</li> </ul>

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>4.4.1. Ship Engineering</b>	Engelhardt / Prof. Gruschka	4	SU (lecture in seminar form)	<b>Summative exam (Modulprüfung):</b> <ul style="list-style-type: none"> <li>▪ KL (written test 180min) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>4.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always consider valid edition!)

<b>Table A-II/2</b> <b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Operate remote controls of propulsion plant and engineering systems and services	Operating principles of marine power plants  Ships' auxiliary machinery  General knowledge of marine engineering terms

## 4.5 Transport Law & Claim Handling

4.5.		Transport Law & Claim Handling	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Law" Prof. Dr. Suzette Suarez		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 4 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module		
<p><b>Learning Outcomes <sup>30</sup>/ Lernergebnisse:</b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding ((knowledge extension, consolidation and understanding knowledge))</i>                      ... remember the content of transport related legislation and regulation (CL 1).                      ... outline selected cases of cargo and other claims (CL 1).                      ... describe and differentiate international multimodal legal relationships (CL 2).  <i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>                      ... determine the regulations concerning transport by ships in the day-to-day business (CL 3).                      ... use transport regulations in disputes on transportation contracts and damages of cargo (CL 3).                      ... work on cases of cargo and other claims and find solutions under consideration of the applicable law (CL 4).  <i>(regarding communication and co-operation)</i>                      ... outline the responsibilities, obligations and liabilities of contractual and non-contractual relations in maritime trade law (CL 4).                      ... communicate with the parties involved on land (shipping company, underwriters/brokers) (CL 3).  <i>(regarding reflection of academic and professional identity)</i>                      ... have awareness concerning the importance of good application of transport law (CL 1).                      ... show interest in legal challenges in sea transportation (CL 3).                      ... use knowledge in day to day business and organization (CL 3).</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <ul style="list-style-type: none"> <li>▪ Maritime trade law concerning Master's obligations regarding seaworthiness and preparedness for loading, carriers liability, conservation of evidence, sea protest;</li> <li>▪ Sea trade law regarding overseas trade contracts as contract of carriage (German Commercial Code,) and conventions (Hague-, Visby-, Hamburg-Rules) and charter contracts (voyage, time, bareboat charter);</li> <li>▪ Multimodal transport law regime, contracts for storage, cargo handling and special transports;</li> <li>▪ Insurance business (P&amp;I, hull &amp; machinery), particular and general average, salvage and assistance;</li> </ul>			

<sup>30</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<ul style="list-style-type: none"> <li>▪ Legal situation of the Master according to trade law (HGB etc.) and as representative of the ship owner;</li> <li>▪ International and German legislation and regulations;</li> <li>▪ Importance of legal situation/contracts for main obligations (claims for – timely performance and for payment of freight, demurrage/detention and other costs aspects).</li> </ul>	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	No prerequisites
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be assigned at the start of the semester</li> <li>▪ Applicable legislation available online such as <a href="http://www.transportrecht.org">www.transportrecht.org</a></li> <li>▪ The Shipmaster’s Business Self-Examiner</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/Wdx6i4827S08985kuMUQYWVrjhBOuhB7XUCAMkEXp54H7">https://refworks.proquest.com/public-share/Wdx6i4827S08985kuMUQYWVrjhBOuhB7XUCAMkEXp54H7</a></li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	./.

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>4.5.1. Transport Law &amp; Claim Handling</b>	Prof. Dr. Suarez	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written test 180min)</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Related to entire course content</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>4.5.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

## 5. Semester

### 5.1 Human Element

5.1.		Human Element	
<b>Module Responsibility:</b> <i>Modulverantwortliche*:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory Module ISMN 5 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 20 h module related exercises and 80 h hospital internship)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>31</sup> / <i>Lernergebnisse</i><sup>32</sup>:</b>                      Upon successful completion of this module, students are expected to be able to ...</p> <p><i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>                      ... ./.</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <p><b>Medical Care</b></p> <ul style="list-style-type: none"> <li>... use terms about the human anatomy and medical issues (CL 3)</li> <li>... apply extended elementary knowledge about sanitation and healthy nutrition on board (CL 3)</li> <li>... identify frequent occurrent diseases and specific tropical diseases and to treat them with the medical medicine and equipment on board (CL 4 + 3)</li> <li>... organise and practice nursing and patient care (CL 3)</li> <li>... practice advanced first-aid, including reanimation (injuries, unconsciousness, hyperthermia) (CL 2)</li> <li>... administer the medical chest and hospital on board (CL 3)</li> <li>... use telemedical assistance. (CL 3)</li> </ul> <p><b>Human Behaviour</b></p> <ul style="list-style-type: none"> <li>... use universal psychologic as well as occupational and organisational psychologic basics in the working and living environment "ship" (CL 3)</li> <li>... apply general sociological and shipping-sociological basics in the working and living environment "ship" (CL 3)</li> <li>...</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... participate in medical treatment (CL 3)</li> <li>... communicate with medical services (CL 3)</li> </ul>			

<sup>31</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>32</sup> consider STCW table A-II/1 (operational level), A-II/2 (management level), A-VI/4.1 (Medical First Aid) and 4.2 (Medical Care) as amended

*(regarding reflection of academic and professional identity)*

... **accept** his/her responsibility for health and life of people on board of a ship (CL 4)

**Course Content / Lehrinhalte:**

**Medical Care:**

- Anatomy of the human body
- Frequently occurring diseases and their treatment
- Tropical diseases and their treatment
- General knowledge about nursing and patient care
- Pharmacologic knowledge about the medicine in the medical chest
- Advanced knowledge in medical first-aid and the competence to practice it (as use of spine board, emergency kits, surgery techniques, dressing)
- Emergency medical aid and ability for reanimation
- Lifesaving in distress at sea
- Competence to use telemedical support including the ability to transfer the advice into effective actions
- Practical medical course to gain medical competence specific for practice on board (e.g. injections, surgical dressing)

**Human Behaviour:**

- Basics and terms of universal psychology (psychologic processes and its organic basics, disposition and environment, process of psychic functions, awareness, memory and learning, thinking and intelligence, psychic forces)
- Basics and terms of occupational and organisational psychology
- Basics and terms of the work sociology
- Basics and terms of shipping-sociology (social system 'ship', social conflicts, intra-role conflict, social situation of seafarer, group structures, group dynamics)
- Intercultural systems

**Language of teaching:**

*Unterrichtssprache:*

English (German for National German Legislation in Medical Care only)

**Prerequisites for participation:**

*Teilnahmevoraussetzungen:*

For module 5.1.: Module 3.1 'Practical Semester 1' mandatory

**Preparation / Literature**

*Vorbereitung / Literatur*

- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture
- WHO: International Medical Guide for Ships
- IMO: IMDG-Code MFAG (Medical First Aid Guide for use in Accidents Involving Dangerous Goods)
- Langenbuch, Ewen, Tülsner (ed.): Medizinisches Handbuch See
- Maritime Medizin-Verordnung
- Link to full list: <https://refworks.proquest.com/public-share/Ht87ICNfAhasZ1x86eFMq6VWVKOHZgoi2dzzeySUBHNwO>

**Further Information:**

*weitere Informationen:*

- The module 5.1.1 covers the requirements of German See-BV in accordance with the requirements set out in sections A-VI/4.1 (Medical First Aid) and 4.2 (Medical Care) of the STCW Code, and in "Anlage 4 der Maritimen-Medizin-Verordnung".
- The module 5.1.2 covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code
- The ISMN Form F-51 (ISMN Quality Management System) is compulsory to use for Hospital Internship;

<ul style="list-style-type: none"> <li>issued after successful completion of part "Medical Care" incl. Surgery Training and Hospital Internship: Certificate of Proficiency "Medical First Aid and Medical Care"</li> </ul>				
Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
5.1.1. Medical Care	Dr. med. Rogge	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>KL (written test) 90min</li> <li>Related to entire content of lecture</li> <li>Minimum passing grade: 4.0</li> </ul> <u>Formative exam (Studienleistungen):</u> <ul style="list-style-type: none"> <li>SL: PÜ Hospital Internship (80h attendance)</li> <li>SL: PÜ Practical Surgery and Dressing (8 h attendance)</li> </ul>
5.1.2. Human Behaviour	Mende	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>R (written essay) 10p</li> <li>Related to entire content of lecture</li> <li>mandatory exercises to be passed to participate in summative examination</li> <li>Minimum passing grade: 4.0</li> </ul>
5.1.3. Module Related Exercises <i>Modulbezogene Übungen</i>	Dr. med. Rogge	(1)	MÜ (module related exercises)	<ul style="list-style-type: none"> <li>Practical exercises for surgery and dressing will be in teams of 12 students (KG)</li> </ul>

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Maintain a safe navigational watch	<b>Bridge resource management</b> Knowledge of bridge resource management principles, including: <ol style="list-style-type: none"> <li>.1 allocation, assignment, and prioritization of resources</li> <li>.2 effective communication</li> <li>.3 assertiveness and leadership</li> <li>.4 obtaining and maintaining situational awareness</li> <li>.5 consideration of team experience</li> </ol>
Function: Controlling the operation of the ship and care for persons on board at the operational level	



Apply medical first aid on board ship	<b>Medical aid</b> Practical application of medical guides and advice by radio, including the ability to take effective action based on such knowledge in the case of accidents or illnesses that are likely to occur on board ship
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Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Controlling the operation of the ship and care for persons on board at the management level	
Organize and manage the provision of medical care on board	A thorough knowledge* of the use and contents of the following publications: .1 International Medical Guide for Ships or equivalent national publications .2 medical section of the International Code of Signals .3 Medical First Aid Guide for use in Accidents Involving Dangerous Goods

Table A-VI/4-1 Specification of minimum standard of competence in medical first aid	
Competence	Knowledge, understanding competence and proficiency
Apply immediate first aid in the event of accident or illness on board	First-aid kit  Body structure and function  Toxicological hazards on board, including use of the Medical First Aid Guide for use in Accidents Involving Dangerous Goods (MFAG) or its national equivalent  Examination of casualty or patient  Spinal injuries  Burns, scalds and effects of heat and cold  Fractures, dislocations and muscular injuries  Medical care of rescued persons  Radio medical advice  Pharmacology  Sterilization  Cardiac arrest, drowning and asphyxia

Table A-VI/4-2 Specification of minimum standard of competence in medical care	
Competence	Knowledge, understanding competence and proficiency
Provide medical care to the sick and injured while they remain on board	Care of casualty involving: .1 head and spinal injuries .2 injuries of ear, nose, throat and eyes .3 external and internal bleeding .4 burns, scalds and frostbite .5 fractures, dislocations and muscular injuries

	<p>.6 wounds, wound healing and infection                  .7 pain relief                  .8 techniques of sewing and clamping                  .9 management of acute abdominal conditions                  .10 minor surgical treatment                  .11 dressing and bandaging</p> <p>Aspects of nursing:                  .1 general principles                  .2 nursing care</p> <p>Diseases, including:                  .1 medical conditions and emergencies                  .2 sexually transmitted diseases                  .3 tropical and infectious diseases</p> <p>Alcohol and drug abuse</p> <p>Dental care</p> <p>Gynaecology, pregnancy and childbirth</p> <p>Medical care of rescued persons</p> <p>Death at sea</p> <p>Hygiene</p> <p>Disease prevention, including:                  .1 disinfection, disinfestation, de-ratting                  .2 vaccinations</p> <p>Keeping records and copies of applicable regulations:                  .1 keeping medical records                  .2 international and national maritime medical regulations</p>
<p>Participate in coordinated schemes for medical assistance to ships</p>	<p>External assistance, including:                  .1 radio medical advice                  .2 Transportation of the ill and injured, including helicopter evacuation                  .3 medical care of sick seafarers involving co-operation with port health authorities or out-patient wards in port</p>

## 5.2. ARPA / ECDIS

5.2.	ARPA / ECDIS		
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 5 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	5 days Radar/ARPA, 5 days ECDIS, offered once a study year	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 20 h practical exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>33</sup> / Lernergebnisse: <sup>34</sup></b>                      Upon successful completion of this module, students are expected to be able to ...                      (regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</p> <p><b>RADAR / ARPA</b></p> <ul style="list-style-type: none"> <li>... <b>explain</b> radar principles, functionalities and limitations (CL 2)</li> <li>... <b>explain</b> ARPA fundamentals, functionalities and limitations (CL 2)</li> </ul> <p><b>ECDIS</b></p> <ul style="list-style-type: none"> <li>... <b>explain</b> ECDIS principles, functionalities and limitations (CL 2)</li> </ul> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</p> <p><b>RADAR / ARPA</b></p> <ul style="list-style-type: none"> <li>... <b>operate</b> and to <b>interpret</b> and <b>evaluate</b> information obtained from radar (CL 5)</li> <li>... <b>operate</b> and to <b>interpret</b> and <b>evaluate</b> information obtained from ARPA (CL 5)</li> <li>... <b>use</b> radar and ARPA in navigation and collision avoidance safely (CL 3)</li> <li>... <b>apply</b> the COLREG's to prevent collisions (CL 3)</li> </ul> <p><b>ECDIS</b></p> <ul style="list-style-type: none"> <li>... <b>operate</b> and to <b>interpret</b> and <b>evaluate</b> information obtained from ECDIS (CL 3 + 4 +5)</li> <li>... <b>use</b> ECDIS (generic) for navigation and monitoring safely (CL 3)</li> <li>... <b>plan</b> and <b>assess</b> a passage plan by using ECDIS (CL 5)</li> <li>... <b>monitor</b> capabilities and limitations of the system (CL 5)</li> <li>... <b>operate</b> system files and data and playback functions (CL 3)</li> </ul> <p>(regarding communication and co-operation)</p> <ul style="list-style-type: none"> <li>... <b>discuss</b> functions and limitations in a professional bridge team (CL 3)</li> </ul>			

<sup>33</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>34</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

*(regarding reflection of academic and professional identity)*

- ... **be convinced** in required situational awareness while using ECDIS and radar (CL 5)
- ... **accept** the limitations of electronic systems (CL 5)
- ... **avoid** overreliance in electronic systems (CL 5)

**Course Content / Lehrinhalte:**

**RADAR / ARPA (Automatic Radar Plotting Aid) (40h lecture and exercises)**

- Radar principles, functionalities, settings and limitations
- Critical echo identification (courses, speed, time and distance of closest approach)
- Parallel indexing
- Plotting techniques and relative- and true-motion concepts
- ARPA fundamentals, functionalities and limitations
- Radar image analysis
- AIS integration
- Radar overlay
- ARPA and decision making
- Case studies and practical use to avoid collisions in simulator

**ECDIS (Electronic Chart Display and Information System) (40h lecture and exercises)**

- Regulatory requirements, backup systems
- ECDIS principles, functionalities, settings and limitations
- ENC (charts) types and modes of presentation
- Installation and updating, chart ordering and handling
- Sensors and integrity
- Planning and monitoring with ECDIS
- Data accuracy, warnings, alerts, cautions
- Cases studies and practical use in setting-up, planning and monitoring in simulator

**Language of teaching:**

*Unterrichtssprache:*

English

**Prerequisites for**

**participation:**

*Teilnahmevoraussetzungen:*

Module 2.1 'Navigation Systems / Informatics' mandatory  
 Module 4.1. 'Applied Navigation' mandatory  
 Module 4.2 'Watchkeeping' mandatory

**Preparation / Literature**

*Vorbereitung / Literatur*

- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture
- Norris, A.: Radar and AIS, Nautical Institute, 2008
- Norris, A.: ECDIS and Positioning, Nautical Institute, 2014
- Becker-Heins, R.: ECDIS Basics, geomares, 2014
- Hecht, Berking, Jonas, Alexander: The Electronic Chart, geomares, 2011
- Link to full list: <https://refworks.proquest.com/public-share/1pDZbh1kBLS3gAFy59q53NxX1Ld5zk53MjMkZg2LT9iU>

**Further Information:**

*weitere Informationen:*

- Lecture takes place in the ECDIS and RADAR – Simulator
- The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code
- The module 5.2.2. covers the requirements of "IMO Model Course 1.27 Training and Assessment of ECDIS".
- Issued after successful completion of 5.5.2 'ECDIS Generic': Certificate of Participation "ECDIS Generic Training"
- Tutorial for module related exercises in ECDIS/RADAR-Simulator

<ul style="list-style-type: none"> <li>Instructorless Training in ECDIS/RADAR-Simulator</li> </ul>				
Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>5.2.1. RADAR/ARPA</b>	Pertiet Prof. Dr. Colmorn,	2	KG (lecture in small teams of 8 students)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>KL (written test, 90min) or EP (electronic test, 90min)</li> <li>Related to entire content of lecture</li> <li>Passed or failed</li> </ul> <u>Formative exam (Studienleistungen):</u> <ul style="list-style-type: none"> <li>PÜ (practical exercises in simulator),</li> <li>to be passed to participate in summative examination</li> </ul>
<b>5.2.2. ECDIS Generic</b>	Prof. Dr. Colmorn, Pertiet	2	KG (lecture in small teams of 8 students)	<u>Summative exam:</u> <ul style="list-style-type: none"> <li>KL (written test, 90min) or EP (electronic test, 90min)</li> <li>Related to entire content of lecture</li> <li>Passed or failed</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>PÜ (practical exercises in simulator)</li> <li>to be passed to participate in summative examination</li> </ul>

**Appendix: STCW Requirements (always refer to valid edition!)**

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Use of radar and ARPA to maintain safety of navigation	<b>Radar navigation</b> Knowledge of the fundamentals of radar and automatic radar plotting aids (ARPA) Ability to operate and to interpret and analyse information obtained from radar, including the following:  Performance, including: .1 factors affecting performance and accuracy .2 setting up and maintaining displays

	<p>.3 detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs</p> <p><b>Use, including:</b></p> <p>.1 range and bearing; course and speed of other ships; time and distance of closest approach of crossing, meeting overtaking ships</p> <p>.2 identification of critical echoes; detecting course and speed changes of other ships; effect of changes in own ship's course or speed or both</p> <p>.3 application of the International Regulations for Preventing Collisions at Sea, 1972, as amended</p> <p>.4 plotting techniques and relative- and true motion concepts</p> <p>.5 parallel indexing</p> <p><b>Principal types of ARPA</b>, their display characteristics, performance standards and the dangers of over-reliance on ARPA</p> <p>Ability to operate and to interpret and analyse information obtained from ARPA, including:</p> <p>.1 system performance and accuracy, tracking capabilities and limitations, and processing delays</p> <p>.2 use of operational warnings and system tests</p> <p>.3 methods of target acquisition and their limitations</p> <p>.4 true and relative vectors, graphic representation of target information and danger areas</p> <p>.5 deriving and analysing information, critical echoes, exclusion areas and trial manoeuvres</p>
<p>Use of ECDIS to maintain the safety of navigation</p>	<p><b>Navigation using ECDIS</b></p> <p>Knowledge of the capability and limitations of ECDIS operations, including:</p> <p>.1 a thorough understanding of Electronic Navigational Chart (ENC) data, data accuracy, presentation rules, display options and other chart data formats</p> <p>.2 the dangers of overreliance</p> <p>.3 familiarity with the functions of ECDIS required by performance standards in force</p> <p>Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, including:</p> <p>.1 use of functions that are integrated with other navigation systems in various installations, including proper functioning and adjustment to desired settings</p> <p>.2 safe monitoring and adjustment of information, including own position, sea area display, mode and orientation, chart data displayed, route monitoring, user-created information layers, contacts (when interfaced with AIS and/or radar tracking) and radar overlay functions (when interfaced)</p> <p>.3 confirmation of vessel position by alternative means</p> <p>.4 efficient use of settings to ensure conformance to operational procedures, including alarm parameters for anti-grounding, proximity to contacts and special areas, completeness of chart data and chart update status, and backup arrangements</p> <p>.5 adjustment of settings and values to suit the present conditions</p> <p>.6 situational awareness while using ECDIS including safe water and proximity of hazards, set and drift, chart data and scale selection, suitability of route, contact detection and management, and integrity of sensors</p>

<b>Table A-II/2</b>	
<b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making	Management of operational procedures, system files and data, including: <ul style="list-style-type: none"> <li>.1 manage procurement, licensing and updating of chart data and system software to conform to established procedures</li> <li>.2 system and information updating, including the ability to update ECDIS system version in accordance with vendor’s product development</li> <li>.3 create and maintain system configuration and backup files</li> <li>.4 create and maintain log files in accordance with established procedures</li> <li>.5 create and maintain route plan files in accordance with established procedures</li> <li>.6 use ECDIS log-book and track history functions for inspection of system functions, alarm settings and user responses</li> </ul> Use ECDIS playback functionality for passage review, route planning and review of system functions

### 5.3 Dry Cargo Operations

5.3.		Dry Cargo Operations	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 5 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and frequency of teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module > Minor "Blue Sciences", as elective		
<p><b>Learning Outcomes<sup>35</sup> / <i>Lernergebnisse</i><sup>36</sup></b></p> <p>Upon successful completion of this module, students are expected to be able to ...                      (<i>regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge)</i>)</p> <ul style="list-style-type: none"> <li>... <b>describe</b> the different ship types, their equipment for cargo operations and transport-related characteristics of most important cargo groups;</li> <li>... <b>discuss</b> the commercial aspects of cargo transportation and loading/discharging;</li> <li>... <b>describe</b> lifting appliances and rigging arrangements;</li> <li>... <b>explain</b> operational and design limitations of bulk carriers;</li> <li>... <b>differentiate</b> and <b>explain</b> requirements of different cargoes as container, heavy lift, Ro/Ro, bulk incl. grain, timber deck cargo, refrigerated cargo;</li> </ul> <p>(<i>regarding using, applying, generating of knowledge (applying and transferring, scientific innovation)</i>)</p> <ul style="list-style-type: none"> <li>... <b>apply</b> relevant international regulations, codes and standards concerning cargo operations;</li> <li>... <b>establish</b> procedures for safe cargo handling;</li> <li>... <b>plan</b> and <b>assess</b> an exemplary stowage plan;</li> <li>... <b>judge</b> the utilization of the vessel's operational capacity;</li> <li>... <b>assess</b> stability and seaworthiness of a vessel within the scope of cargo operations and the loading conditions at sea;</li> <li>... <b>plan</b> and <b>assess</b> cargo securing arrangements;</li> <li>... <b>set up</b> work schedules for cargo operations;</li> <li>... <b>choose</b> correct ventilation of cargo holds on sea voyages;</li> <li>... <b>assess</b> reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action, especially on bulk carriers;</li> </ul>			

<sup>35</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>36</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level)



*(regarding communication and co-operation)*

- ... **explain** the basic principles for establishing effective communications and improving working relationship between ship and terminal personnel
- ... **establish** effective communications during loading and unloading

*(regarding reflection of academic and professional identity)*

- ... **agree** on the responsibilities of a cargo officer

**Course Content / Lehrinhalte:**

- Cargo transportation technologies (ship types, cargoes, holds and hatch covers, maintenance).
- Cargo operations (loading and discharging processes, legal and organisational framework of operations, claim handling).
- Cargo handling (lifting appliances, rigging, operational safety).
- Stowage planning (cargo information, space calculation, stowage rules, stowage plans, work schedules).
- Ship's stability and strength (stability in cargo operations, trimming, ballasting, limit assessments).
- Cargo securing (behaviour of cargo, principles of securing, securing devices and material properties, securing arrangement assessment, cargo securing manual)
- Ventilation of cargo holds
- Specific cargo requirements (container, heavy lift, Ro/Ro, bulk incl. grain, timber deck cargo, refrigerated cargo).

