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| **Country****RO** | **Institution****RNA** | **Course title****Ship Handling and BRIDGE watchKEEPING – Training on bridge Simulator** | **ECTS****2** |

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| Service**Navy** | **Minimum Qualification for Lecturers*** Bachelor/ master degree in Nautical Sciences
* Certified instructor for NTPRO simulator
* English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2
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| Languages**English** |
| **Prerequisites for international participants:*** English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2.
* Basic knowledge of SMCP.
* Basic knowledge of COLREGs.
* Basic knowledge of seamanship and navigation.
 | **Goals of the Module:*** To develop the fundamental theoretical bases regarding the principles of ship handling in different situations and conditions of weather, sea and navigation area.
* To introduce students to the terms and definitions about watchkeeping standards.
* To understand the nautical and maneuvering qualities of the ship as well as the factors that may influence ship handling.
* To introduce students the general use of the charts, ECDIS and nautical publications.
* To give an idea about familiarization with bridge equipment and emergency checklists directly related to ships.
* To give a complete and detailed knowledge of the principles to be observed in execution of navigation watchkeeping.
* To train and develop the capacity (knowledge, skills) to organize and lead the activities of OOW in the most complex/ dangerous situations at the level of the functions they will perform as an officer on board.
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| Learning outcomes | Knowledge | * Acquisition of knowledge on nautical and maneuvering qualities of the ship as well as the factors that may influence ship handling.
* Acquiring knowledge on fundamental theoretical bases regarding the principles of ship handling in different situations and conditions of weather, sea and navigation area.
* Acquiring knowledge on terms and definitions about watchkeeping standards.
* Familiarizing students with bridge equipment and emergency checklists directly related to ships.
* Familiarizing students with general use of the charts, ECDIS and nautical publications.
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| **Skills