**Language of Teaching:**

*Unterrichtssprache:*

English

**Prerequisites for participation:**

*Teilnahmevoraussetzungen:*

- ISMN: Module 2.4. 'Stability, Trim & Strength' mandatory
- ISMN: Module 3.1. 'Practical Semester 1'
- Other study courses: no prerequisites

**Preparation / Literature:**

*Vorbereitung / Literatur:*

- CSS Code
- IMSBC Code, BLU Code
- Int. Grain Code
- IS-Code incl. Timber on Deck regulations
- ICLL Convention
- GDV (ed.): Container Handbook Vol. 1 – 3 ([www.containerhandbuch.de](http://www.containerhandbuch.de))
- House, D.J.: Cargo Work, 8.ed., 2016
- Meurn, R.: Marine Cargo Operations, 4.ed., 2011
- Pepper, G.M.: Thomas' Stowage, 7. Ed., 2016
- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture
- Link to full list: <https://refworks.proquest.com/public-share/kHxDyq6ZdPYJnJlavmJUEGbQiO4KvACEi5idILQiqUGG>

**Further information:**

*weitere Informationen:*

- The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code
- For students not registered to ISMN: Tutorial "Stability and Strength"
- Use of "Stability Calculator M/V NAUTILUS" (simulation)

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>5.3.1. Dry Cargo Operations</b>	Jungen	4	SU (lecture in seminar form)	<b>Summative exam (<i>Modulprüfung</i>):</b> <ul style="list-style-type: none"> <li>▪ HA (semester paper 40 pg) or PA (project) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>5.3.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Cargo handling and stowage at the operational level	
Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes	Cargo handling, stowage and securing  Knowledge of the effect of cargo, including heavy lifts, on the seaworthiness and stability of the ship  Knowledge of safe handling, stowage and securing of cargoes, including dangerous, hazardous and harmful cargoes, and their effect on the safety of life and of the ship  Ability to establish and maintain effective communications during loading and unloading
Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks	Knowledge* and ability to explain where to look for damage and defects most commonly encountered due to: .1 loading and unloading operations .2 corrosion .3 severe weather conditions
	* it should be understood that deck officers need not to be qualified in the survey of ships

<b>Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Cargo handling and stowage at the management level	
Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	<p>Knowledge of and ability to apply relevant international regulations, codes and standards concerning the safe handling, stowage, securing and transport of cargoes</p> <p>Knowledge of the effect on trim and stability of cargoes and cargo operations</p> <p>Use of stability and trim diagrams and stress calculating equipment, including automatic data based (ADB) equipment, and knowledge of loading cargoes and ballasting in order to keep hull stress within acceptable limits</p> <p>Stowage and securing of cargoes on board ships, including cargo-handling gear and securing and lashing equipment</p> <p>Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing</p> <p>Knowledge of the operational and design limitations of bulk carriers</p> <p>Ability to use all available shipboard data related to loading, care and unloading of bulk cargoes</p> <p>Ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as IMDG Code, IMSBC Code, MARPOL 73/78 Annexes III and V and other relevant information</p> <p>Ability to explain the basic principles for establishing effective communications and improving working relationship between ship and terminal personnel</p>
Assess reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action	<p>Knowledge of the limitations on strength of the vital constructional parts of a standard bulk carrier and ability to interpret given figures for bending moments and shear forces</p> <p>Ability to explain how to avoid the detrimental effects on bulk carriers of corrosion, fatigue and inadequate cargo handling</p>

## 5.4. Ship Automation & Digitalization

5.4.		Ship Automation & Digitalization	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 5th Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, 3 simulator trainings, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>37</sup> / <i>Lernergebnisse:</i> <sup>38</sup></b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>                      ... <b>describe</b> principles and limitations of measurement and control technologies (CL 2)                      ... <b>describe</b> automated and autonomous maritime systems (CL 2)                      ... <b>explain</b> control systems of propulsion plant and auxiliary systems (CL 2)    <i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>                      ... <b>operate</b> control technologies on board (CL 3)                      ... <b>analyse</b> ship performance data (CL 4)    <i>(regarding communication and co-operation)</i>                      ... <b>communicate</b> challenges of marine systems control (CL 3)                      ... <b>co-operate</b> with ship engineers and technical staff (CL 5)    <i>(regarding reflection of academic and professional identity)</i>                      ... <b>outline</b> the importance of technical performance (CL 3)</p>			
<p><b>Course Content / <i>Lehrinhalte:</i></b>  <b>Data processing</b>                      Sensor Technology, Coding and number systems, Logical operations and Boolean algebra    <b>Automation Technology</b>                      Open and closed-loop control, Contactors and relay technology, Processing of analog and binary sensor signals (e.g. PLC), State and block diagrams, Control circuit / PID controller    <b>Automation systems</b>                      Safety Systems, Propulsion Control Systems, Alarm Systems, Monitoring and Control Systems, Power Management Systems</p>			

<sup>37</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>38</sup> consider STCW table A-II/2 (management level)

<p><b>Data Management</b>                  Data Governance, Data Lifecycle Management, Big Data Management, Data Reliability, Data Storage, Fall-back Systems</p> <p><b>Cyber Security</b></p>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English</p>
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<p>Module 3.1 'Practical Semester 1' mandatory                  Module 4.4 'Ship Engineering' recommended</p>
<p><b>Preparation / Literature</b>  <i>Vorbereitung / Literatur</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes,</li> <li>▪ specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Meier-Peter, Hansheinrich; Bernhardt, Frank (ed.): Compendium Marine Engineering, Hamburg; 2009</li> <li>▪ Kees Kuiken: Gas- and dual-fuel engines for ship propulsion, power plants and cogeneration: from 0 to 100,000 kW</li> <li>▪ Kees Kuiken: Diesel engines for ship propulsion and power plants from 0 to 100,000 kW, 3th ed.</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/aPfPr7vGaydE4zDEvUBwIVkZ2bOTDRLJyiFX4jFsu7z2">https://refworks.proquest.com/public-share/aPfPr7vGaydE4zDEvUBwIVkZ2bOTDRLJyiFX4jFsu7z2</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Ship Engine Simulator exercises</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/2 (management level) of the STCW Code</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>5.4.1. Ship Automation &amp; Digitalization</b>	Engelhardt / Prof. Gruschka	4	SU, (lecture in seminar form)	<p><u>Summative exam (Modulprüfung):</u></p> <ul style="list-style-type: none"> <li>▪ KL (written test 120min) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Minimum passing grade: 4.0</li> </ul> <p><u>Formative exam (Studienleistungen):</u></p> <ul style="list-style-type: none"> <li>▪ PÜ (practical exercises with Ship Engine Simulator)</li> <li>▪ Passed or failed</li> </ul>

<b>5.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	Ship Engine Simulator will be used for practical exercises in teams of 6 students
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**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/2</b> <b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Operate remote controls of propulsion plant and engineering systems and services	Operating principles of marine power plants  Ships' auxiliary machinery  General knowledge of marine engineering terms

## 5.5 Maritime Human Resources

5.5.		Maritime Human Resources	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 5 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module		
<p><b>Learning Outcomes</b> <sup>39</sup> / <b>Lernergebnisse</b> :<sup>40</sup>                      Upon successful completion of this module, students are expected to be able to ...                      (regarding knowledge and understanding ((knowledge extension, consolidation and understanding knowledge))</p> <p>... <b>explain</b> the international and national legislation and regulations of maritime labour law (CL 2).                      ... <b>describe</b> an effective human resource management (CL 2).                      ... <b>illustrate</b> major components of human resource management (CL 2).</p> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</p> <p>... <b>demonstrate</b> the application of maritime labour law in examples (CL 3).                      ... <b>demonstrate</b> effective resource management (CL 3).                      ... <b>use</b> appropriate decision-making techniques (CL 3).</p> <p>(regarding communication and co-operation)</p> <p>... <b>present</b> leadership, teamworking and managerial skills (CL 3).                      ... <b>apply task and workload management</b> (CL 3).</p> <p>(regarding reflection of academic and professional identity)</p> <p>... <b>Consider</b> the importance of an efficient human resource management (CL 1).                      ... <b>Respect</b> and <b>recall</b> the maritime labour legislation (CL 1).</p>			
<p><b>Course Content / Lehrinhalte:</b>  <b>Maritime Labour Law</b></p> <ul style="list-style-type: none"> <li>▪ International regulations as STCW and MLC (Maritime Labour Convention)</li> <li>▪ Contracts and labour agreements</li> <li>▪ Social insurances</li> </ul>			

<sup>39</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>40</sup> For ISMN: consider STCW table A-II/1 (operational level) and A-II/2 (management level)

<ul style="list-style-type: none"> <li>▪ Work Time regulations</li> <li>▪ Occupational health regulations, ISO standards, training and education on board</li> </ul> <p><b>Nationaler Rechtsrahmen / Deutsches Seeschiffahrtsrecht</b> <sup>41</sup></p> <ul style="list-style-type: none"> <li>▪ Seearbeitsgesetz und Begleitvorschriften einschließlich Arbeitsschutzrecht</li> <li>▪ Betriebsverfassungsrecht</li> <li>▪ Sozialrecht</li> <li>▪ Seeleute-Befähigungsverordnung, Ausbildung von Seeleuten, Bescheinigungen für Seeleute</li> <li>▪ Schiffsbesetzungsverordnung</li> </ul> <p><b>HR Management</b></p> <ul style="list-style-type: none"> <li>▪ Shipboard personnel management and training</li> <li>▪ Application of workload management</li> <li>▪ Application of effective resource management</li> <li>▪ Application of decision-making techniques</li> <li>▪ Appraisal of employees and understanding of cultural behaviours</li> <li>▪</li> </ul>	
<p><b>Teaching Language:</b>  <i>Unterrichtssprache:</i></p>	<p>English, national regulations in German</p>
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module 3.1 'Practical Semester 1' mandatory;</li> <li>▪ For formative examination (Deutsches Seeschiffahrtsrecht) German Level B2 is mandatory</li> </ul>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ ILO: Maritime Labour Convention</li> <li>▪ BG-Verkehr: Leitfaden zur Umsetzung Seearbeitsgesetze unter deutscher Flagge, 2018</li> <li>▪ ICS: Welfare aspects of the MLC</li> <li>▪ Jeffery: Leadership Throughout, Nautical Institute</li> <li>▪ Goubin, Mentoring at Sea: The 10 Minute Challenge, Nautical Institute</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/ex1Syhf6xe3WOeSUBHFUtNgkVdJrr8drR7M64M0421d">https://refworks.proquest.com/public-share/ex1Syhf6xe3WOeSUBHFUtNgkVdJrr8drR7M64M0421d</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Mandatory practical exercises are part of the lecture</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> </ul>

<sup>41</sup> Vgl. See-BV Anlage 2 (zu § 5) Zulassung von Lehrgängen im deutschen Seeschiffahrtsrecht und Wahlpflichtfach „Deutsches Seeschiffahrtsrecht“



Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>5.5.1 Maritime Human Resources</b>	Grimpe Lingnau	4	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ TP (combined examination)                             <ul style="list-style-type: none"> <li>- 'Labour Law': KL (written test, 120 min) <u>and</u></li> <li>- 'HR Management': PR (oral presentation, 15 min)</li> </ul> </li> <li>▪ Related to entire content of course</li> <li>▪ Mandatory practical exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0 (each examination ≥ 50%)</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ 'Deutsches Seeschiffahrtsrecht': KL (written test, 45min) or EP (electronic test, 45min), in German, level B2 mandatory</li> <li>▪ passed or failed – passed with 70/100</li> </ul>
<b>5.5.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Application of leadership and teamworking skills	Working knowledge of shipboard personnel management and training
	A knowledge of related international maritime conventions and recommendations, and national legislation
	Ability to apply task and workload management, including: <ul style="list-style-type: none"> <li>.1 planning and co-ordination</li> <li>.2 personnel assignment</li> <li>.3 time and resource constraints</li> <li>.4 prioritization</li> </ul>
	Knowledge and ability to apply effective resource management: <ul style="list-style-type: none"> <li>.1 allocation, assignment, and prioritization of resources</li> <li>.2 effective communication onboard and ashore</li> <li>.3 decisions reflect consideration of team experiences</li> <li>.4 assertiveness and leadership, including motivation</li> <li>.5 obtaining and maintaining situational awareness</li> </ul>
	Knowledge and ability to apply decision-making techniques: <ul style="list-style-type: none"> <li>.1 situation and risk assessment</li> <li>.2 identify and consider generated options</li> <li>.3 selecting course of action</li> </ul>

	.4 evaluation of outcome effectiveness
<b>Table A-II/2</b>	
<b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Controlling the operation of the ship and care for persons on board at the management level	
Use of leadership and managerial skill	Knowledge of shipboard personnel management and training  A knowledge of related international maritime conventions and recommendations, and national legislation  Ability to apply task and workload management, including: .1 planning and co-ordination .2 personnel assignment .3 time and resource constraints .4 prioritization
	Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experiences .4 assertiveness and leadership, including motivation .5 obtaining and maintaining situation awareness
	Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and generate options .3 selecting course of action .4 evaluation of outcome effectiveness

## 6. Semester

### 6.1. Practical Semester 2

6.1.		Practical Semester 2	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Internship Coordinator / <i>Praxissemesterbeauftragter</i> Malte Pertiet		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	30 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	900 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 6 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	0 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	6 months sea training, in summer semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	900 h
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>42</sup> / Lernergebnisse:</b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge enlargement, knowledge deepening, knowledge understanding))</i>                      ... <b>describe</b> the operational tasks according the TRB NOA (Training Record Book for Navigational Officer Assistants) on board of a seagoing ship (CL 2)  <i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>                      ... <b>apply</b> theoretical contents of modules (previous studies) to the reality of everyday working life on board of a seagoing ship and to determine missing theoretical knowledge by reflecting the work experience (CL 3)                      ... <b>apply</b> the systematics of operational end emergency procedures (CL 3)  <i>(regarding communication and co-operation)</i>                      ... <b>convinced</b> to work in groups and to head small teams (CL 5)  <i>(regarding reflection of academic and professional identity)</i>                      ... <b>take responsibility</b> on tasks on board of seagoing ships (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b>                      The content is according to the 'On-Board Training Record Book for Navigational Officer's Assistants' (TRB NOA):</p> <ul style="list-style-type: none"> <li>▪ Navigation at the support level</li> <li>▪ Navigation at the operational level</li> <li>▪ Cargo handling and stowage at the operational level</li> </ul> <p>Controlling the operation of the ship and care of persons onboard at the operational level                      Details are specified in the TRB NOA of BSH</p>			
<b>Language of teaching:</b>	English (or German, depending to working language on board)		

<sup>42</sup> Competence levels: 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<i>Unterrichtssprache:</i>	
<p><b>Prerequisites for participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module 3.1 'Practical Semester' mandatory</li> <li>▪ As cadet: internship contract (student – shipping company – HSB)</li> <li>▪ As Navigational Officer Assistant (NOA): training contract (apprentice – shipping company) controlled by Berufsbildungsstelle See (BBS)</li> <li>▪ All other services acceptance by BSH required</li> </ul>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Bundesamt für Seeschifffahrt und Hydrographie (BSH): On Board Training Record Book for Navigational Officer Assistants (TRB NOA)</li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>&gt; A proper evidence of sea training according ISMN form F-33 "Bestätigung Fahrtzeit / Confirmation Internship" is mandatory, as:</li> <li>&gt; confirmation of successful on-board training by BBS (time, content)</li> <li>&gt; properly kept 'Training Record Book for Navigational Officer's Assistants' (TRB NOA)</li> <li>&gt; project reports (two per month) according TRB NOA and form F-37</li> <li>&gt; internship report (one per contract)</li> <li>&gt; shipmasters appraisal with a minimum of a pass grade</li> <li>&gt; The regulations for the practical semester (<i>Praxissemesterordnung</i>) are to consider</li> <li>&gt; The module covers the requirements of German See-BV in accordance with the requirements set out in regulation II/1 of the STCW Convention</li> <li>&gt; Before starting the 2<sup>nd</sup> practical semester, it is recommended to achieve the certificate acc. STCW A-II/4 "Mandatory minimum requirements for certification of ratings forming part of a navigational watch" ("Wachbefähigung Brücke NWB") issued by BSH. For requirements see <a href="http://www.deutsche-flagge.de">www.deutsche-flagge.de</a>.</li> </ul>

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
For students who selected to achieve a STCW Certificate of Competence:				
6.1.1 Practical Semester	assigned officer on board	n/a	Practical On-board Training	<b>Formative exam (<i>Studienleistung</i>):</b> <ul style="list-style-type: none"> <li>▪ minimum 6 months sea training acc. BSH time calculation sheet (units in month and days)</li> <li>▪ Completed documentation acc. Form F-33 "Bestätigung Fahrtzeit" and Form-34 "Anerkennung Praxissemester / Approval Internship" or a confirmation of BSH</li> <li>▪ passed or failed</li> </ul>
<u>Alternative</u> (instead of 6.1.1. for students who selected <u>not</u> to achieve a STCW Certificate of Competence:				
6.1.2 Alternative Internship	n/a	n/a	Internship	<b>Formative exam (<i>Studienleistung</i>):</b> <ul style="list-style-type: none"> <li>▪ 18 weeks internship in a foreign country (evidence by contract)</li> <li>▪ PF (portfolio) for documentation</li> <li>▪ Passed or failed</li> </ul>

**For further details to module "6.1. Practical Semester 2" refer also to chapter 9.3., use link: [Ergänzung Modul 3.1./6.1. Practical Semester \(Praxissemesterordnung\)](#)**

## 7. Semester

### 7.1. Maritime Meteorology

7.1.		Maritime Meteorology	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 7 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>43</sup> / <i>Lernergebnisse</i>: <sup>44</sup></b>                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <ul style="list-style-type: none"> <li>... <b>explain</b> the characteristics of the various weather systems, reporting procedures and recording systems (CL 2)</li> <li>... <b>determine</b> the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants (CL 2)</li> <li>... <b>determine</b> the ocean current systems (CL 2)</li> </ul> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <ul style="list-style-type: none"> <li>... <b>perform</b> gathering of weather data and to participate in the weather reporting systems (CL 3)</li> <li>... <b>use</b> and <b>interpret</b> information obtained from shipborne meteorological instruments (CL 4)</li> <li>... <b>apply</b> the meteorological information available</li> <li>... <b>interpret</b> a synoptic chart and to forecast area weather, considering local weather conditions and information received by weather fax (CL 4)</li> <li>... <b>evaluate</b> weather routing proposals and to plan routes accordingly (CL 5)</li> <li>... <b>evaluate</b> evasion strategies to avoid hazardous situation when encountering storms or other meteorological hazards (CL 5)</li> </ul> <p><i>(regarding communication and co-operation)</i></p> <ul style="list-style-type: none"> <li>... <b>participate</b> in the weather reporting systems (CL 3)</li> </ul> <p><i>(regarding reflection of academic and professional identity)</i></p> <ul style="list-style-type: none"> <li>... <b>being convinced</b> to be a part of the worldwide system for weather data gathering (CL 5)</li> </ul>			

<sup>43</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>44</sup> consider STCW table A-II/1 (operational level) and table A-II/2 (management level)

<b>Course Content / Lehrinhalte:</b>	
<ul style="list-style-type: none"> <li>▪ Basics in physics of the atmosphere (thermodynamics, temperature, pressure, humidity)</li> <li>▪ Weather observations and meteorological shipborne instruments (functionality, use, interpretation of data)</li> <li>▪ Weather data reporting systems and services</li> <li>▪ Weather forecasts (numerical and synoptically)</li> <li>▪ Basics in oceanography (sea currents, sea atmosphere oscillations, ice, modes etc.)</li> <li>▪ Weather development (pressure systems, movement, warm-cold-air circulation, thunderstorms)</li> <li>▪ Temperate latitudes weather (pressure systems, front systems)</li> <li>▪ Tropical weather</li> <li>▪ Weather in polar regions</li> <li>▪ Weather routing, route related weather forecast</li> <li>▪ Tropical cyclone systems</li> <li>▪ Evasion strategies for tropical storms</li> </ul>	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	No prerequisites
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>- Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>- Reeds: Maritime Meteorology, 4<sup>th</sup> Edition</li> <li>- Link to full list: <a href="https://refworks.proquest.com/public-share/TyGaCtRqQBJEY3PpZVv7BDxWjfHw2CHdXvlgRifHAITd">https://refworks.proquest.com/public-share/TyGaCtRqQBJEY3PpZVv7BDxWjfHw2CHdXvlgRifHAITd</a></li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	./.

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>7.1.1. Maritime Meteorology</b>	Prof. Dr. Colmorn, Dr. Sievers	4	SU (lecture in seminar form)	<b>Summative exam (<i>Modulprüfung</i>):</b> <ul style="list-style-type: none"> <li>▪ KL (written exam, 180min) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>7.1.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1</b> <b>Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the operational level	
Plan and conduct a passage and determine position	<p><b>Meteorology</b>                      Ability to use and interpret information obtained from shipborne meteorological instruments</p> <p>Knowledge of the characteristics of the various weather systems, reporting procedures and recording systems</p> <p>Ability to apply the meteorological information available</p>

<b>Table A-II/2</b> <b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Forecast weather and oceanographic conditions	<p>Ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax</p> <p>Knowledge of the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants</p> <p>Knowledge of ocean current systems</p> <p>Ability to calculate tidal conditions</p> <p>Use all appropriate nautical publications on tides and currents</p>



## 7.2. Applied Ship Handling

7.2.		Applied Ship Handling	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 7 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	1 lecture theory, 7 days simulator, offered once a study year	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>45</sup> / <i>Lernergebnisse</i>: <sup>46</sup></b>                      Upon successful completion of this module, students are expected to be able to ...                      (regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))                      ... ./.</p> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))                      ... <b>demonstrate</b> professional bridge procedures (standards and exceptional) (CL 3)                      ... <b>demonstrate</b> professional English communication with external stations (VTS, pilots, other ships, tugs) (CL 3)                      ... <b>plan, execute and monitor</b> a passage plan (CL 5)                      ... <b>assess</b> and <b>use</b> ECDIS and radar for navigation and monitoring safely (type specific) (CL 5)                      ... <b>check</b> the bridge equipment for correct settings and integrity of sensors (CL 5)                      ... <b>assess</b> and <b>demonstrate</b> ship manoeuvres in various situations (CL 5)                      ... <b>assess</b> traffic situations in open and restricted waters and <b>demonstrate</b> safe navigation (CL 5)</p> <p>(regarding communication and co-operation)                      ... <b>take over</b> leadership in ship handling (CL 3)                      ... <b>be a part</b> of a professional bridge team and to <b>evaluate</b> the ship handling performance (CL 5)                      ... <b>apply</b> and <b>accept</b> a professional communication in a bridge team as basis for ships safety (CL 5)</p> <p>(regarding reflection of academic and professional identity)                      ... <b>accept</b> and <b>take over</b> the responsibility as officer of the watch and as Master (CL 5)</p>			

<sup>45</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>46</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

<p><b>Course Content / Lehrinhalte:</b></p> <p><b>Bridge Familiarization</b></p> <ul style="list-style-type: none"> <li>▪ Familiarization with bridge equipment</li> <li>▪ Use of radar and ECDIS</li> <li>▪ Settings of equipment and integrity of sensors</li> <li>▪ Navigation and manoeuvring data</li> <li>▪ Bridge procedures (standards and exceptional as abnormal or emergency situations)</li> <li>▪ Bridge tools as logbook and check lists</li> </ul> <p><b>Passage Planning, Execution and Monitoring</b></p> <ul style="list-style-type: none"> <li>▪ Passage plan</li> <li>▪ Case studies: navigation in open waters and TSS, pilotage, restricted waters (in simulator)</li> </ul> <p><b>Ship Handling</b></p> <ul style="list-style-type: none"> <li>▪ Case studies: propulsion types</li> <li>▪ Case studies: ship-ship-interaction, squat, bank effect</li> <li>▪ Case studies: anchoring, berthing and unberthing under different conditions (wind, current)</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English</p>
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<p>Module 1.2. 'Marine Communication' mandatory                  Module 2.2. 'Ship Manoeuvring' mandatory                  Module 5.2. 'ARPA/ECDIS' mandatory                  Module 6.1. 'Practical Semester 2' mandatory</p>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<p>Nautical Publications, sea charts                  most recent reading materials will be named at commence of lecture                  Link to full list: <a href="https://refworks.proquest.com/public-share/DtsWX1yr0ykb16dRmD3EVeBgmwWHQ2AyVtu8F4i1mVtR">https://refworks.proquest.com/public-share/DtsWX1yr0ykb16dRmD3EVeBgmwWHQ2AyVtu8F4i1mVtR</a></p>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module takes place in the ship handling simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> <li>▪ issued after successful completion:                         <ul style="list-style-type: none"> <li>&gt; Certificate of Participation "ECDIS Type Specific Familiarization"</li> <li>&gt; Certificate of Participation "Ship Handling Training"</li> </ul> </li> </ul>

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>7.2.1. Applied Ship Handling</b>	Pertiet	4	Ü(L), KG (1 day / 8h theory with all students, 7 days / 52 h in simulator with small groups of 3 students)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ B (written report, 10p, summarizing the exercises)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Minimum passing grade: 4.0</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ PÜ (practical exercise): "ECDIS Passage Plan"</li> <li>▪ PÜ (practical exercises in simulator) to be passed to participate in summative examination</li> </ul>

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the operational level	
Maintain a safe navigational watch	<p><b>Watchkeeping</b></p> <p>Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended</p> <p>Thorough knowledge of the Principles to be observed in keeping a navigational watch</p> <p>The use of routeing in accordance with the General Provisions on Ships' Routeing</p> <p>The use of information from navigational equipment for maintaining a safe navigational watch</p>
Use of ECDIS to maintain the safety of navigation	<p>Proficiency in operation, interpretation, and analysis of information obtained from ECDIS, including:</p> <ul style="list-style-type: none"> <li>.1 use of functions that are integrated with other navigation systems in various installations, including proper functioning and adjustment to desired settings</li> <li>.2 safe monitoring and adjustment of information, including own position, sea area display, mode and orientation, chart data displayed, route monitoring, user-created information layers, contacts (when interfaced with AIS and/or radar tracking) and radar overlay functions (when interfaced)</li> <li>.3 confirmation of vessel position by alternative means</li> <li>.4 efficient use of settings to ensure conformance to operational procedures, including alarm parameters for anti-grounding, proximity to contacts and special areas, completeness of chart data and chart update status, and backup arrangements</li> <li>.5 adjustment of settings and values to suit the present conditions</li> <li>.6 situational awareness while using ECDIS including safe water and proximity of hazards, set and drift, chart data and scale selection, suitability of route, contact detection and management, and integrity of sensors</li> </ul>
Manoeuvre the ship	<p><b>Ship manoeuvring and handling</b></p> <p>Knowledge of:</p> <ul style="list-style-type: none"> <li>.1 the effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances</li> <li>.2 the effects of wind and current on ship handling</li> <li>.3 manoeuvres and procedures for the rescue of person overboard</li> <li>.4 squat, shallow-water and similar effects</li> <li>.5 proper procedures for anchoring and mooring</li> </ul>

<b>Table A-II/2</b>	
<b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Plan a voyage and conduct navigation	Reporting in accordance with the General principles for Ship Reporting Systems and with VTS procedures
Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making	<p>An appreciation of system errors and thorough understanding of the operational aspects of navigational systems</p> <p>Blind pilotage planning</p> <p>Evaluation of navigational information derived from all sources, including radar and ARPA, in order to make and implement command decisions for collision avoidance and for directing the safe navigation of the ship</p> <p>The interrelationship and optimum use of all navigational data available for conducting navigation</p>
Manoeuvre and handle a ship in all conditions	<p>Manoeuvring and handling a ship in all conditions, including:</p> <ul style="list-style-type: none"> <li>.1 manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, headreach and stopping distances</li> <li>.2 handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response</li> <li>.3 application of constant- rate-of-turn techniques</li> <li>.4 manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching</li> <li>.5 interaction between passing ships and between own ship and nearby banks (canal effect)</li> <li>.6 berthing and unberthing under various conditions of wind, tide and current with and without tugs</li> <li>.7 ship and tug interaction</li> <li>.8 use of propulsion and manoeuvring systems</li> <li>.9 choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used</li> <li>.10 dragging anchor; clearing fouled anchors</li> <li>.11 dry-docking, both with and without damage</li> <li>.12 management and handling of ships in heavy weather, including assisting a ship or aircraft in distress; towing operations; means of keeping an unmanageable ship out of trough of the sea, lessening drift and use of oil</li> <li>.13 precautions in manoeuvring to launch rescue boats or survival craft in bad weather</li> <li>.14 methods of taking on board survivors from rescue boats and survival craft</li> <li>.15 ability to determine the manoeuvring and propulsion characteristics of common types of ships, with special reference to stopping distances and turning circles at various draughts and speeds</li> <li>.16 importance of navigating at reduced speed to avoid damage caused by own ship's bow wave and stern wave</li> <li>.17 practical measures to be taken when navigating in or near ice or in conditions of ice accumulation on board</li> <li>.18 use of, and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas</li> </ul>

### 7.3. Elective I

7.3.		Elective I (Special Ship Operations)	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 7 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes or in blocks, winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> Different specified modules are offered as electives > Available for ISMN, ISSC and Blue Science study programmes as electives		
<p><b>Learning Outcomes<sup>47</sup> / Lernergebniss:</b>                      Students are obliged to take a class to deepen own interests.                      The learning outcomes are described in the module description of each specific elective.                      This module description explains the general objectives of the elective modules.                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (extension, consolidation and understanding of knowledge))</i>                      ... <b>explain</b> and <b>describe</b> specific contemporary issues of shipping markets and requirements or development of maritime technologies (CL 2)  <i>(regarding using, applying, generating knowledge (applying and transferring, scientific innovation))</i>                      ... <b>apply</b> specific tools (CL 3)                      ... <b>analyze</b> fundamental materials and <b>structure</b> topic related questions (CL 4)                      ... <b>evaluate</b> specific tasks and challenges for decision making or qualified discussion (CL 5)  <i>(regarding communication and co-operation)</i>                      ... <b>participate</b> in topic related discussions (CL 3)                      ... <b>agree</b> in co-operation with others to work on maritime challenges (CL 5)  <i>(regarding reflection of academic and professional identity)</i>                      ... <b>take responsibility</b> for a subject of personal interest (CL 5)                      ... <b>find value</b> for the personal development (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b>                      The focus of Elective 1 are specific aspects of shipping markets and technologies. The objectives of the offered modules are contemporary issues of maritime markets and technological developments. The content of the modules is documented in the specific module descriptions.                      The specific electives are offered in the study year on student's demand. General topics are:</p>			

<sup>47</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<b>Module 7.3.1 Passenger Ships</b>	
(1) Operations of Passenger Ships	
(2) Environmental Issues	
<b>Module 7.3.2 Project Cargo / Heavy Lift</b>	
(1) Project Cargo Shipping	
(2) Heavy Lift Operations	
<b>Module 7.3.3 Offshore Shipping</b>	
(1) Market Requirements (wind, oil, gas)	
(2) Technical Challenges	
<b>Module 7.3.4 Deutsches Seeschiffahrtsrecht</b>	
(1) Deutsches Seeschiffahrtsrecht für EU-Kapitäne	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	Modules 7.3.1 – 7.3.3: English Module 7.3.4: Deutsch
<b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i>	as per specific module description
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	as per specific module description
<b>Further Information:</b> <i>weitere Informationen:</i>	as per specific module description

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>7.3.n.1. Elective I (part 1)</b>	various	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ PF (portfolio), KL (written test) or MP (oral test)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>7.3.n.2. Elective I (part 2)</b>	various	2		<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ PF (portfolio), KL (written test) or MP (oral test)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>7.3.n.3. Module Related Exercises</b> <i>Modulbezogene Übungen</i>	various	(1)	MÜ (module related exercises)	

### 7.3.4. Elective I – Deutsches Seeschiffahrtsrecht für EU-Kapitäne

7.3.4.		Elective I – Deutsches Seeschiffahrtsrecht für EU-Kapitäne	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor „Maritime Law“ Prof. Dr. Suzette Suarez		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Wahlpflichtmodul ISMN 7. Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	7 Tage Blockseminar, im Wintersemester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (inkl. 15 h modul- bezogene Übungen)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> Elective for foreign students		
<p><b>Learning Outcomes<sup>48</sup> / Lernergebniss:</b> <sup>49</sup></p> <p>Nach erfolgreichem Absolvieren des Moduls wird von den Studierende an Kompetenzen erwartet:  <i>(bezüglich Wissen und Verstehen (Wissensverbreiterung, Wissensvertiefung, Wissensverständnis))</i></p> <p>... <b>Beschreiben</b> des deutschen Rechtssystems (CL 2)                  ... <b>Erläutern</b> der für die Seeschiffahrt relevanten Vorschriften Deutschlands (CL 2)</p> <p><i>(bezüglich Einsatz, Anwendung und Erzeugung von Wissen (Nutzung und Transfer, wissenschaftliche Innovation))</i></p> <p>... <b>Anwenden</b> von Vorschriften auf Beispielfälle (CL 3)                  ... <b>Analysieren</b> von Beispielfällen bezüglich der nötigen Anwendung deutschen Rechts (CL 4)                  ... <b>Bewerten</b> von Beispielfällen hinsichtlich Entscheidungsfindung an Bord (CL 5)</p> <p><i>(bezüglich Kommunikation und Kooperation)</i></p> <p>... <b>Teilnahme</b> an Diskussionen mit Bezug zum deutschen Rechtssystem (CL 3)                  ... <b>Verständnis</b> hinsichtlich der Zusammenarbeit mit deutschen Behörden (CL 5)</p> <p><i>(bezüglich wissenschaftlichen Selbstverständnisses oder Professionalität)</i></p> <p>... <b>Übernahme von Verantwortung</b> für die Umsetzung deutschen Rechts an Bord (CL 5)                  ... <b>Wertschätzung</b> der Kenntnis des deutschen Seeschiffahrtsrechts für die persönliche Entwicklung (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <p><b>Deutsches Seeschiffahrtsrecht für EU-Kapitäne</b></p> <ul style="list-style-type: none"> <li>- Rechtssystem der Bundesrepublik Deutschland,</li> <li>- Aufgaben und Struktur der Schifffahrtsverwaltung,</li> <li>- Öffentlich-rechtliche Vorschriften mit Bezügen zum Seerecht,</li> <li>- Strafrecht und Ordnungswidrigkeiten mit Bezügen zum Seerecht,</li> <li>- Zivilrechtliche Vorschriften mit Bezügen zum Seerecht,</li> <li>- Allgemeines Seeverkehrsrecht,</li> <li>- Ausbildung von Seeleuten, Bescheinigungen für Seeleute,</li> <li>- Schiffsbesetzung,</li> <li>- Seearbeitsgesetz und Begleitvorschriften einschließlich Arbeitsschutzrecht,</li> <li>- Betriebsverfassungsrecht,</li> <li>- Sozialrecht.</li> </ul>			

<sup>48</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>49</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended



<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	<ul style="list-style-type: none"> <li>▪ Deutsch</li> </ul>
<b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i>	<ul style="list-style-type: none"> <li>▪ Deutsch Level B 2 verpflichtend</li> </ul>
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Bruhns: Schifffahrtsrecht- Seerechtliche Gesetze, Verordnungen, Übereinkommen.</li> <li>▪ Ehlers, P: Recht des Seeverkehrs (Nomos Verlag, 2017)</li> <li>▪ Gesetze im Internet</li> <li>▪ Literature used in the other modules, such as Shipping Law &amp; Env. Liability, Watchkeeping, Maritime Human Resources and Ship Security Officer</li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	<ul style="list-style-type: none"> <li>&gt; Der Kurs umfasst die Themenbereiche gemäß Anlage 2 (zu § 5) der Seeleute-Befähigungsverordnung.</li> <li>&gt; Studienleistung ist verpflichtend für Bildungsausländer</li> <li>&gt; Weitere Details zu Inhalten und Durchführung sind im Anhang „Berufsrechtliche Ergänzung zum Modul 7.3.4 „Deutsches Seeschifffahrtsrecht für EU-Kapitäne“ festgelegt.</li> </ul>

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>7.3.4.1</b> <b>Deutsches Seeschifffahrtsrecht für EU-Kapitäne</b>	Pertiet Köppen	4	SU (Seminar)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ n/a</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ MP (Mündl. Prüfung) o. R (schriftl. Referat)</li> </ul>
<b>7.3.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (modulbezogene Übungen)	<ul style="list-style-type: none"> <li>▪ In deutscher Sprache, verpflichtend</li> <li>▪ Bestanden oder nicht bestanden</li> <li>▪ bestanden mit 70/100</li> </ul>

For further details to the module “7.3.4. Deutsches Seeschifffahrtsrecht für EU-Kapitäne“ refer also to chapter 9.4., use link: [Ergänzung Modul 7.3.4. Deutsches Seeschifffahrtsrecht](#)

## 7.4. Safety & Security Management

7.4.		Safety & Security Management	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt::</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 7 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	<u>60 h</u> 48 h Safety 12 h Security
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	<u>120 h</u> 16 h Safety Sim.Ex. 4h Security Exerc. 100 h Self-Studies
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>50</sup> / Lernergebnisse:</b> <sup>51</sup></p> <p>Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i></p> <p>... <b>outline</b> and <b>explain</b> international safety and security regulations (CL 2)                  ... <b>summarize</b> the basic systematics of a scientifically risk assessments (CL 2)</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <p>... <b>apply</b> safety and security management procedures according legislation and regulations (CL 3)                  ... <b>respond</b> correctly and <b>give orders</b> in emergency situations (CL 5)                  ... <b>analyse</b> safety and security issues and <b>determine</b> options and solutions (CL 5)                  ... <b>organise</b> and effectively <b>deliver</b> safety drills and trainings (CL 4)</p> <p><i>(regarding communication and co-operation)</i></p> <p>... actively <b>implement / promote</b> safety and security improvements (CL 3)                  ... <b>give reasons</b> for the establishment of safety and security related procedures and best practices (CL 3)</p> <p><i>(regarding reflection of academic and professional identity)</i></p> <p>... <b>develop</b> a self-awareness about safety and security matters (CL 3)</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <p><b>Safety Management</b></p> <ul style="list-style-type: none"> <li>▪ IMO and flagstate regulations</li> <li>▪ Legislation and regulations (SOLAS and Codes, IAMSAR)</li> <li>▪ Human Element in emergencies</li> <li>▪ Emergency preparedness (ashore, on board, trainings &amp; drills, risk management)</li> <li>▪ Damage to ship (regulations, physical basics and technologies, emergency response)</li> <li>▪ Fire (regulations, fire theory and fire extinguishing, fire-fighting equipment, emergency response)</li> </ul>			

<sup>50</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>51</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) and STCW table A-VI/5 (ship security officer), as amended

<ul style="list-style-type: none"> <li>▪ Distress (regulations, life-saving equipment, emergency response)</li> <li>▪ Search and Rescue</li> <li>▪ Personnel casualties (regulations, accident prevention, survival at sea, emergency response)</li> <li>▪ Cargo &amp; pollution (regulations, emergency response)</li> </ul> <p><b>Nationaler Rechtsrahmen / Deutsches Seeschiffahrtsrecht</b> (included in Safety Management)</p> <ul style="list-style-type: none"> <li>▪ Seeaufgabengesetz</li> <li>▪ Schiffssicherheitsgesetz, -verordnung</li> <li>▪ Aufgaben und Struktur der Schifffahrtsverwaltung</li> <li>▪ Unfallverhütungsvorschriften, Handbuch See</li> </ul> <p><b>Security Management / Ship Security Officer</b></p> <ul style="list-style-type: none"> <li>▪ ISPS Code</li> <li>▪ Implementation and maintaining a Ship Security Plan</li> <li>▪ Assessment of security risks, threat and vulnerability</li> <li>▪ Implementation, maintaining and inspection of appropriate security measures</li> <li>▪ Operating, testing and calibrating of security equipment</li> <li>▪ Encouraging security awareness and vigilance</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English, national regulations in German</p>
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module 3.1 'Practical Semester 1' mandatory</li> <li>▪ Module 6.1 'Practical Semester 2' mandatory</li> <li>▪ For formative examination (Deutsches Seeschiffahrtsrecht) German Level B2 is mandatory</li> </ul>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ IMO: SOLAS und Codes (ISM, ISPS, FSS, LSA, IS)</li> <li>▪ IMO: IAMSAR</li> <li>▪ BG Verkehr: Handbuch Schiffssicherungsdienst, UVV, Handbuch See, BGVA 1</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/szZgcCe24oQLppTrImV5PwLapAswcEML4yyQk3b5dDhP">https://refworks.proquest.com/public-share/szZgcCe24oQLppTrImV5PwLapAswcEML4yyQk3b5dDhP</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ Practical exercises in the ship handling simulator</li> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level), and STCW table A-VI/5 (Ship Security Officer) of the STCW Code.</li> <li>▪ After successful completion of the module (Studienleistung SSO) and final completion of studies a Certificate of Proficiency as "Ship Security Officer" can be applied at the German authorities.</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
<b>7.4.1. Safety &amp; Security Management</b>	Braun	4	SU (lecture in seminar form)	<p><u>Summative exam (Modulprüfung):</u></p> <ul style="list-style-type: none"> <li>▪ HA (seminar paper, 25p) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises in ship handling simulator to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul> <p><u>Formative exam (Studienleistungen):</u></p> <ul style="list-style-type: none"> <li>▪ 'Deutsches Seeschiffrechtsrecht': KL (written test, 45min) or EP (electronic test, 45min), in German, level B2 mandatory, passed or failed, minimum passing grade 70/100</li> <li>▪ 'Ship Security Officer': KL (written test, 60 min) or EP (60 min), passed with 70/100</li> </ul>
<b>7.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>	Prof. Jung	(1)	MÜ (module related exercises)	<ul style="list-style-type: none"> <li>▪ for the practical exercises the Ship Handling Simulator is used in teams of 6 students</li> </ul>

For further details to the part "Security Management" of this module refer also to chapter 9.5., use link: [Ergänzung Modul 7.4. Safety & Security Management](#)

**Appendix: STCW Requirements** (always refer to valid edition!)

Table A-II/1 Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more	
Competence	Knowledge, understanding competence and proficiency
Function: Navigation at the operational level	
Respond to emergencies	<p><b>Emergency procedures</b></p> <p>Precautions for the protection and safety of passengers in emergency situations</p> <p>Initial action to be taken following a collision or a grounding; initial damage assessment and control</p> <p>Appreciation of the procedures to be followed for rescuing persons from the sea, assisting a ship in distress, responding to emergencies which arise in port</p>

Respond to a distress signal at sea	<b>Search and rescue</b> Knowledge of the contents of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Ensure compliance with pollution-prevention requirements	<b>Prevention of pollution of the marine environment and anti-pollution procedures</b> Knowledge of the precautions to be taken to prevent pollution of the marine environment  Anti-pollution procedures and all associated equipment  Importance of proactive measures to protect the marine environment
Prevent, control and fight fires on board	<b>Fire prevention and fire-fighting appliances</b> Ability to organize fire drills  Knowledge of classes and chemistry of fire  Knowledge of fire-fighting systems  Knowledge of action to be taken in the event of fire, including fires involving oil systems
Operate life-saving appliances	<b>Life-saving</b> Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids
Contribute to the safety of personnel and ship	Knowledge of personal survival techniques  Knowledge of fire prevention and ability to fight and extinguish fires  Knowledge of elementary first aid  Knowledge of personal safety and social responsibilities

<b>Table A-II/2</b>	
<b>Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the management level	
Coordinate search and rescue operations	A thorough knowledge of and ability to apply the procedures contained in the International Aeronautical and Maritime Search and Rescue (IAMSAR Manual)
Respond to navigational emergencies	Precautions when beaching a ship  Action to be taken if grounding is imminent, and after grounding  Refloating a grounded ship with and without assistance  Action to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause

	<p>Assessment of damage control</p> <p>Emergency steering</p> <p>Emergency towing arrangements and towing procedure</p>
<p>Function: Controlling the operation of the ship and care for persons on board at the management level</p>	
<p>Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment</p>	<p>Knowledge of international maritime law embodied in international agreements and conventions</p> <p>Regard shall be paid especially to the following subjects:                  .3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended</p>
<p>Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems</p>	<p>Thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea)</p> <p>Organization of fire drills and abandon ship drills</p> <p>Maintenance of operational condition of life-saving, fire-fighting and other safety systems</p> <p>Actions to be taken to protect and safeguard all persons on board in emergencies</p> <p>Actions to limit damage and save the ship following a fire, explosion, collision or grounding</p>
<p>Develop emergency and damage control plans and handle emergency situations</p>	<p>Preparation of contingency plans for response to emergencies</p> <p>Ship construction, including damage control</p> <p>Methods and aids for fire prevention, detection and extinction</p> <p>Functions and use of life-saving appliances</p>

<p><b>Table A-VI/5</b>  <b>Mandatory minimum requirements for the issue of certificates of proficiency for ship security officers</b></p>	
<p><b>Competence</b></p>	<p><b>Knowledge, understanding competence and proficiency</b></p>
<p>Maintain and supervise the implementation of a ship security plan</p>	<p>Knowledge of international maritime security policy and responsibilities of Governments, companies and designated persons, including elements that may relate to piracy and armed robbery</p> <p>Knowledge of the purpose for and the elements that make up a ship security plan, related procedures and maintenance of records, including those that may relate to piracy and armed robbery</p> <p>Knowledge of procedures to be employed in implementing a ship security plan and reporting of security incidents</p> <p>Knowledge of maritime security levels and the consequential security measures and procedures aboard ship and in the port facility environment</p> <p>Knowledge of the requirements and procedures for conducting internal audits, on-scene inspections, control and monitoring of security activities specified in a ship security plan</p>

	<p>Knowledge of the requirements and procedures for reporting to the company security officer any deficiencies and non-conformities identified during internal audits, periodic reviews, and security inspections</p> <p>Knowledge of the methods and procedures used to modify the ship security plan</p> <p>Knowledge of security-related contingency plans and the procedures for responding to security threats or breaches of security, including provisions for maintaining critical operations of the ship/port interface, including also elements that may relate to piracy and armed robbery</p> <p>Working knowledge of maritime security terms and definitions, including elements that may relate to piracy and armed robbery</p>
<p>Assess security risk, threat, and vulnerability</p>	<p>Knowledge of risk assessment and assessment tools</p> <p>Knowledge of security assessment documentation, including the Declaration of Security</p> <p>Knowledge of techniques used to circumvent security measures, including those used by pirates and armed robbers</p> <p>Knowledge enabling recognition, on a non-discriminatory basis, of persons posing potential security risks</p> <p>Knowledge enabling recognition of weapons, dangerous substances and devices and awareness of the damage they can cause</p> <p>Knowledge of crowd management and control techniques, where appropriate</p> <p>Knowledge in handling sensitive security-related information and security-related communications</p> <p>Knowledge of implementing and co-ordinating searches</p> <p>Knowledge of the methods for physical searches and non-intrusive inspections</p>
<p>Undertake regular inspections of the ship to ensure that appropriate security measures are implemented and maintained</p>	<p>Knowledge of the requirements for designating and monitoring restricted areas</p> <p>Knowledge of controlling access to the ship and to restricted areas on board ship</p> <p>Knowledge of methods for effective monitoring of deck areas and areas surrounding the ship</p> <p>Knowledge of security aspects relating to the handling of cargo and ship's stores with other shipboard personnel and relevant port facility security officers</p> <p>Knowledge of methods for controlling the embarkation, disembarkation and access while on board of persons and their effects</p>

<p>Ensure that security equipment and systems, if any, are properly operated, tested and calibrated</p>	<p>Knowledge of the various types of security equipment and systems and their limitations, including those that could be used in case of attacks by pirates and armed robbers</p> <p>Knowledge of the procedures, instructions and guidance on the use of ship security alert systems</p> <p>Knowledge of the methods for testing, calibrating, and maintaining security systems and equipment, particularly whilst at sea</p>
<p>Encourage security awareness and vigilance</p>	<p>Knowledge of training, drill and exercise requirements under relevant conventions, codes and IMO circulars, including those relevant to anti-piracy and anti-armed robbery</p> <p>Knowledge of the methods for enhancing security awareness and vigilance on board</p> <p>Knowledge of the methods for assessing the effectiveness of drills and exercises</p>



## 7.5 Fleet Management

7.5.		Fleet Management	
<b>Module Responsibility:</b> <i>Modulverantwortliche*<sup>r</sup>:</i>	Professor "Maritime Technology" Prof. Bastian Gruschka		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 7 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes, offered in winter term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> ISSC as mandatory module		
<p><b>Learning Outcomes <sup>52</sup> / Lernergebnisse:</b></p> <p>Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>                  ... ./.</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>                  ... <b>determine</b> the different maintenance systems for ships (CL 3)                  ... <b>analyse</b> and <b>evaluate</b> performance data of ships and fleets (CL 5)                  ... <b>determine</b> the content of spare part logistics (spare part structures, processes, purchasing, warehousing) (CL 3)                  ... <b>differentiate</b> the tasks of nautical and technical ship management (CL 4)                  ... <b>classify</b> the tasks for docking and <b>outline</b> a docking project (CL 4)</p> <p><i>(regarding communication and co-operation)</i>                  ... <b>participate</b> in an effective collaboration between shore organisation and ship's command (CL 3)</p> <p><i>(regarding reflection of academic and professional identity)</i>                  ... <b>accept</b> the fleet management tasks as a holistic and systematic management approach (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <p><b>Technical Ship Management</b></p> <ul style="list-style-type: none"> <li>▪ Maintenance and repair (asset strategy, maintenance systems, outsourcing strategy, spare parts strategy, Failure Mode and Effects Analysis FMEA)</li> <li>▪ Inspection and audits (newbuilding, port state control, classification society)</li> <li>▪ Docking requirements and preparation for shipyard</li> </ul>			

<sup>52</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<b>Fleet and Ship Performance</b>	
<ul style="list-style-type: none"> <li>▪ Ship and fleet performance control systems (condition monitoring, operational performance, real time fleet performance management, retro-fitting and conversions)</li> <li>▪ Energy Efficiency (EEDI Energy Efficiency Design Index), EEOI (Energy Efficiency Operating Indicator), SEEMP (Ship Energy Efficiency Management Plan))</li> <li>▪ Shipping KPI-Systems (performance indicators (PI, KPI, SPI), BIMCO-indicators)</li> </ul>	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	None
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/yPC1Bi1CQp45tWZfrkDE9COs040Zzo1NniMjKB221Jtl">https://refworks.proquest.com/public-share/yPC1Bi1CQp45tWZfrkDE9COs040Zzo1NniMjKB221Jtl</a></li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	./.

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>6.5.1. Fleet Management</b>	Köppen	4	SU (lecture in seminar form)	<b>Summative exam (Modulprüfung):</b> <ul style="list-style-type: none"> <li>▪ KL (written test 120min) or HA (semester paper 25 pg) or PF (portfolio)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>6.5.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(1)	MÜ (module related exercises)	

## 8. Semester

### 8.1. Ship Command

8.1.		Ship Command	
<b>Module Responsibility:</b> <i>Modulverantwortliche*<sup>r</sup>:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 8 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	block lectures offered once a study year; BEP <sup>53</sup> examination offered each semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>54</sup> / Lernergebnisse: <sup>55</sup></b>                      Upon successful completion of this module, students are expected to be able to ...</p> <p><i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>                      ... have knowledge and understanding as well as in all related STCW competencies in previous lectures</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i></p> <p><b>Navigation</b>  <i>on operational level:</i>                      ... <b>execute</b> the safe navigation and <b>monitor</b> the execution of a passage plan (CL 5)                      ... <b>assess</b> the reliability of position fixes (CL 5)  <i>on management level:</i>                      ... <b>plan</b> a passage (appraisal, planning, execution) (CL 6)                      ... <b>evaluate</b> weather conditions regarding safe and economic weather routing (CL 5)</p> <p><b>Cargo Operations &amp; Ship's Stability</b>  <i>on operational level:</i>                      ... <b>monitor</b> the loading, stowage and securing during the voyage and the unloading of cargoes (CL 3)                      ... <b>calculate, use and apply</b> stability and strength information, also by using stability, trim and stress tables and calculating equipment (CL 3)  <i>on management level:</i>                      ... <b>analyse, determine,</b> and <b>plan</b> safe loading, stowage, securing during the voyage, and unloading of cargoes (CL 6)                      ... <b>judge</b> and <b>plan</b> safe stability and strength when loading and unloading and during the voyage (CL 6)</p>			

<sup>53</sup> BEP = Berufseingangsprüfung (profession entrance assessment)

<sup>54</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>55</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

... **classify** cargoes according international regulations, standards, codes and recommendations for the carriage of dangerous cargoes (CL 4)

**Ship Operations**

*on operational level:*

... **monitor** the compliance with regulations regarding crew, operational end environmental matters (CL 3)

*on management level:*

... **judge** the compliance with regulations regarding crew, operational end environmental matters (CL 5)

... **adapt** appropriate measures and activities (CL 6)

... **monitor** the compliance with national German legislation system and specific shipping regulations (CL 3)

**STCW Competencies (only for alternative assessment)**

... **analyse** and **evaluate** an individual actual STCW relevant task in an academic paper (CL 5)

*(regarding communication and co-operation)*

... **balance** communication and co-ordination between crew members (CL 5)

*(regarding reflection of academic and professional identity)*

... **act** as a responsible officer (CL 5)

**Course Content / Lehrinhalte:**

**Navigation**

Tasks of an officer and a master (operational and management level)

... to navigate a seagoing ship.

**Cargo Operations & Ship's Stability**

Tasks of an officer and a master (operational and management level) .

... regarding cargo operations and cargo care.

... to maintain ship's stability.

**Ship Operations**

Tasks of an officer and a master (operational and management level)

... regarding leadership and management of the crew.

... concerning environmental protection.

... regarding German legal affairs.

**STCW Competencies (only for alternative assessment)**

... discussing specific questions of the above listed syllabus in the fields of STCW applications.

**Language of teaching:**

*Unterrichtssprache:*

Navigation, Cargo & Stability, Operations: English

Deutsches Seeschiffahrtsrecht: German

**Prerequisites for**

**Participation:**

*Teilnahmevoraussetzungen:*

- Module 5.3. 'Dry Cargo Operations' mandatory,
- Module 5.5 'Maritime Human Resources' mandatory,
- Module 7.1 'Maritime Meteorology' mandatory,
- Module 7.2 'Applied Ship Handling' mandatory,
- Module 7.4 'Safety & Security Management' mandatory,
- Formal application regarding type of examination (*Berufseingangsprüfung* or Alternative) necessary

	<ul style="list-style-type: none"> <li>For Profession Entrance Assessment (<i>Berufseingangsprüfung</i>): approved seagoing service of not less than 12-month sea training (acc. modules 3.1 and 6.1), German level B2 (for non-native speakers)</li> <li>Approval by examination board (<i>Prüfungsausschuss</i>) necessary</li> </ul>
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>Refer to specific modules of previous semesters</li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	<ul style="list-style-type: none"> <li>The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> <li>Attendees are reported to German administration (BSH)</li> </ul>

Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
For students who selected to achieve a STCW Certificate of Competence:				
<b>8.1.1. Navigation (BEP)</b>	Prof. Dr. Colmorn	1,5	SU (lecture in seminar form)	<u>Summative exam (<i>Modulprüfung</i>):</u> <ul style="list-style-type: none"> <li>KL (written test, 240min)</li> <li><i>Berufseingangsprüfung</i></li> <li>Related to entire content of the subject in study course</li> <li>Minimum passing grade: 4.0 (35% of total module grade)</li> </ul>
<b>8.1.2. Cargo &amp; Stability (BEP)</b>	Jungen	1,5	SU (lecture in seminar form)	<u>Summative exam (<i>Modulprüfung</i>):</u> <ul style="list-style-type: none"> <li>KL (written test, 240min)</li> <li><i>Berufseingangsprüfung</i></li> <li>Related to entire content of the subject in study course</li> <li>Minimum passing grade: 4.0 (35% of total module exam)</li> </ul>
<b>8.1.3. Ship Operations (BEP)</b>	Prof. Dr. Colmorn	1	SU (lecture in seminar form)	<u>Summative exam (<i>Modulprüfung</i>):</u> <ul style="list-style-type: none"> <li>KL (written test, 180min)</li> <li><i>Berufseingangsprüfung</i></li> <li>Related to entire content of the subject in study course</li> <li>Minimum passing grade: 4.0 (25% of total module exam)</li> </ul> <u>Formative exam (<i>Studienleistung</i>):</u> <ul style="list-style-type: none"> <li>MP (oral test, 20min) or PR (oral presentation 15min): „Deutsches Seeschiffahrtsrecht“</li> </ul>

				<ul style="list-style-type: none"> <li>passed or failed, minimum passing grade 70/100</li> </ul>
<b>8.1.5. Module Related Exercises</b>	As above	(1)	MÜ (module related exercises)	Classroom exercises in the above listed modules 8.1.1., 8.1.2., 8.1.3.
<u>Alternative</u> (instead of 8.1.1. - 8.1.3.) for students who selected <u>not</u> to achieve a STCW Certificate of Competence:				
<b>8.1.4. Ship Command</b>	Prof. Dr. Colmorn	(4)	SU (lecture in seminar form)	<u>Summative exam:</u> <ul style="list-style-type: none"> <li>HA (seminar paper, 30pg) or PF (portfolio)</li> <li>Related to entire content of study course</li> <li>Minimum passing grade: 4.0 (100% of total module exam)</li> </ul>

**Appendix: STCW Requirements** (always refer to valid edition!)

**For module 8.1.3 Ship Operations:**

<b>Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Controlling the operation of the ship and care for persons on board at the management level	
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment	Knowledge of international maritime law embodied in international agreements and conventions  Regard shall be paid especially to the following subjects: .1 certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity .2 responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended .3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended .4 responsibilities under the International Convention for the Prevention of Pollution from Ships, as amended .5 maritime declarations of health and the requirements of the International Health Regulations .6 responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo .7 methods and aids to prevent pollution of the marine environment by ships .8 national legislation for implementing international agreements and conventions

## 8.2. Applied Bridge Management

8.2.		Applied Bridge Management	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor Maritime Simulation & Seamanship N.N.		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 8 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	1 lecture theory offered in winter term; 5 days simulator and 2 days simulator BEP <sup>56</sup> offered every semester	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes <sup>57</sup> / <i>Lernergebnisse</i>: <sup>58</sup></b>                      Upon successful completion of this module, students are expected to be able to ...</p> <p><i>(regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</i>                      ... ./.</p> <p><i>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</i>                      ... <b>manage</b> independently safe navigation and manoeuvres according STCW operational und management level (CL 5)                      ... <b>organize</b> and <b>realize</b> a professional Bridge-Resource-Managements (BRM) (CL 5)</p> <p><i>(regarding communication and co-operation)</i>                      ... <b>take over</b> the responsibility and <b>control</b> of a professional bridge team principles (CL 5)</p> <p><i>(regarding reflection of academic and professional identity)</i>                      ... <b>take over</b> the tasks and responsibilities of a professional mariner (CL 5)</p>			
<p><b>Course Content / <i>Lehrinhalte</i>:</b></p> <p><b>Bridge Resource Management</b></p> <ul style="list-style-type: none"> <li>▪ Bridge team organisation, manning levels, risk assessment</li> <li>▪ Procedures and checklists</li> <li>▪ Communication (internal and external)</li> <li>▪ Teamwork and leadership, briefings</li> <li>▪ Situational awareness and decision making</li> <li>▪ Workload management</li> <li>▪ Exercises: BRM case studies</li> </ul>			

<sup>56</sup> BEP = Berufseingangsprüfung (profession entrance assessment)

<sup>57</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<sup>58</sup> consider STCW table A-II/1 (operational level) and A-II/2 (management level) as amended

<p><b>Watchkeeping and Ship Handling</b></p> <ul style="list-style-type: none"> <li>▪ Bridge preparation</li> <li>▪ Navigation by using all means of navigation</li> <li>▪ Manoeuvring in different conditions (area, wind, current)</li> <li>▪ Exercises: case studies concerning COLREG and position fixing</li> <li>▪ Exercises: case studies concerning manoeuvres</li> </ul> <p><b>Emergency Response</b></p> <ul style="list-style-type: none"> <li>▪ Emergency preparedness and response</li> <li>▪ Emergency procedures</li> <li>▪ Emergency communication (GMDSS)</li> <li>▪ Exercises: case studies concerning emergency situations</li> </ul>	
<p><b>Language of teaching:</b>  <i>Unterrichtssprache:</i></p>	<p>English</p>
<p><b>Prerequisites for Participation:</b>  <i>Teilnahmevoraussetzungen:</i></p>	<ul style="list-style-type: none"> <li>▪ Module 7.2. 'Applied Ship Handling' mandatory</li> <li>▪ Formal application regarding type of examination (BEP or Alternative) necessary</li> <li>▪ Profession Entrance Assessment (<i>Berufseingangsprüfung</i>): approved seagoing service of not less than 12 month sea training (acc. modules 3.1 and 6.1), German level B2 (for non-native speakers)</li> <li>▪ Approval by examination board (<i>Prüfungsausschuss</i>) necessary</li> </ul>
<p><b>Preparation / Literature:</b>  <i>Vorbereitung / Literatur:</i></p>	<ul style="list-style-type: none"> <li>▪ Lecture notes, specific literature, most recent reading materials will be named at commence of lecture</li> <li>▪ Neff (ed.): Improving Bridge Resource Management, 2020</li> <li>▪ National Publications and sea charts according to the exercises</li> <li>▪ HSB Checklists and procedures</li> <li>▪ Link to full list: <a href="https://refworks.proquest.com/public-share/6OHsVVAAaBZlRdtI2u20Bz9y9aWEOJEnEqhPiUVmWIWx7">https://refworks.proquest.com/public-share/6OHsVVAAaBZlRdtI2u20Bz9y9aWEOJEnEqhPiUVmWIWx7</a></li> </ul>
<p><b>Further Information:</b>  <i>weitere Informationen:</i></p>	<ul style="list-style-type: none"> <li>▪ The module covers the requirements of German See-BV in accordance with the requirements set out in sections A-II/1 (operational level) and A-II/2 (management level) of the STCW Code</li> <li>▪ Practical examination for Profession Entrance Assessment (<i>Berufseingangsprüfung</i>)</li> <li>▪ Introduction lecture for all students and Ship Handling Simulator lectures in small groups</li> <li>▪ issued after successful completion:            Certificate of Participation "Bridge Resource Management" acc. STCW and IMO Model Course 1.22</li> </ul>



Courses of the module / Zugehörige Lehrveranstaltungen				
Course title: <i>Titel der Lehrveranstaltung:</i>	Teaching staff <i>Lehrende</i>	Contact hours per week <i>SWS</i>	Teaching & Learning Methods: <i>Lehr- &amp; Lernmethoden:</i>	Examination methods, scope and duration: <i>Prüfungsform, -umfang, -dauer:</i>
For students who selected to achieve a STCW Certificate of Competence:				
<b>8.2.1. Bridge Resource Management</b>	Prof. Jung	3	Ü(L), KG (1 day / 8h theory, 5 days / 38 h in simulator with small groups of 6 students)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ KL (written test, 90min)</li> <li>▪ Related to content of the subject in entire study course</li> <li>▪ Minimum passing grade: 4.0 (65% of total module grade)</li> </ul> <u>Formative exam (Studienleistung):</u> <ul style="list-style-type: none"> <li>▪ PÜ (practical exercises in simulator), <u>all</u> to be passed to take part in the summative examination</li> </ul>
<b>8.2.2. Watchkeeping &amp; Ship Handling (BEP)</b>	Pertiet	1	Ü(L), KG (2 days / 14h in simulator with small groups of 3 students)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ MP (oral test in the simulator exercises)</li> <li>▪ “Berufseingangsprüfung”</li> <li>▪ Related to entire content of subject</li> <li>▪ Mandatory simulator exercises, <u>all</u> to be passed</li> <li>▪ Minimum passing grade: 4.0 (35% of total module grade)</li> </ul>
<u>Alternative</u> (instead of 8.2.1. – 8.2.2.) for students who selected <u>not</u> to achieve a STCW Certificate of Competence:				
<b>8.2.3. Applied Ship Management</b>	Prof. Dr. Colmorn	(4)	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ HA (seminar paper, 30pg) or PF (portfolio)</li> <li>▪ Related to entire content of study course and focused to Applied Ship Management (alternative an additional elective)</li> <li>▪ At least grade 4.0 (100% of total module exam)</li> </ul>

**Appendix: STCW Requirements** (always refer to valid edition!)

<b>Table A-II/1</b>	
<b>Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
Function: Navigation at the operational level	
Maintain a safe navigational watch	<p><b>Watchkeeping</b>                      The use of information from navigational equipment for maintaining a safe navigational watch</p> <p>Knowledge of blind pilotage techniques</p> <p>The use of reporting in accordance with the General Principles for Ship Reporting Systems and with VTS procedures</p> <p><b>Bridge resource management</b>                      Knowledge of bridge resource management principles, including:                      .1 allocation, assignment, and prioritization of resources                      .2 effective communication                      .3 assertiveness and leadership                      .4 obtaining and maintaining situational awareness                      .5 consideration of team experience</p>
Respond to emergencies	<p><b>Emergency procedures</b>                      Initial action to be taken following a collision or a grounding; initial damage assessment and control</p> <p>Appreciation of the procedures to be followed for rescuing persons from the sea, assisting a ship in distress, responding to emergencies which arise in port</p>
Use the IMO Standard Marine Communication Phrases and use English in written and oral form	<p><b>English language</b>                      Adequate knowledge of the English language to enable the officer to use charts and other nautical publications, to understand meteorological information and messages concerning ship's safety and operation, to communicate with other ships, coast stations and VTS centres and to perform the officer's duties also with a multilingual crew, including the ability to use and understand the IMO Standard Marine Communication Phrases (IMO SMCP)</p>
Function: Controlling the operation of the ship and care for persons on board at the operational level	
Application of leadership and teamworking skills	<p>Ability to apply task and workload management, including:                      .1 planning and co-ordination                      .2 personnel assignment                      .3 time and resource constraints                      .4 prioritization</p> <p>Knowledge and ability to apply effective resource management:                      .1 allocation, assignment, and prioritization of resources                      .2 effective communication onboard and ashore                      .3 decisions reflect consideration of team experiences                      .4 assertiveness and leadership, including motivation</p>

	.5 obtaining and maintaining situational awareness
	Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and consider generated options .3 selecting course of action .4 evaluation of outcome effectiveness

<b>Table A-II/2 Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more</b>	
<b>Competence</b>	<b>Knowledge, understanding competence and proficiency</b>
<b>Function: Navigation at the management level</b>	
Establish watchkeeping arrangements and procedures	Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended  Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch
<b>Function: Controlling the operation of the ship and care for persons on board at the management level</b>	
Use of leadership and managerial skill	Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experiences .4 assertiveness and leadership, including motivation .5 obtaining and maintaining situation awareness
	Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and generate options .3 selecting course of action .4 evaluation of outcome effectiveness  Development, implementation, and oversight of standard operating procedures

### 8.3. Elective II

8.3.		Elective II (Maritime Management)	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	6 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	180 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Mandatory module ISMN 8 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	60 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	15 classes or in blocks, summer term	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	120 h (including 15 h module related exercises)
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> Different specified modules are offered as electives > Available for ISMN, ISSC and Blue Science study programmes as electives		
<p><b>Learning Outcomes<sup>59</sup> / Lernergebniss:</b></p> <p>Students are obliged to take a class to deepen own interests.                      The learning outcomes are described in the module description of each specific elective.                      This module description explains the general objectives of the elective modules.                      Upon successful completion of this module, students are expected to be able to ...  <i>(regarding knowledge and understanding (extension, consolidation and understanding of knowledge))</i>                      ... <b>explain</b> and <b>describe</b> specific contemporary issues of shipping markets and management related challenges and requirements (CL 2)  <i>(regarding using, applying, generating knowledge (applying and transferring, scientific innovation))</i>                      ... <b>apply</b> specific tools (CL 3)                      ... <b>analyze</b> fundamental materials and <b>structure</b> topic related questions (CL 4)                      ... <b>evaluate</b> specific tasks and challenges for decision making or qualified discussion (CL 5)  <i>(regarding communication and co-operation)</i>                      ... <b>participate</b> in topic related discussions (CL 3)                      ... <b>agree</b> in co-operation with others to work on maritime challenges (CL 5)  <i>(regarding reflection of academic and professional identity)</i>                      ... <b>take responsibility</b> for a subject of personal interest (CL 5)                      ... <b>find value</b> for the personal development (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <p>The focus of Elective 2 are specific aspects of shipping markets and managerial challenges. The objectives of the offered modules are contemporary issues of maritime markets and management related challenges and requirements. The content of the modules is documented in the specific module descriptions.                      The specific electives are offered in the study year on student's demand. General topics are:</p>			

<sup>59</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<b>Module 8.3.1 Port Management</b>	
(1) Port Design and Equipment	
(2) Port Operations	
<b>Module 8.3.2 Shipping Management &amp; Organization</b>	
(1) Management Systems in Shipping (Quality and Safety Management)	
(2) Management Systems in Shipping (Environmental and Energy Management Systems)	
<b>Module 8.3.3 Specific Topics in Shipping</b>	
(1) Actual topics in shipping	
(2) Actual topics in shipping	
<b>Module 8.3.4 Digitalization</b>	
(1) Actual topics concerning digitalization, IT and internet use	
(2) Actual topics concerning digitalization, IT and internet use	
<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	all modules in English
<b>Prerequisites for participation:</b> <i>Teilnahmevoraussetzungen:</i>	as per specific module description
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	as per specific module description
<b>Further Information:</b> <i>weitere Informationen:</i>	as per specific module description

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>8.3.n.1. Elective II (part 1)</b>	various	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ PF (portfolio), KL (written test) or MP (oral test)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>8.3.n.2. Elective II (part 2)</b>	various	2	SU (lecture in seminar form)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ PF (portfolio), KL (written test) or MP (oral test)</li> <li>▪ Related to entire content of lecture</li> <li>▪ Mandatory exercises to be passed to participate in summative examination</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>8.3.n.3. Module Related Exercises</b> <i>Modulbezogene Übungen</i>	various	(1)	MÜ (module related exercises)	

## 8.4. Bachelor Thesis

8.4.		Bachelor Thesis	
<b>Module Responsibility:</b> <i>Modulverantwortliche*r:</i>	Professor "Maritime Navigation & Digitalisation" Prof. Dr. Ilknur Colmorn		
<b>ECTS Credit Points:</b> <i>ECTS Leistungspunkte:</i>	12 ECTS	<b>Workload total [h]:</b> <i>Arbeitsbelastung gesamt:</i>	360 h
<b>Type of module and position in the course of study:</b> <i>Art und Position im Studiengang:</i>	Compulsory Module ISMN 8 <sup>th</sup> Semester	<b>Contact Hours [h]:</b> <i>davon Präsenzstudium:</i>	120 h
<b>Scope and Frequency of Teaching:</b> <i>Umfang und Häufigkeit des Angebotes:</i>	individual	<b>Self-Study [h]:</b> <i>davon Selbststudium:</i>	360 h
<b>Type of module and position in other study programs or continuing education offers:</b> <i>Verwendbarkeit in anderen Studiengängen/Angeboten:</i>	> no		
<p><b>Learning Outcomes<sup>60</sup> / Lernergebnisse :</b> Upon successful completion of this module, students are expected to be able to ... (regarding knowledge and understanding (knowledge extension, consolidation and understanding knowledge))</p> <p>... <b>identify</b> and <b>discuss</b> a research question in the business field of maritime shipping (CL 2)</p> <p>(regarding using, applying, generating of knowledge (applying and transferring, scientific innovation))</p> <p>... <b>apply</b> the learned competencies in a discrete scientific task (CL 3)</p> <p>... <b>plan</b>, <b>analyze</b> and <b>evaluate</b> a scientific question of the maritime industry (CL 5)</p> <p>... <b>appraise</b> the outcomes of the thesis (CL 5)</p> <p>(regarding communication and co-operation)</p> <p>... <b>participate</b> in scientific discussions (CL 3)</p> <p>... <b>organize</b> himself/herself and <b>collaborate</b> with other stakeholders of the topic. (CL 3)</p> <p>(regarding reflection of academic and professional identity))</p> <p>... <b>determine</b> a scientific question (CL 4)</p> <p>... <b>accept</b> a challenging task, to solve problems and to find answers on their own (CL 5)</p> <p>... <b>being convinced</b> to develop further scientific tasks (e.g. in a master program) (CL 5)</p>			
<p><b>Course Content / Lehrinhalte:</b></p> <ul style="list-style-type: none"> <li>▪ Determine the research task or question</li> <li>▪ Identify and analyze literature</li> <li>▪ Plan and determine the frame of content and time (exposé and draft of Table of Content)</li> <li>▪ Determine methods of research</li> <li>▪ Work on scientific development of answers</li> <li>▪ Analyze and discuss data</li> <li>▪ Structure, develop and write the thesis</li> <li>▪ Defense of the thesis</li> </ul>			

<sup>60</sup> Competence levels (CL): 1-remember, 2-understand, 3-apply, 4-analyse, 5-evaluate, 6-create

<b>Language of teaching:</b> <i>Unterrichtssprache:</i>	English
<b>Prerequisites for Participation:</b> <i>Teilnahmevoraussetzungen:</i>	Application and approval required according BPO-AT <i>Anmeldung und Genehmigung erforderlich gemäß BPO-AT</i>
<b>Preparation / Literature:</b> <i>Vorbereitung / Literatur:</i>	<ul style="list-style-type: none"> <li>▪ Guidelines Bachelor Thesis ISMN/ISSC</li> <li>▪ Rossig, Prätisch: Wissenschaftliches Arbeiten, 2010.</li> <li>▪ MacGilchrist, Felicitas: Academic Writing, 2014</li> <li>▪ Monippally, Pawar: Academic Writing - a guide for management students and researchers, 2010</li> <li>▪ Glasman-Deal, Hilary, Science research writing for non-native speakers of English, 2010</li> <li>▪ Turabian, Kate L., A Manual for writers of research papers, theses and dissertations, 9<sup>th</sup> Edition, 2018</li> <li>▪ specific publications according the subject.</li> </ul>
<b>Further Information:</b> <i>weitere Informationen:</i>	./.

<b>Courses of the module / Zugehörige Lehrveranstaltungen</b>				
<b>Course title:</b> <i>Titel der Lehrveranstaltung:</i>	<b>Teaching staff</b> <i>Lehrende</i>	<b>Contact hours per week</b> <i>SWS</i>	<b>Teaching &amp; Learning Methods:</b> <i>Lehr- &amp; Lernmethoden:</i>	<b>Examination methods, scope and duration:</b> <i>Prüfungsform, -umfang, -dauer:</i>
<b>8.4.1. Bachelor Thesis (Seminar)</b>	Academic Staff	8	BT (Bachelor Thesis)	<u>Summative exam (Modulprüfung):</u> <ul style="list-style-type: none"> <li>▪ BT (Bachelor Thesis, min. 40 / max 60 written pages) and MP (Colloquium, 30min)</li> <li>▪ Duration 9 weeks, in academic writing form</li> <li>▪ Minimum passing grade: 4.0</li> </ul>
<b>8.4.2. Module Related Exercises</b> <i>Modulbezogene Übungen</i>		(2)	MÜ (module related exercises)	

## 9. Berufsrechtliche Ergänzungen zu einzelnen Modulen

### 9.1. Ergänzung Modul 1.2.2 GMDSS

#### 1. Ausbildungsrahmen

Das vorliegende Dokument ist eine berufsrechtliche Ergänzung und Anhang der Modulbeschreibung „ISMN 1-2 Marine Communication 2020 EN 210115“. Sie präzisiert die Anforderungen an die Ausbildung gemäß STCW und See-BV, auf deren Basis durch das BSH ein Befähigungszeugnis *Allgemeines Betriebszeugnis / General Operator's Certificate (GOC)* ausgestellt wird.

Das Modul wird im Rahmen des Studiums „International Degree Programme Ship Management - Nautical Sciences (B.Sc.)“ (ISMN) an der Hochschule Bremen als verpflichtendes Teilmodul *1.2.2. Marine Radio Communication* durchgeführt.

Die Teilnehmerzahl ist im Minimum auf 6, im Maximum auf 12 Teilnehmer beschränkt.

#### 2. Ausbildungsplan

##### 2.1. Umfang

Der Kurs deckt die nach dem STCW-Übereinkommen Regel IV/2 geforderten Mindestinhalte ab und ist in seiner Konzeption an den IMO Model Course 1.25 *GOC for GMDSS (2014 ed.)* angelehnt.

Der Zeitrahmen des Kurses umfasst 140 Semester-Wochenstunden (SWS). Die Stunden sind entsprechend der Tabelle aufgeteilt<sup>61</sup>.

	<b>Gesamt</b>	Präsenzlehre	Modul- bezogene Übungen (angeleitet)	Selbstlern- anteil
Modul SWS	<b>5 SWS</b>	3 SWS	2 SWS	
<b>Modul h</b>	<b>140 h</b>	<b>45 h</b>	<b>35 h</b>	<b>60 h</b>
Lehre	70 h	45 h		25 h
Übungen	65 h		30 h	35 h
Prüfung	5 h		5 h	

Die Präsenzlehre sowie die angeleiteten modulbezogenen Übungen erfolgen im Funklabor unter Leitung des/der Lehrenden.

Die Übungen im Selbstlernanteil können durch die Teilnehmer eigenständig im Funklabor durchgeführt werden. Im Selbstlernanteil erfolgt ebenfalls das Selbststudium.

<sup>61</sup> Ein Modul der Hochschule Bremen umfasst regulär 180 Stunden. Die Differenz von 40 Stunden sind dem Teilmodul „1.2.1. Maritime English (SMCP)“ zugeordnet.



## 2.2. Lehrplan

Der Lehrplan entspricht der nachstehenden Tabelle. Inhaltliche Details sind der Lehrunterlage (Skript) zu entnehmen (Anlage a).

	Kompetenzen nach Lehrplan	Lehre [ h ]	Übungen [ h ]	Selbstlern anteil [ h ]	Gesamt [ h ]
1.	<b>Einführung</b>	<b>1.0</b>	<b>0.0</b>	<b>1.0</b>	<b>2.0</b>
2.	<b>Gesetzlicher Rahmen des Maritime Mobile Service</b>	<b>3.0</b>	<b>0.0</b>	<b>3.0</b>	<b>6.0</b>
2.1	SOLAS	1.0	0.0	1.0	2.0
2.2	Radio Regulations	2.0	0.0	2.0	4.0
3.	<b>Identifikation von Funkstationen</b>	<b>2.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.0</b>
4.	<b>Publikationen</b>	<b>3.0</b>	<b>1.0</b>	<b>3.0</b>	<b>7.0</b>
4.1	ITU List V	1.0	0.5	1.5	2.0
4.2	Admiralty List of Radio Signals	2.0	0.5	1.5	3.0
5.	<b>Funktechnik</b>	<b>10.0</b>	<b>0.0</b>	<b>0.0</b>	<b>10.0</b>
5.1	Ausbreitung von Funkwellen	1.0	0.0	0.0	1.0
5.2	Grundlagen der Modulation	2.0	0.0	0.0	2.0
5.3	Grundlagen von Sende- und Empfangsgeräten	1.0	0.0	0.0	1.0
5.4	Batterien	1.0	0.0	0.0	1.0
5.5	Antennen	1.0	0.0	0.0	1.0
5.6	Grundlagen des DSC	1.0	0.0	0.0	1.0
5.7	Grundlagen des Funktelex	1.0	0.0	0.0	1.0
5.8	Wartung und Fehlerbehebung von Seefunkanlagen	2.0	0.0	0.0	2.0
6.	<b>GMDSS-Geräte</b>	<b>18.0</b>	<b>25.0</b>	<b>42.0</b>	<b>85.0</b>
6.1	Grundlagen	1.5	0.0	4.0	2.0
6.2	VHF DSC	2.0	2.0	3.0	2.0
6.3	MF/HF DSC	1.0	2.0	2.0	2.0
6.4	VHF/MF/HF Sprechfunkverfahren	5.0	10.0	16.0	8.0
6.5	Funktelex	1.0	1.0	1.0	2.0
6.6	Inmarsat/Iridium	2.0	7.0	3.0	4.0
6.7	Cospas/Sarsat	1.0	0.0	2.0	2.0
6.8	EPRIB	1.0	0.0	3.0	2.0
6.9	SART (Radar and AIS)	1.5	0.0	3.0	2.0
6.10	Maritime Safety Information	1.0	3.0	3.0	2.0
6.11	tragbare UKW-Seefunkgeräte	0.5	0.0	1.0	1.0
6.12	tragbare UKW-Flugfunkgeräte	0.5	0.0	1.0	1.0
7.	<b>weitere Kommunikationssysteme</b>	<b>2.0</b>	<b>0.0</b>	<b>1.0</b>	<b>3.0</b>

	Kompetenzen nach Lehrplan	Lehre [ h ]	Übungen [ h ]	Selbstlern anteil [ h ]	Gesamt [ h ]
7.1	UHF-Handsprechfunkgeräte („Walkie-Talkie“)	1.0	0.0	0.0	1.0
7.2	AIS	0.5	0.0	0.5	1.0
7.3	SSAS	0.5	0.0	0.5	1.0
<b>8.</b>	<b>SAR-Verfahren</b>	<b>2.0</b>	<b>1.0</b>	<b>1.0</b>	<b>4.0</b>
8.1	MRCC	1.0	0.5	0.5	2.0
8.2	IAMSAR-Manual	1.0	0.5	0.5	2.0
<b>9.</b>	<b>Schiffsmeldesysteme</b>	<b>2.0</b>	<b>1.0</b>	<b>1.0</b>	<b>4.0</b>
9.1	AMVER	0.5	1.0	0.5	2.0
9.2	JASREP	0.5	0.0	0.0	0.5
9.3	MASTREP	0.5	0.0	0.0	0.5
9.4	LRIT	0.5	0.0	0.5	1.0
<b>10.</b>	<b>Weitere Fähigkeiten und Verfahren</b>	<b>2.0</b>	<b>2.0</b>	<b>8.0</b>	<b>12.0</b>
10.1	Englisch (schriftlich und mündlich) im Sicherheitsverkehr <sup>62</sup>	1.0	1.0	7.0	9.0
10.2	Abrechnungsverfahren im Funkverkehr	1.0	1.0	1.0	3.0
<b>11.</b>	<b>Prüfung</b>		<b>5.0</b>		<b>5.0</b>
11.1	schriftliche Prüfung		2.0		2.0
11.2	praktische Prüfung		3.0		3.0
	<b>Gesamt:</b>	<b>45.0</b>	<b>35.0</b>	<b>60.0</b>	<b>140.0</b>

<sup>62</sup> Maritimes Englisch/SCMP werden separat mit 40 SWS gelehrt und geprüft.

### 2.3. Ablauf

Der Kurs wird entsprechend der Semesterplanung über fünf Wochen an zwei Tagen oder als Blockseminar unterrichtet. Beiden Kursen vorgeschaltet ist eine Vorbereitung als Selbstlernzeit (Eigenstudium) im Sinne eines „flipped classrooms“.

Der Stundenplan für den oben beschriebenen Kurs als Blockseminar ist nachfolgend dargestellt.

	Wochentag	08:30 – 10:00	10:15 – 11:45	12:00 – 13:30	14:30 – 16:00	16:15 – 17:45	Stunden
	Eigenstudium	2	2	2			6
	Eigenstudium	2	2	2	1		7
	Eigenstudium	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
1	Montag	2	2	2	2	2	10
2	Dienstag	2	2	2	2	2	10
3	Mittwoch	2	2	2	2	2	10
4	Donnerstag	2	2	2	2	2	10
5	Freitag	2	2	2	2	2	10
	Eigenstudium	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
6	Montag	2	2	2	2	2	10
7	Dienstag	2	2	2	2	2	10
8	Mittwoch	2	1	1	2	2	10
9	Donnerstag	2	2	2	2		8
10	Freitag	2	2	2	1		7
<b>Insgesamt</b>							<b>140</b>

Vorlesung (Präsenz)	45 Stunden
Übung (Präsenz)	30 Stunden
Selbststudium	60 Stunden
Prüfungen	5 Stunden

Der Stundenplan für den oben beschriebenen Kurs im 5 Wochenrhythmus sieht als in den Stundenplan integrierter Kurs wie folgt aus:

	Wochentag	08:30 – 10:00	10:15 – 11:45	12:00 – 13:30	14:30 – 16:00	16:15 – 17:45	SWS
	Eigenstudium	2	2				4
	Eigenstudium	2	2				4
1	Mittwoch	2	2	2	2		8
2	Donnerstag	2	2	2	2		8
	Eigenstudium	1	2	2			5
	Eigenstudium	2	2	2			6
3	Mittwoch	2	2	2	2		8
4	Donnerstag	2	2	2	2		8
	Eigenstudium	2	2	2			6
	Eigenstudium	2	2	2			6
5	Mittwoch	2	2	2	2		8
6	Donnerstag	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
7	Mittwoch	2	2	2	2		8
8	Donnerstag	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
9	Mittwoch	2	1	1	2	2	8
10	Donnerstag	2	2	1			5
<b>Insgesamt</b>							<b>140</b>

Vorlesung (Präsenz)	45 Stunden
Übung (Präsenz)	30 Stunden
Selbststudium	60 Stunden
Prüfungen	5 Stunden

## 2.4. Verwendete Lehr- und Lernmittel

Der Unterricht findet im Funklabor der Hochschule Bremen statt. Das Funklabor bietet an Stationen 12 Arbeitsplätze am GMDSS-Simulator. An jeder Station kann eine Funkstation mit Ausrüstung für Seegebiet A4 simuliert werden. Darüber hinaus ist das Funklabor als Seefunkstation zugelassen und betreibt an Originalgeräten den Empfang von UKW-Sprechfunk und Sat-C-Funk. Siehe QMS Maritime Report „13 Infrastruktur“.

Es steht eine umfangreiche Bibliothek zur Verfügung. Durch die Ausbilder werden darüber hinaus Fotos, Pläne, Präsentationen und Dokumente aus der täglichen Praxis benutzt. Als Publikationen werden verwendet:

- GOC Model Course Compendium
- User manuals for all installed or simulated GMDSS equipment including EPIRB and SART
- GMDSS Radio Logbook (Funktagebuch)
- AMSA GMDSS Handbook (2018 Ed)
- IMO Dokumente (IAMSAR I, II, III, Standard Marine Communication Phrases, Resolution A.814(19), SOLAS Convention, COMSAR/Circ. 32, GMDSS.1/Circ.23, International SafetyNET Manual)
- Admiralty: Nautical Radio Publications (Admiralty List of Radio Signals Volumes 1,2,3,4,6)
- ITU Manuals, Radio Regulations, Recommendations & Lists, i.e.
  - ITU Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services
  - ITU List of Coast Stations and Special Service Stations (List IV)
  - ITU List of Ship Stations and Maritime Mobile Service Identity Assignments (List V)
- Inmarsat Maritime Communications Handbook und “SafetyNET Users’ Handbook”
- International Signal Book ISB

## 3. Darstellung des Verfahrens zur Bewertung der Teilnehmerkompetenzen

Für den Modul besteht Anwesenheitspflicht. Die Anwesenheit wird jeden Tag durch Unterschrift des Teilnehmers / der Teilnehmerin und des Ausbilders / der Ausbilderin dokumentiert.

Die Kompetenz wird mit einer schriftlichen und einer praktischen Prüfung nachgewiesen. Die schriftliche Prüfung wird als Multiple-Choice-Prüfung durchgeführt, zum Bestehen müssen 80 % der Fragen richtig beantwortet werden.

Die praktische Prüfung umfasst das Aufnehmen und Abgeben von Sprechfunkmeldungen und die ordnungsgemäße Abwicklung von Not-, Dringlichkeits-, Sicherheits- und Routineverkehr auf allen Geräten einer für die Seegebiet A4 ausgerüsteten Funkstation. Die Gerätekunde für alle Geräte wird in kleinen Einzelprüfungen im Verlauf des Kurses nachgewiesen.

Ein Kandidat muss alle Teilprüfungen gemäß der Prüfungsordnung bestehen. Fällt ein Kandidat bei einer Teilprüfung durch, hat er das Recht, die Teilprüfung innerhalb von 6 Monaten zu wiederholen. Verstreicht diese Frist oder fällt er in mehr als einer Teilprüfung durch, muss er die gesamte Prüfung wiederholen. Das Bestehen des Moduls 1.2. ist gemäß

Prüfungsordnung Voraussetzung für das Modul 6.2 Applied Ship Handling, das wiederum Voraussetzung für die Berufseingangsprüfung ist.

	<b>Leistungsnachweise gemäß BPO</b>	<b>Art</b>	<b>Bewertung</b>
1	Prüfungsleistung: KL	schriftlicher Test	80 %
2.1	Studienleistung: PÜ	Aufnahme von Meldungen	fehlerfrei
2.2		Abgeben von Meldungen	fehlerfrei
3	Studienleistung: MP	Abwicklung von Not-, Dringlichkeits-, Sicherheits- und Routineverkehr	fehlerfrei

Eine Nachprüfung ist gemäß den Regeln der Allgemeinen Bachelor-Prüfungsordnung der Hochschule Bremen möglich (max. zweimalige Wiederholung).

#### **4. Liste der Ausbilder und Prüfer**

Als Ausbilder\*innen und Prüfer \*innen sind vorgesehen:

1. Prof. Dr. Ilknur Colmorn, HS Bremen (Ausbilderin und Prüferin)
2. Dipl. Wirt.-Ing. f. Seeverkehr (FH) Malte Pertiet, Lehrkraft für Navigation, HS Bremen (Ausbilder und Prüfer)
3. Brunhild Osterhues, Lehrbeauftragte für Telekommunikation (Ausbilderin und Prüferin)
4. Hans Pleister, Techniker für Simulatoren, HS Bremen (Co-Prüfer)

Alle Ausbilder\*innen verfügen über den notwendigen Qualifikationen und Kenntnisse. Grundsätzlich sind Ausbilder der Hochschule Bremen Hochschullehrer\*innen oder Lehrbeauftragte, die ein Bewerbungsverfahren durchlaufen haben. In diesem wird insbesondere darauf geachtet, dass sie über entsprechende Kompetenzen und Erfahrungen im Bereich der Seefahrt verfügen.

#### **5. Teilnahmebescheinigung**

Studierende bekommen das bestandene Modul auf ihrem Abschlusszeugnis bestätigt.

#### **Mitgeltende Dokumente**

- a) Modulbeschreibung 01.10.2023
- b) Lehrunterlage Stand November 2019
- c) Prüfungsfragen und -aufgaben
- d) QMS Report 13 Infrastructure

## 9.2. Ergänzung Modul 2.3. Tanker Shipping & Cargo Operations

### 1. Ausbildungsrahmen

Das vorliegende Dokument ist eine berufsrechtliche Ergänzung und Anhang der Modulbeschreibung „ISMN 2-3 Tanker Shipping 2021 EN“. Sie präzisiert die Anforderungen an die Ausbildung gemäß STCW und See-BV, auf deren Basis durch das BSH ein *Befähigungsnachweis über die Grundausbildung für den Dienst auf allen Tankschiffen / Certificate of proficiency in basic training for service on all tankers* ausgestellt wird.

Das Modul 2.3 *Tanker Shipping* wird im Rahmen des Studiums „International Degree Programme Ship Management – Nautical Sciences (B.Sc.)“ an der Hochschule Bremen als Pflichtmodul durchgeführt. Im Rahmen dieses Moduls werden die theoretischen Inhalte in Anlehnung an die IMO Model Courses 1.01 (*Basic trainings for oil and chemical cargo operations*) und 1.04 (*Basic training for liquefied gas tanker cargo operations*) gelehrt.

Das Modul ist im Minimum auf 6, im Maximum auf 36 Studierende beschränkt. Der theoretische Unterricht findet mit maximal 36 Studierenden in den Seminar- und Computerräumen der Hochschule Bremen statt. Das im Rahmen der theoretischen Ausbildung stattfindende Simulatortraining wird in zwei Gruppen mit jeweils maximal 18 Studierenden durchgeführt, so dass grundsätzlich jeder Studierende einen Simulatorarbeitsplatz hat.

Für die Ausstellung eines Befähigungsnachweises nach **STCW A-V/1-1 (1)** (oil and chemical tanker) und **STCW A-V/1-2 (1)** (liquefied gas tanker) werden zur Beantragung beim BSH zusätzlich benötigt:

- Besitz eines gültigen *Seediensttauglichkeitszeugnis / Medical Certificate* sowie der gültige *Befähigungsnachweis über Einführungs- und Sicherheitsgrundausbildung und Unterweisung für alle Seeleute / Certificate Familiarization, basic safety training and instruction for all seafarers* als Eingangsvoraussetzungen für den praktischen Teil des Trainings;
- Nachweis der erfolgreichen Teilnahme an einem durch das BSH zugelassenen Lehrgang *Praktische Brandbekämpfung für den Dienst auf allen Tankschiffstypen sowie für den Dienst auf Schiffen, die dem IGF-Code unterliegen* an;

Der praktische Teil ist außerhalb des Studiums (extracurricular) an einer vom BSH zugelassenen Bildungseinrichtung zu absolvieren. Die praktische Ausbildung sollte parallel zur theoretischen Ausbildung stattfinden, spätestens jedoch vor der Anmeldung zur Berufseingangsprüfung abgeschlossen sein.

Die Beantragung des Befähigungsnachweises hat beim BSH zu erfolgen und ist nach Absolvieren des theoretischen und des praktischen Teils bei Vorliegen aller Voraussetzungen jederzeit während des Studiums möglich.

## 2. Ausbildungsplan

### 2.1. Umfang

Es werden die Themenbereiche nach STCW A-V/1-1-1 (oil and chemical tanker), STCW A-V/1-2-1 (liquefied gas tanker) und STCW A-II/2 behandelt. Die Ausbildung erfolgt in Anlehnung an die IMO Model Courses:

- 1.02 (Basic Training For Oil And Chemical Tanker Cargo Operations, ed. 2014);
- 1.04 (Basic Training For Liquefied Gas Tanker Cargo Operations, ed. 2014).

Der Zeitrahmen der Theorie umfasst insgesamt 40 Semesterstunden, der der Simulatorübungen insgesamt 7,5 Semesterstunden. Diese werden innerhalb einer Lehrveranstaltung von 5 Semesterwochenstunden (SWS) geleistet.

Die Inhalte beziehen sich auf „Oil and Chemical Tanker“ wie auch „Liquefied Gas Tanker“:

Fields of competences	Semester hours		Location
	Theory	Simulator	
<b>Safely Perform and Monitor All Cargo Operation</b>	26,0	7,5	Hochschule Bremen
<b>Familiarity with Physical and Chemical properties</b>	2,0	0	Hochschule Bremen
<b>Precautions to prevent hazards</b>	3,0	0	Hochschule Bremen
<b>Respond to emergencies</b>	5,0	0	Hochschule Bremen
<b>Precautions to prevent pollution</b>	4,0	0	Hochschule Bremen
<b>TOTAL</b>	<b>40,0</b>	<b>7,5</b>	



## 2.2. Lehrplan

Der Lehrplan entspricht der nachstehenden Tabelle. Inhaltliche Details sind den Lehrunterlagen zu entnehmen.

STCW	Competences	Hours	Hours
	knowledge, understanding and proficiency	Theory	Simulator
<b>A-V/ 1-1-1</b>	<b>Specification of minimum standard of competence in basic training for oil and chemical tanker cargo operations</b>	<b>40,0</b>	<b>7,5</b>
<b>A-V/ 1-2-1</b>	<b>Specification of minimum standard of competence in basic training for liquefied gas tanker cargo operations</b>	<b>incl.</b>	<b>Incl.</b>
1.	Ability to Safely Perform and Monitor All Cargo Operation of all oil and chemical tanker	26,0	7,5
	Knowledge of oil and chemical tanker design, systems and equipment	3,0	
	Knowledge of liquefied gas tanker design, systems and equipment	3,0	
	Knowledge of pump theory and characteristics, including types of cargo pumps and their safe operation	2,0	
	Knowledge and understanding of tanker safety culture and safety management	1,0	
	Knowledge and understanding of monitoring and safety systems, including the emergency shutdown	1,0	
	Loading, unloading, care and handling of cargo	1,0	
	Knowledge of the effect of bulk liquid cargoes on trim, stability and structural integrity	0,5	1,5
	Knowledge of cargo operations oil and chemical tankers	6,0	3,0
	Knowledge of cargo operations liquefied gas tankers	6,0	3,0
	Development and application of cargo-related operations plans, procedures and checklists	1,0	
	Ability to calibrate and use monitoring and gas-detection systems, instruments and equipment	1,0	
	Ability to manage and supervise personnel with cargo-related responsibilities	0,5	
2.	Familiarity with Physical and Chemical properties	2,0	
	Knowledge and understanding of the physical and chemical properties of oil and chemicals	1,0	
	Knowledge and understanding of the physical and chemical properties of liquefied gas	1,0	
3.	Take precautions to prevent hazards	3,0	
	Knowledge and understanding of the hazards and control measures associated with tanker operations	3,0	
4.	Respond to Emergencies	5,0	
	Knowledge and understanding of tanker emergency procedures	2,0	
	Actions to be taken following collision, grounding, or spillage	1,0	
	Knowledge of medical first aid procedures on board tankers	2,0	
5.	Take Precautions to Prevent pollution of environment	4,0	
	Understanding of procedures to prevent pollution of the atmosphere and the environment	2,0	

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Basic knowledge and understanding of relevant provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL), as amended, and other relevant IMO instruments, industry guidelines and port regulations as commonly applied 2,0

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### **2.3. Verwendete Lehr- und Lernmittel**

Es steht eine umfangreiche Bibliothek zur Verfügung. Durch die Ausbilder werden darüber hinaus Fotos, Pläne, Präsentationen und Dokumente aus der täglichen Praxis benutzt. Im Unterricht an der Hochschule werden verwendet:

- IMO: Model Course 1.01 Basic Training For Oil And Chemical Tanker Cargo Operations; London; 2014 edition. In Bibliothek unter IMOk Bas 2014.1
- IMO: Model Course 1.04 Basic Training For Liquefied Gas Tanker Cargo Operations; London; 2014 edition. In Bibliothek unter IMOk Bas 2014.1
- International Chamber of Shipping: ISGOTT International Safety Guide for Oil Tankers and Terminals; 6<sup>th</sup> ed.; London; 2020 Jd ISG.3 (2020)a
- International Chamber of Shipping: Tanker Safety Guide - Chemicals; 4<sup>th</sup> ed.; London; 2014. In Bibliothek unter Jd Tan.1
- International Chamber of Shipping: Tanker Safety Guide – Liquefied Gas; 2<sup>nd</sup> ed.; London; 1995. In Bibliothek unter Jd Tan Gas.1
- Society of International Gas Tanker and Terminal Operators (SIGTTO): Liquefied Gas Handling Principles on Ships and in Terminals (LGHP4); 4<sup>th</sup> ed.; Witherby; 2016. In Bibliothek unter Jd Liq.1
- IMO: STCW 2010
- IMO: MARPOL 73/78 Annex I and II, ORB, ODMCS, SOPEP, SMPEP
- Publications of OCIMF, IPTA, ICS, Classification Bodies, ...

Es steht eine umfangreiche Bibliothek zur Verfügung. Durch die Trainer werden darüber hinaus Fotos, Pläne, Präsentationen und Dokumente aus der täglichen Praxis ergänzt.

Es stehen Videos zur Ergänzung des Unterrichts zur Verfügung.

### **3. Darstellung des Verfahrens zur Bewertung der Teilnehmerkompetenzen**

Für das Modul besteht im Rahmen der theoretischen Ausbildung (Theorie und Simulator) Anwesenheitspflicht. Die Anwesenheit wird täglich durch Unterschrift des Teilnehmers / der Teilnehmerin und des Trainers / der Trainerin dokumentiert.

Es dürfen maximal insgesamt 10% der Vorlesungsstunden entschuldigt versäumt werden.

Zum Abschluss des theoretischen Teiles erfolgt ein schriftlicher Test oder elektronischer Test auf Grundlage der jeweils gültigen Prüfungsordnung der Hochschule Bremen. Zum Bestehen sind mindestens 70/100 Prozent zu erreichen.

Eine Nachprüfung ist gemäß den Regeln der Allgemeinen Bachelor-Prüfungsordnung der Hochschule Bremen möglich.

#### **4. Liste der Ausbilder und Prüfer**

Als Lehrende für die Theorie sind vorgesehen:

1. Herr Heinrich Braun, HSSE-Beauftragter, Oiltanking Deutschland GmbH & Co. KG
2. Herr Prof. Bastian Gruschka, Professor Maritime Technology, Hochschule Bremen

Alle Lehrenden verfügen über die notwendigen Qualifikationen und führen die Lehrveranstaltung schon heute durch. Grundsätzlich sind Lehrende der Hochschule Bremen Hochschullehrer\*innen oder Lehrbeauftragte, die ein Bewerbungsverfahren durchlaufen haben. In diesem wird insbesondere darauf geachtet, dass sie über entsprechende Kompetenzen und Erfahrungen aus dem Betrieb von Tankern an Bord oder von Land verfügen.

#### **5. Teilnahmebescheinigung**

Studierende bekommen die bestandene Prüfung auf ihrem Abschlusszeugnis der Hochschule Bremen bestätigt. Bei Bedarf können die Teilnehmer nach erfolgreich bestandener Prüfung einen Nachweis vom Immatrikulations- und Prüfungsamt erhalten. Gemeinsam mit dem Nachweis über die extern erbrachte Ausbildung kann beim BSH das Ausstellen des Befähigungsnachweises beantragt werden.

#### **Mitgeltende Dokumente**

- a) Modulbeschreibung vom 01.10.2023
- b) Lehrunterlagen Stand 15.01.2021

### 9.3. Ergänzung Modul 3.1./6.1. Practical Semester (Praxissemesterordnung)

#### Praxissemesterordnung

##### Präambel

Die Praxissemesterordnung regelt die Anforderungen an die praktische Ausbildung und Seefahrtzeit von Studierenden, die gemäß Seeleute-Befähigungsverordnung (See-BV) in der jeweils geltenden Fassung im Rahmen von Praxissemestern durchgeführt wird. Sie orientiert sich an den Richtlinien des Bundesministeriums für Verkehr und digitale Infrastruktur (BMVI) für die praktische Ausbildung und Seefahrtzeit als nautische\*r Offiziersassistent\*in. Die Seeleute-Befähigungsverordnung (See-BV) in ihrer jeweils gültigen Fassung ist zu beachten. Die Praxissemesterordnung gilt für immatrikulierte Studierende des Studiengangs „Internationaler Studiengang in Ship Management – Nautical Sciences B.Sc.“, die das Praxissemester als Praktikantinnen bzw. Praktikanten oder als nautische Offiziersassistentinnen bzw. Offiziersassistenten durchführen.

#### 1 Dauer und Zweck der praktischen Ausbildung und Seefahrtzeit

1.1 Die in der Seeleute-Befähigungsverordnung (See-BV) genannte praktische Ausbildung und Seefahrtzeit (Ausbildung) dauert mindestens zwölf Monate. Urlaub, Krankheit oder andere Ausfallzeiten können auf die festgelegten Zeitrichtwerte nicht angerechnet werden.

1.2 Die Ausbildung dient der Vermittlung und dem Erwerb von Fertigkeiten und Kenntnissen gemäß Regel II/1 (Betriebsebene) der Anlage zum STCW-Übereinkommen in:

- 1.Schiffsführung;
- 2.Ladungsumschlag und -stauung;
- 3.Steuerung des Schiffsbetriebs und Fürsorge für die Personen an Bord.

1.3 Mit dem Nachweis der ordnungsgemäß durchgeführten Ausbildung als Praktikant\*in oder nautische\*r Offiziersassistent\*in ist gemäß See-BV eine der Voraussetzungen für die Zulassung zur Berufseingangsprüfung erbracht.

#### 2 Durchführung der praktischen Ausbildung und Seefahrtzeit

2.1 Die Ausbildung ist gemäß der Übersicht (Anlage 1) durchzuführen. Verantwortlich für die Planung und Durchführung der Ausbildung sind die Reederei, der Kapitän und ein mit der Ausbildung beauftragter nautischer Schiffsoffizier.

2.2 Die Reederei stellt sicher, dass die Ausbildung auf Schiffen stattfindet, die für die Vermittlung und den Erwerb der in Anlage 1 aufgeführten Fertigkeiten und Kenntnisse geeignet sind und den Anforderungen der See-BV entsprechen.

2.3 Der mit der Ausbildung beauftragte Schiffsoffizier muss mindestens über die vom Praktikanten oder nautischen Offiziersassistenten angestrebten gültigen Befähigungszeugnisse und über angemessene berufs- und arbeitspädagogische Kenntnisse verfügen.

2.4 Die Praxissemester werden in der Regel im 3. und im 6. Fachsemester durchgeführt. Sie umfassen jeweils 26 Wochen Ausbildung und Tätigkeit an Bord gemäß Anlage 1.

### **3 Voraussetzungen**

3.1 Die Teilnahme an einer Sicherheitsgrundausbildung gemäß See-BV und in der Grundausbildung in der Gefahrenabwehr gemäß See-BV ist grundsätzlich vor der Seefahrtzeit und zusätzlich zu den in der Anlage 1 aufgeführten Ausbildungs- und Tätigkeitsbereichen nachzuweisen. Die Ausbildungen sind nicht Bestandteil des Studiums.

3.2 Der Nachweis der Seediensttauglichkeit ist durch den oder die Studierende\*n vor der Seefahrtzeit zu erbringen.

3.3 Die Kosten für die Ausbildung und Seediensttauglichkeitsprüfung nach Absatz 3.1 und 3.2 trägt die Reederei oder der bzw. die Studierende.

### **4 Ausbildungsberichtsheft (TRB NOA – On Board Training Record Book for Navigational Officer’s Assistants)**

4.1 Der oder die Studierende hat das vom Bundesamt für Seeschifffahrt und Hydrographie (BSH) veröffentlichte Ausbildungsberichtsheft für nautische Offiziersassistenten (TRB NOA) als Ausbildungsleitfaden zu führen.

4.2 Das TRB NOA beinhaltet den Ausbildungsplan und einen Tätigkeitsnachweis.

4.3 Im Ausbildungsplan wird vom verantwortlichen Schiffsoffizier oder vom Kapitän bestätigt, dass der Praktikant bzw. die Praktikantin oder der bzw. die nautische Offiziersassistent\*in die hier aufgeführten Fertigkeiten und Kenntnisse im ausreichenden Umfang besitzt.

4.4 Der Praktikant oder die Praktikantin hat den Tätigkeitsnachweis, in dem die täglich ausgeführten Arbeiten nach Art und Dauer zu dokumentieren sind, zu führen. Der Tätigkeitsnachweis ist von dem mit der Ausbildung beauftragten nautischen Schiffsoffizier und vom Kapitän wöchentlich gegenzuzeichnen.

4.5. Die Kosten zum Erwerb des TRB trägt die Reederei oder der bzw. die Studierende.

## **5 Praxissemestervertrag für Praktikanten und Praktikantinnen**

5.1 Wird das Praxissemester als Praktikant bzw. Praktikantin durchgeführt, wird zwischen dem oder der Studierenden und der Praxisstelle ein Praxissemestervertrag geschlossen. Dieser ist der Hochschule Bremen durch den/die Studierende\*n vorzulegen.

5.2 Studierende werden als Praktikantinnen oder Praktikanten eingesetzt und sind nicht auf die erforderliche Besatzung gemäß Schiffsbesatzungszeugnis anzurechnen. Sie sind während der Praxissemester gegen Unfall zu versichern. Sie genießen ferner den Schutz der studentischen Krankenversicherung. Für die Absicherung der über die Leistungen der Krankenversicherung hinausgehenden Risiken einer Krankheit im Ausland ist die Praxisstelle zuständig.

## **6. Aufgaben der Hochschule**

6.1 Zur Organisation, Betreuung und Anerkennung der Praxissemester ernennt die Hochschule eine\*n Praxissemesterbeauftragte\*n. Diese\*r muss Inhaber eines (nicht zwingend gültigen) Befähigungszeugnisses auf Managementebene sein und wird namentlich dem BSH bekannt gegeben.

6.2 Praktikumsverträge für Praktikanten (Deck Cadets) und sonstige benötigte Unterlagen werden den Studierenden auf der Lernplattform der Hochschule zur Verfügung gestellt.

6.3 Die Berufsbildungsstelle See (BBS) führt die Prüfung der praktischen Fahrtzeiten durch. Die Hochschule erkennt ordnungsgemäß absolvierte und bestätigte Fahrtzeiten als Praxissemester an. Sie gewährt dem BMVI oder der von ihm beauftragten Stelle Einblick in die Praktikumsunterlagen.

## **7. Praxiszeiten als nautische Offiziersassistenten oder Offiziersassistentinnen**

7.1 Wird das Praxissemester als nautischer Offiziersassistent oder nautische Offiziersassistentin durchgeführt, gilt zusätzlich die „Richtlinie für die Ausbildung von nautischen Offiziersassistenten in der Seeschifffahrt“ in der jeweils gültigen Form.

7.2 Der Ausbildungsvertrag wird gemäß den Vorgaben der unter 6.1 benannten Richtlinie direkt zwischen der Praxisstelle und dem bzw. der Studierenden abgeschlossen.

7.2 Für die Ausbildung zum nautischen Offiziersassistenten oder Offiziersassistentin ist die Berufsbildungsstelle See (BBS) zuständig. Sie stellt eine Ausbildungsbescheinigung aus und prüft die Fahrtzeitnachweise und das TRB.

## **8. Aufgaben der Studierenden**

8.1 Die Studierenden suchen sich eigenständig eine Praxisstelle.

8.2 Das Praxissemester ist vor Dienstantritt bei der oder dem Praxissemesterbeauftragten anzumelden. Das Muster dazu findet sich im Qualitätsmanagement des Studiengangs. Als Anlage sind der Vertrag mit der Praxisstelle sowie das Seediensttauglichkeitszeugnis beizufügen.

8.3 Nach Ablauf des Praxissemesters ist darüber ein Bericht anzufertigen, der eine Beschreibung des Schiffes und der Reisen, eine zusammenfassende Darstellung der Erfahrungen und des Kompetenzerwerbs sowie eine abschließende Wertung des jeweiligen Praxissemesters enthält.

8.4 Der Bericht mit Bewertung sowie die Bestätigung der Fahrtzeiten durch die BBS sind als Studienleistung dem oder der Praxissemesterbeauftragten der Hochschule vorzulegen. Nur bei vorliegenden kompletten Fahrtzeiten und Unterlagen werden die Leistungspunkte für das jeweilige Praxissemester angerechnet.

8.5 Das TRB NOA und persönlichen Dokumente verbleiben im Besitz des Studierenden. Die Unterlagen sind sicher aufzubewahren, der Hochschule und dem BMVI oder der von ihm beauftragten Stelle ist bis zum Abschluss des Studiums auf Verlangen Einblick zu gewähren. Die Nachweispflicht liegt bei dem / der Studierenden.

## **9. Aufgaben der Praxisstelle**

9.1 Die Praxisstelle bestimmt einen an Bord befindlichen nautischen Schiffsoffizier (Betreuer\*in), der oder die für die Betreuung des Studierenden verantwortlich ist. Diese\*r achtet auf die ordnungsgemäße Durchführung des Praxissemesters entsprechend den Richtlinien des BMVI, dieser Praxissemesterordnung und dem TRB NOA.

9.2 Für die Absicherung der über die Leistungen der Krankenversicherung hinaus gehenden Risiken einer Krankheit im Ausland ist die Praxisstelle zuständig.

9.3 Dem Studierenden ist an Bord freie Unterkunft und Verpflegung zu gewähren. Das Ausbildungsberichtsheft für nautische Offiziersassistenten (TRB NOA) wird von der ersten Praxissemesterstelle zur Verfügung gestellt.

9.4 Falls die Reise des Studierenden im Ausland beginnt und/oder endet, trägt die Praxisstelle die Reisekosten.

9.5 Die Praxisstelle erstattet nach erfolgreicher Beendigung des Praxissemesters die vom Studierenden zu verauslagenden, im Zusammenhang mit der Erfüllung der allgemeinen Voraussetzungen einer Erwerbstätigkeit in der deutschen Seeschifffahrt entstehenden Kosten einschließlich der erforderlichen medizinischen Vorsorgemaßnahmen.

## **10. Befähigungsnachweises „Wachbefähigung Brücke (NWB)“**

10.1 Für das Modul 6.1 ‚Praxissemester 2‘ wird der Erwerb des Befähigungsnachweises ‚Wachbefähigung Brücke (NWB)‘ empfohlen.

10.2 Der Befähigungsnachweis ‚Wachbefähigung Brücke (NWB)‘ ist beim Bundesamt für Seeschifffahrt und Hydrographie zu beantragen. Neben den persönlichen Angaben werden als Nachweise benötigt:

- > erfolgreich absolviertes Modul 3.1 ‚Praxissemester 1‘ mit mindestens 6 Monaten Seefahrtzeit als Praktikant\*in und erfolgreich absolviertes Modul 4.2 ‚Watchkeeping‘ (Bestätigung für beides durch Praxissemesterbeauftragte\*n)

oder

- > Bestätigung in Form einer Bescheinigung der BBS für nautische Offiziersassistenten, dass die Voraussetzungen nach Regel II/4 der Anlage zum STCW-ÜE erfüllt sind.“

## **11. Anerkennung der Praxissemester**

11.1 Die Anerkennung aller Fahrtzeiten als NOA oder Praktikant erfolgt über die Berufsbildungsstelle See (BBS). Von der Regelausbildung abweichende Fahrtzeiten bestätigt ausschließlich das BSH. Die Bescheinigungen des BSH sind auch der BBS vorzulegen.

Der Berufsbildungsstelle See (BBS) sind sämtliche geforderten Dokumente und Nachweise vorzulegen. Die Prüfung und Bestätigung der Fahrtzeiten erfolgen durch die BBS.

Zur Anrechnung der Studienleistung für die Praxissemester sind zu jedem Bordeinsatz der dem oder der Praxissemesterbeauftragten vorzulegen:

- > Bestätigung der BBS über die anerkannten Fahrtzeiten
- > Aufstellung der BBS zum Fortschritt im Ausbildungsplan
- > Liste über die durchgeführten Projektarbeiten
- > Die Projektberichte in digitaler Form
- > Vorlage der TRB NOA zur Einsicht
- > Einen Bericht über den Einsatz an Bord
- > Bewertung des Praxissemesters: Evaluationsbogen

11.2 Der oder die Praxissemesterbeauftragte kann in Fällen, in denen Voraussetzungen für die Anerkennung nicht ausreichend erfüllt sind, die Anerkennung von der Erfüllung von Auflagen abhängig machen.



11.3 Das Praxissemester kann, sofern sie vor Aufnahme des Studiums erfolgten, durch folgende Ausbildungen und/oder Tätigkeiten ganz oder teilweise angerechnet werden:

- > die Berufsausbildung zum Schiffsmechaniker,
- > die (auch anteilige) praktische Ausbildung und Seefahrtzeit zum nautischen Offiziersassistenten,
- > vom BMVI oder der beauftragten Stelle als ausreichend und einschlägig anerkannte Seefahrtzeiten.

**Anlage 1 zur Praxissemesterordnung:**

**Übersicht über die praktische Ausbildung und Seefahrtzeit**

Die Ausbildungsinhalte orientieren sich an den Richtlinien des Bundesministers für Verkehr und digitale Infrastruktur für die Ausbildung von nautischen Offiziersassistenten und Offiziersassistentinnen in der jeweils geltenden Fassung.

Im Rahmen der regulären Praxissemester sind 52 Wochen zu erbringen. Für die Zulassung zur Berufseingangsprüfung sind die kompletten 52 Wochen innerhalb einer Seefahrtzeit von mindestens 12 Monaten nachzuweisen.

<b>AUSBILDUNGSMODULE UND ZU ERWERBENDE BEFÄHIGUNGEN</b>	<b>Zeitrichtwerte</b>
<b>US Schiffsführung auf Unterstützungsebene</b>	<b>26 Wochen</b>
US 1 Planen und Durchführen einer Reise und Bestimmen der Position	6 Wochen
US 2 Gehen einer sicheren Seewache	5 Wochen
US 3 Gehen einer sicheren Hafenwache	2 Wochen
US 4 Verwenden von Radargerät und der ARPA-Funktion zur Aufrechterhaltung der Sicherheit der Navigation	2 Wochen
US 5 Verwenden elektronischer Seekartendarstellungs- und Informationssysteme (ECDIS) zur Aufrechterhaltung einer sicheren Navigation	2 Wochen
US 6 Reagieren auf Notfallsituationen	0,5 Wochen
US 7 Reagieren auf ein Notsignal auf See	0,5 Wochen
US 8 Verwenden der IMO Standard- Redewendungen	ständig
US 9 Steuern des Schiffes	2 Wochen
Zur freien Verfügung und Vertiefung für Ausbildungsinhalte Schiffsführung auf Betriebsebene US 1 — US 9	6 Wochen
<b>BS Schiffsführung auf Betriebsebene</b>	<b>6 Wochen</b>
BS 1 Signaldienst (Internationales Signalbuch, Lichtmorsezeichen)	0,5 Woche
BS 2 Manövrieren des Schiffes	2 Wochen
BS 3 Maschinenkunde	2 Wochen
Zur freien Verfügung und Vertiefung für Ausbildungsinhalte Schiffsführung auf Betriebsebene BS 1 — BS 2	1,5 Wochen
<b>BL Ladungsumschlag und -stauung auf Betriebsebene</b>	<b>14 Wochen</b>

BL 1 Überwachen der Vorbereitung für den Ladungsumschlag	3 Wochen
BL 2 Überwachen des Ladens, Stauens, Sicherns und Löschens von Ladungen. Kontrollieren und Dokumentieren von Beschädigungen der Laderäume, Laderaumabdeckungen und Ballasttanks	5 Wochen
BL 3 Ladungsfürsorge während der Seereise durchführen sowie Kennenlernen, Instandhalten und Überholen der Lade- und Löscheinrichtungen	1,5 Wochen
BL 4 Kenntnisse über Trimm und Stabilität	1,5 Wochen
Zur freien Verfügung und Vertiefung für Ausbildungsinhalte Ladungsumschlag und -stauung auf Betriebsebene BL 1 — BL 4	3 Wochen
<b>BK Steuerung des Schiffsbetriebs und Fürsorge für die Personen an Bord auf Betriebsebene</b>	<b>6 Wochen</b>
BK 1 Einhalten der Umweltschutzvorschriften sicherstellen	ständig
BK 2 Aufrechterhalten der Seetüchtigkeit des Schiffes	ständig
BK 3 Persönlicher Beitrag zur Sicherheit des Schiffes und der Personen an Bord. Verhüten, Eindämmen der Ausbreitung und Bekämpfen von Bränden an Bord	2 Wochen
BK 4 Einsetzen von Rettungsmitteln	2 Wochen
BK 5 Anwenden medizinischer Erster Hilfe an Bord	0,5 Wochen
BK 6 Einhaltung von Rechts- und Verwaltungsvorschriften	ständig
BK 7 Gefahrenabwehr an Bord	0,5 Wochen
BK 8 Anwenden von Führungskompetenz und Teamfähigkeit	ständig
Zur freien Verfügung und Vertiefung für Ausbildungsinhalte BK 1 — BK 8	1 Woche
<b>Gesamtdauer</b>	<b>52 Wochen</b>

## 9.4. Ergänzung Modul 7.3.4. Deutsches Seeschiffahrtsrecht

### 1. Ausbildungsrahmen

Das vorliegende Dokument ist eine berufsrechtliche Ergänzung und Anhang der Modulbeschreibung „ISMN 7-3-4 Elective I SeeSchRecht 2021 EN 210115“. Sie präzisiert die Anforderungen an die Ausbildung gemäß STCW und See-BV, auf deren Basis durch das BSH der Befähigungsnachweis *Deutsches Seeschiffahrtsrecht für EU-Kapitäne* ausgestellt wird.

Das Modul wird im Rahmen des Studiums „International Degree Programme Ship Management - Nautical Sciences (B.Sc.)“ an der Hochschule Bremen als Wahlpflichtmoduls 7.3.4 *Deutsches Seeschiffahrtsrecht* durchgeführt.

Das Modul ist im Minimum auf 6, im Maximum auf 24 Teilnehmer beschränkt.

### 2. Ausbildungsplan

Es werden die Themenbereiche gemäß Anlage 2 (zu § 5) der Seeleute-Befähigungsverordnung gestellten Forderungen an die Ausbildung und Prüfung von Kapitänen aus EU-Mitgliedstaaten erfüllt. Nachgewiesen werden die geforderten Kenntnisse im deutschen Seeschiffahrtsrecht. Der Zeitrahmen des Moduls umfasst mindestens 96 Lehrstunden, eine Lehrstunde entspricht 45 Minuten (entspricht 72 Stunden u 60 Minuten).

#### 2.1. Modulinhalte nach Anlage 2 (zu § 5 See-BV)

Inhalte	Stunden
5.1 Rechtssystem der Bundesrepublik Deutschland	14,0
5.2 Aufgaben und Struktur der Schifffahrtsverwaltung	8,5
5.3 Allgemeines Seeverkehrsrecht	13,25
5.4 Ausbildung von Seeleuten, Bescheinigungen für Seeleute	5,5
5.5 Schiffsbesetzung	4,0
5.6 Seearbeitsgesetz und Begleitvorschriften einschließlich Arbeitsschutzrecht	11,0
5.7 Strafrecht und Ordnungswidrigkeiten mit Bezügen zum Seerecht	10,0
5.8 Zivilrechtliche Vorschriften mit Bezügen zum Seerecht	9,5
5.9 Öffentlich-rechtliche Vorschriften mit Bezügen zum Seerecht	12,75
5.10 Betriebsverfassungsrecht	3,5
5.11 Sozialrecht	4,0
<b>Präsenzstudium, Übungen und Selbststudium</b>	<b>96,0</b>

## 2.2. Detaillierter Lehrplan

Der Lehrplan entspricht der nachstehenden Tabelle. Inhaltliche Details sind der Lehrunterlage (Skript) zu entnehmen (Anlage a)).

See-BV Anlage 2	Kompetenzen nach Lehrplan	SWS	SWS	SWS
		Theorie	Übungen	Selbstlernanteil
<b>5.1., 5.4.</b>	<b>Kapitel 1 Einführung</b>	<b>4</b>	<b>0,5</b>	<b>0,5</b>
	Kursprogramm	0,5		
5.4.	Der Zweck und Zielsetzung des Kurses	1		
5.1.	Politisch geografischer Überblick	1	0,2	0,2
5.1.	Die wichtigsten Organe	1,5	0,3	0,3
<b>5.1.</b>	<b>Kapitel 2 Das Rechtssystem der Bundesrepublik Deutschland</b>	<b>8</b>	<b>1,5</b>	<b>1</b>
5.1.	Einführung in die Rechtswissenschaft	1		
5.1.	Der Aufbau des Rechtssystems in Deutschland	2	0,2	0,7
5.1.	Erläuterung zu den Bereichen: Privatrecht, Öffentliches Recht und Strafrecht	1,5		0,3
5.1.	Das Grundgesetz	1		
5.1.	Die Staatsprinzipien und die Gewaltenteilung	1	0,3	
5.1.	Grundbegriffe und nützliche Sätze für den Schifffahrtsbereich	1,5	1	
<b>5.7.</b>	<b>Kapitel 3 Deutsches Strafrecht und Ordnungswidrigkeiten</b>	<b>6</b>	<b>1</b>	<b>3</b>
5.7.	Was ist Strafrecht?	0,5		
5.7.	Allgemeine Bestimmungen des Strafgesetzbuches	1	0,5	0,5
5.7.	Besondere Rechtsvorschriften des Strafgesetzbuches	1,5	0,5	1
5.7.	Verletzungen des Marpol-Übereinkommens als Verstoß gegen das Gesetz	1		0,5
5.7.	Verantwortung für die Erhaltung der Sicherheit und Ordnung an Bord	1		0,5
5.7.	Verantwortung für die Verfolgung von Straftaten und Ordnungswidrigkeiten	1		0,5
<b>5.8.</b>	<b>Kapitel 4 Das Handelsgesetzbuch (HGB)</b>	<b>6</b>	<b>1</b>	<b>2,5</b>
5.8.	Das Handelsgesetzbuch (HGB) als den Kern des Handelsrechts in Deutschland	0,5		
5.8.	Erläuterungen zu den Personen der Schifffahrt	1	0,3	1
5.8.	Erläuterung zum den Verträgen sowie den daraus entstehenden Rechten, Pflichten und Haftungsvorschriften	3	0,5	1
5.8.	Einschlägige internationale und europäische Rechtssetzungen (sind zwischen den obigen Themen verteilt)	1,5	0,2	0,5
<b>5.2., 5.9.</b>	<b>Kapitel 5 Öffentliches Seerecht</b>	<b>6</b>	<b>2</b>	<b>4</b>
5.9.	Was ist Öffentliches Recht?	0,5		
5.9.	Übersicht über das Seeaufgabengesetz	1		1

See-BV Anlage 2	Kompetenzen nach Lehrplan	SWS	SWS	SWS
		Theorie	Übungen	Selbstlernanteil
5.2, 5.9.	Aufgaben und Struktur der Schifffahrtsverwaltung	1,5	1	1
5.2.	Selbstverwaltete Behörden	1		0,5
5.2.	öffentlich beauftragte Organisationen	1	0,5	0,5
5.9.	Flaggenrechtsgesetz und Flaggenrechtsverordnung	1	0,5	1
<b>5.9., 5.3.</b>	<b>Kapitel 6 Maritime Sicherheit</b>	<b>6</b>	<b>1</b>	<b>2</b>
5.9.	Das Schiffssicherheitsgesetz und die Schiffssicherheitsverordnung	1,5	0,5	
5.9.	Maßnahmen bei Verstößen gegen die Regelungen des Schiffssicherheitsgesetzes (§ 13 SchSG) und der Schiffssicherheitsverordnung (§14 SchSV)	1		0,5
5.3.	Das Schiffslogbuch und andere Tagebücher	0,5		
5.3., 5.9.	Gefahrguttransport, Anlaufbedingungen und Transportpapiere	1,5	0,5	1
5.9.	Die geltenden internationalen Regelungen zur Schiffssicherheit und zum Umweltschutz auf See (zwischen den obigen Themen verteilt)	1,5		0,5
<b>5.4., 5.5., 5.6., 5.10., 5.11</b>	<b>Kapitel 7 Arbeitsvorschriften und Bildungssystem in Deutschland</b>	<b>13</b>	<b>5</b>	<b>8,5</b>
5.4., 5.6.	Das Seearbeitsgesetz und die Schiffsbesatzungsverordnung	2	1	1,5
5.5., 5.6.	Einzelne Bestimmungen des SeeArbG: Mindestarbeitsanforderungen für Besatzungsmitglieder, Arbeitsbedingungen und einschlägige Nebengesetze und Verordnungen	4	1	2,5
5.11.	Soziale Absicherung, Versicherungen und Knappschaft Bahn und See	1,5	1	1
5.10.	Das Betriebsverfassungsgesetz	1,5	1	1
5.11., 5.6.	Aufgaben der Berufsgenossenschaft im Arbeitsschutz	1	0,5	0,5
5.6.	DGUV Vorschriften zur Arbeitssicherheit (insb. DGUV Vorschrift 84)	2	0,5	1
5.4.	Übersicht über die Ausbildungsinstitute in Deutschland	1		1
<b>5.3.</b>	<b>Kapitel 8 Kollisionsverhütungsregeln und die Seeschiffahrtsstraßen-Ordnung</b>	<b>3</b>	<b>1</b>	<b>2</b>
5.3.	Gebietsübersicht: Weser, Elbe, NOK, Kieler Förde usw.	1		0,5
5.3.	SeeSchStrO als wichtiger Bestandteil des deutschen Seeverkehrs- bzw. Schifffahrtsrechts	1	0,5	0,5
5.3.	Besonderheiten der SeeSchStrO gegenüber den internationalen Regelungen ( z.B. Einmündende und abzweigende Fahrwasser, Rechtsfahrgebot, VHF Absprachen)	1	0,5	1
<b>5.2., 5.3.</b>	<b>Kapitel 9 Seeunfalluntersuchung</b>	<b>4</b>	<b>1</b>	<b>2,5</b>
5.2.	Seeunfalluntersuchungsbehörden	0,5		
5.2.	Das Seesicherheits-Untersuchungs-Gesetz und der Untersuchungshergang	1		1

See-BV Anlage 2	Kompetenzen nach Lehrplan	SWS	SWS	SWS
		Theorie	Übungen	Selbstlernanteil
5.3.	Andere einschlägige Rechtsnormen: Schiffssicherheitsgesetz (SchSG), Verordnung über die Sicherung der Seefahrt (SeeFSichV), Richtlinie 2009/18/EG des Europäischen Parlaments und des Rates, Verordnung (EU) Nr. 1286/2011 der Kommission vom 9. Dezember 2011	1	1	1
5.3.	Umgang mit den Fragebögen zur See- bzw. Schiffsunfallanzeige	0,5		0,5
5.3.	Einführung in die Nutzung des elektronischen Wasserstraßen-Informationsservice (ELWIS)	1		
	<b>Präsenzstudium Gesamt:</b>	<b>56</b>	<b>14</b>	
	<b>Selbststudium (Vorbereitung einer Präsentation)</b>			<b>26</b>
	<b>Gesamt:</b>			<b>96</b>

Die Präsenzzeit umfasst 60 Stunden, davon entfallen auf angeleitete Übungen 15 Stunden. Der Selbstlernanteil beträgt 26 Stunden. Daraus ergibt sich in Summe ein Umfang von 96 Stunden, die innerhalb des Moduls geleistet werden.

### 2.3. Ablauf

Das Modul wird grundsätzlich als Blockseminar angeboten. Dem Blockseminar vorgeschaltet ist eine Vorbereitung als Selbstlernzeit (Eigenstudium) im Sinne eines „flipped classrooms“.

Der Stundenplan für den oben beschriebenen Modul sieht als Blockseminar wie folgt aus:

HSB Tag	Wochentag	08:30 – 10:00	10:15 – 11:45	12:00 – 13:30	14:30 – 16:00	16:15 – 17:45	SWS
	Eigenstudium	2	2	2	2	2	10
1	Montag	2	2	2	2	2	10
2	Dienstag	2	2	2	2	2	10
3	Mittwoch	2	2	2	2	2	10
4	Donnerstag	2	2	2	2	2	10
5	Freitag	2	2	2	2	2	10
	Eigenstudium	2	2	2	2		8
	Eigenstudium	2	2	2	2		8
6	Montag	2	2	2	2	2	10
7	Dienstag	2	2	2	2	2	10
<b>Insgesamt</b>							<b>96</b>

Seminar (Präsenz)	56 SWS
Übung (Präsenz)	14 SWS
Selbststudium	26 SWS

## 2.4. Verwendete Lehr- und Lernmittel

Der Unterricht findet in den Unterrichtsräumen der Hochschule Bremen statt. Die Räume der Hochschule sind mit entsprechenden audiovisuellen Hilfsmitteln ausgestattet.

Es steht eine umfangreiche Bibliothek zur Verfügung. Durch die Ausbilder werden darüber hinaus Fotos, Pläne, Präsentationen und Dokumente aus der aktuellen Praxis benutzt. Als Publikationen werden verwendet:

- > Bruhns: Schifffahrtsrecht- Seerechtliche Gesetze, Verordnungen, Übereinkommen
- > Ehlers, P: Recht des Seeverkehrs (Nomos Verlag, 2017)
- > Herber, R: Seehandelsrecht (De Gruyter, 2016)
- > Gesetze im Internet

## 3. Darstellung des Verfahrens zur Bewertung der Teilnehmerkompetenzen

Für das Modul besteht Anwesenheitspflicht. Die Anwesenheit wird jeden Tag durch Unterschrift der Teilnehmer / der Teilnehmerin und des Ausbilders / der Ausbilderin dokumentiert.

Mit einer Präsentation oder einem Referat sollen die Teilnehmer gemäß der Prüfungsordnung ihre Kenntnisse im deutschen Seeschifffahrtsrecht und in der deutschen Sprache nachweisen. Zum Bestehen sind 70/100 Punkten zu erreichen.

Zum Abschluss des Moduls erfolgt eine 15-minütige Präsentation in deutscher Sprache innerhalb eines Kolloquiums. Die Bewertung erfolgt nach den durch den Prüfer festgelegten Kriterien. Das Kolloquium wird schriftlich dokumentiert (Formblatt „F-07 Beurteilung mündliches Kolloquium“).

Alternativ ist ein schriftlich ausgearbeitet Referat zu erstellen. Die Präsentation wird auf Grundlage der nachstehenden Tabelle bewertet (Formblatt „F-05 Beurteilung schriftliches Referat“ ist entsprechend durch die Prüfer\*innen anzupassen).

Bewertungskriterien	Gewichtung	Bewertung in %	Gewichtete Bewertung
Komplexität	1,0		
Berücksichtigung Literatur & Regelwerke	4,0		
Umfang und Tiefgang	3,0		
Schlussfolgerungen & Empfehlungen / Beitrag zur Praxis	2,0		
Aufbau der Präsentation / des Referates und Stil	2,0		
Mündliche oder schriftliche Präsentation	3,0		
Total =	Summe der gewichteten Bewertung / 15,0:		Σ =

Eine Wiederholung der Prüfung ist für Studierende gemäß den Regeln der Allgemeinen Bachelor-Prüfungsordnung der Hochschule Bremen möglich (max. zweimalige Wiederholung).

#### **4. Liste der Ausbilder\*innen und Prüfer\*innen**

Als Ausbilder und Prüfer\*innen sind vorgesehen:

1. Prof. Dr. Suzette Suarez, Juristin, Studiengangsleiterin ISSC, HS Bremen:  
Lehrgebiet „Maritimes Recht, Deutsches Recht“.
2. Prof. Thomas Jung, Dipl.-Nautiker, Dipl. Wirtschaftsing. f. Transportwesen, Nautiker  
(STCW Kapitän), HS Bremen: Lehrgebiet „Sicherheit“.
3. Anna-Lena Simon, LL.M., Juristin, Wissenschaftliche Mitarbeiterin, HS Bremen: Lehr-  
und Forschungsgebiet: „Maritimes Recht“
4. Malte Pertiet, Diplom-Wirtschaftsing. für Seeverkehr (FH), Nautiker, (STCW  
Management Level), HS Bremen: Lehrgebiet „Seeverkehrsrecht, Schiffsführung“.

Alle Lehrkräfte verfügen über die notwendigen Qualifikationen und Kenntnisse. Grundsätzlich sind Ausbilder\*innen der Hochschule Bremen Hochschullehrer\*innen, wissenschaftliche Mitarbeiter\*innen oder Lehrbeauftragte, die ein Bewerbungs- und Bewertungsverfahren durchlaufen haben. In diesem wird insbesondere darauf geachtet, dass sie über entsprechende Kompetenzen und Erfahrungen im Themenbereich sowie in der Seefahrt verfügen.

#### **5. Teilnahmebescheinigung**

Studierende bekommen das bestandene Modul auf ihrem Abschlusszeugnis bestätigt.

#### **Mitgeltende Dokumente**

- a) Modulbeschreibung 7.3.4 Deutsches Seeschiffahrtsrecht vom 01.10.2023
- b) Lehrunterlagen Stand 15.01.2022



## 9.5. Ergänzung Modul 7.4. Safety & Security Management

### 1. Ausbildungsrahmen

Das vorliegende Dokument ist eine berufsrechtliche Ergänzung und Anhang der Modulbeschreibung „ISMN 7-4 Safety Security Mgmt 2021 EN 220401“. Sie präzisiert die Anforderungen an die Ausbildung gemäß STCW A-VI/5 und See-BV, auf deren Basis durch das BSH ein Befähigungsnachweis Beauftragter für die Gefahrenabwehr auf dem Schiff / Ship Security Officer ausgestellt wird.

Das Modul wird im Rahmen des Studiums „International Degree Programme Ship Management - Nautical Sciences B.Sc.“ an der Hochschule Bremen als fester Bestandteil des Pflichtmoduls 7.4. *Safety and Security Management* durchgeführt. Im Rahmen dieses Moduls werden die theoretischen Inhalte in Anlehnung an die IMO Model Courses 3.19 *Ship Security Officer (SSO)* gelehrt.

Das Modul ist im Minimum auf 6, im Maximum auf 36 Teilnehmer beschränkt. Der Unterricht findet in den Seminarräumen der Hochschule Bremen statt.

### 2. Ausbildungsplan

#### 2.2 Ausbildungsziele

Gemäß IMO Model Course 3.19 werden folgende Ausbildungsziele verfolgt:

Those who successfully complete this course should be able to undertake the duties and responsibilities as Ship Security Officer, as defined in section A/12.2 of the ISPS Code and in section A-VI/5 of the STCW Code, as amended, which include, but are not limited to:

- .1 undertaking regular security inspections of the ship to ensure that appropriate security measures are maintained;
- .2 maintaining and supervising the implementation of the Ship Security Plan, including any amendments to the plan;
- .3 coordinating the security aspects of the handling of cargo and ship's stores with other shipboard personnel and with the relevant Port Facility Security Officers;
- .4 proposing modifications to the Ship Security Plan;
- .5 reporting to the Company Security Officer any deficiencies and non-conformities identified during internal audits, periodic reviews, security inspections and verifications of compliance and implementing any corrective actions;
- .6 enhancing security awareness and vigilance on board;
- .7 ensuring that adequate training has been provided to shipboard personnel, as appropriate;
- .8 reporting all security incidents;
- .9 coordinating implementation of the Ship Security Plan with the Company Security Officer and the relevant Port Facility Security Officer; and

.10 ensuring that security equipment is properly operated, tested, calibrated and maintained, if any.

### 2.3 Umfang

Es werden die Themenbereiche nach STCW A-VI/5 (Ship Security Officer) behandelt. Die Ausbildung richtet sich nach dem IMO Model Course 3.19 Ship Security Officer. Der Zeitrahmen der Ausbildung umfasst insgesamt 16 Semesterstunden, eine Lehrstunde entspricht 45 Minuten.

Inhalte	Präsenz-Studium	Präsenz-Übungen
<b>Block 1</b>	<b>1,5</b>	<b>0,5</b>
Introduction Maritime Security Policy		
<b>Block 2</b>	<b>1,5</b>	<b>0,5</b>
Security Responsibilities		
<b>Block 3</b>	<b>2,0</b>	
Security Assessment Ship Security Equipment		
<b>Block 4</b>	<b>1,5</b>	<b>0,5</b>
Ship Security Plan		
<b>Block 5</b>	<b>1,0</b>	<b>1,0</b>
Threat Identification, Recognition & Response		
<b>Block 6</b>	<b>2,0</b>	
Ship Security Actions Emergency Preparedness		
<b>Block 7</b>	<b>1,5</b>	<b>0,5</b>
Security Administration Security Training		
<b>Block 8</b>	<b>1,0</b>	<b>1,0</b>
Security Training BMP Measures and Worldwide Piracy		
<b>Examination</b>		
<b>Präsenzstudium und Übungen</b>	<b>12,0</b>	<b>4,0</b>

Der Kurs umfasst 16 SWS Präsenz plus 4 SWS Selbststudium. Die Prüfung erfolgt im Anschluss an die Lehrveranstaltung.

## 2.4 Lehrplan

Der Lehrplan umfasst nachstehende Inhalte, Details sind der Lehrunterlage zu entnehmen.

Inhalte
<b>1. Introduction</b>
<ul style="list-style-type: none"> <li>1.1 Course overview</li> <li>1.2 Competences to be achieved</li> <li>1.3 Historical perspective</li> <li>1.4 Current security threats and patterns</li> <li>1.5 Ship and port operations and conditions</li> </ul>
<b>2. Maritime Security Policy</b>
<ul style="list-style-type: none"> <li>2.1 Relevant international conventions, codes, and recommendations</li> <li>2.2 Relevant government legislation and regulations</li> <li>2.3 Definitions</li> <li>2.4 Legal implications of action or non-action by the Ship Security Officer personnel</li> <li>2.5 Action against pirates attacks</li> </ul>
<b>3. Security Responsibilities</b>
<ul style="list-style-type: none"> <li>3.1 Contracting governments</li> <li>3.2 Recognized Security Organizations</li> <li>3.3 The company</li> <li>3.4 The ship</li> <li>3.5 The port facility</li> <li>3.6 Ship Security Officer</li> <li>3.7 Company Security Officer</li> <li>3.8 Port Facility Security Officer</li> <li>3.9 Seafarers with designated security duties</li> <li>3.10 Port facility personnel with specific security duties</li> <li>3.11 Other personnel</li> </ul>
<b>4. Ship Security Assessment</b>
<ul style="list-style-type: none"> <li>4.1 Risk assessment methodology</li> <li>4.2 Assessment tools</li> <li>4.3 On-scene security surveys</li> <li>4.3 Security assessment documentation</li> </ul>
<b>5. Security Equipment</b>
<ul style="list-style-type: none"> <li>5.1 Security equipment and systems</li> <li>5.2 Operational limitations of security equipment and systems</li> <li>5.3 Testing, calibration and maintenance of security equipment and systems</li> </ul>
<b>6. Ship Security Plan</b>
<ul style="list-style-type: none"> <li>6.1 Purpose of the Ship Security Plan</li> <li>6.2 Contents of the Ship Security Plan</li> <li>6.3 Confidentiality issues</li> <li>6.4 Implementation of the Ship Security Plan</li> <li>6.5 Maintenance and modification of the Ship Security Plan</li> </ul>
<b>7. Threat Identification, Recognition and Response</b>
<ul style="list-style-type: none"> <li>7.1 Recognition and detection of weapons, dangerous substances and devices</li> <li>7.2 Methods of physical searches and non-intrusive inspections</li> <li>7.3 Implementing and coordinating searches</li> <li>7.4 Recognition, on a non-discriminatory basis, of the persons posing potential security risks</li> <li>7.5 Techniques used to circumvent security measures</li> <li>7.6 Crowd management and control techniques</li> </ul>
<b>8. Ship Security Actions</b>
<ul style="list-style-type: none"> <li>8.1 Actions required by different security levels</li> <li>8.2 Maintaining security of the ship/port interface</li> <li>8.3 Usage of the Declaration of Security</li> <li>8.4 Reporting security incidents</li> <li>8.5 Implementation of security procedures</li> </ul>

<b>9. Emergency Preparedness</b>
9.1 Contingency planning 9.2 Security drills and exercises 9.3 Assessment of drills and exercises
<b>10. Security Administration</b>
10.1 Documentation and records 10.2 Reporting security incidents 10.3 Monitoring and control 10.4 Security audits and inspections 10.5 Reporting nonconformities
<b>11. Security Training</b>
11.1 Training requirements
<b>Präsenzstudium und Übungen</b>

## 2.5 Ablauf

Der Kurs wird als zweitägiges Seminar angeboten.

Der Stundenplan für den oben beschriebenen Kurs sieht wie folgt aus:

	Wochentag	08:30 – 10:00	10:15 – 11:45	12:00 – 13:30	14:30 – 16:00	16:15 – 17:45	SWS
Woche 1	gemäß Vorlesungsplan	2	2	2	2		8
	freie Einteilung	2	2				4
Woche 2	gemäß Vorlesungsplan	2	2	2	2		8
<b>Insgesamt</b>							<b>20</b>

Vorlesung (Präsenz)	12 SWS Lehre 4 SWS Übungen
Selbststudium	4 SWS

Die praktischen Übungen erfolgen im Rahmen des theoretischen Unterrichtes und sind themenorientiert integriert. Die Studierenden werden in Kleingruppen von 4 bis 6 Studierende eingeteilt und führen die Übungen unter Anleitung selbstständig durch.

## 2.6 Verwendete Lehr- und Lernmittel

Der Unterricht findet in den Unterrichtsräumen der Hochschule Bremen statt. Die Räume der Hochschule sind mit entsprechenden audiovisuellen Hilfsmitteln ausgestattet.

Im Unterricht an der Hochschule werden unter anderem in der jeweils aktuellen Ausgabe verwendet:

- IMO: Guide to Maritime Security and the ISPS Code (International Code for the Security of Ships and Port Facilities; edition 2021)

- IMO: MSC/Circ. 1111 Guidance relating to the implementation of SOLAS XI-2 and the ISPS-Code, 2004
- BMP5 Best Management Practices To Deter Piracy
- BMP West Africa
- Global Counter Piracy Guidance for Companies, Masters and Seafarers
- Maritime Security Charts (Q6099, 6110, 6111, 6112)
- Nautical Institute: Maritime Security – A Practical Guide, 2008
- Marshall Islands Guidance Note 2-011-19 (Continuous Synopsis Records)
- BIMCO: Shipmaster's Security Manual 2019
- ICS: Maritime Security – Guidance for Ship Operators, 2003
- Maritime and Coastguard Agency (UK) RoRo Model Ship Security Plan
- Verschiedene Internetseiten und eigene Lehrunterlagen

Es steht eine umfangreiche Bibliothek zur Verfügung. Durch die Ausbilder werden darüber hinaus Internetquellen, Fotos, Pläne, Präsentationen und Dokumente aus der täglichen Praxis benutzt.

### **3. Darstellung des Verfahrens zur Bewertung der Teilnehmerkompetenzen**

Für das Modul besteht Anwesenheitspflicht. Die Anwesenheit wird jeden Tag durch Unterschrift der Teilnehmer und des Ausbilders dokumentiert.

Der Lehrgang wird mit einer Klausur oder einer Elektronischen Prüfung unter Aufsicht, beide von maximal einer Stunde Dauer, abgeschlossen. Zum Bestehen sind 70/100 Punkten zu erreichen.

Eine Nachprüfung ist gemäß den Regeln der Allgemeinen Bachelor-Prüfungsordnung der Hochschule Bremen möglich.

Studierende bekommen das bestanden Modul auf ihrem Abschlusszeugnis bestätigt.

### **4. Liste der Ausbilder und Prüfer**

Als Ausbilder und Prüfer sind vorgesehen:

5. Heinrich Braun, Diplom-Nautiker, STCW (Management-Level), Lehrbeauftragter im Studiengang ISMN, HS Bremen, Sicherheitsingenieur einer Werft, CSO/SSO/PFSO-Zertifikate und entsprechende Berufserfahrung.
6. Prof. Thomas Jung, Diplom-Nautiker, Studiengang ISMN, HS Bremen  
Lehrgebiet „Ladungstechnik, Sicherheitsmanagement, Bridge Team Management“, STCW (Kapitän), SSO-Zertifikat.

Alle Ausbilder verfügen über die notwendigen Qualifikationen und Kenntnisse.

Grundsätzlich sind Ausbilder der Hochschule Bremen Hochschullehrer oder Lehrbeauftragte, die ein Bewerbungs- und Bewertungsverfahren durchlaufen haben. In diesem wird insbesondere darauf geachtet, dass sie über entsprechende Kompetenzen und Erfahrungen im Themenbereich sowie in der Seefahrt verfügen.

## **5. Teilnahmebescheinigung**

Studierende bekommen die bestandene Prüfung auf ihrem Abschlusszeugnis der Hochschule Bremen bestätigt.

Anlagen:

a) Modulbeschreibung 7.4 Safety & Security Management vom 01.10.2023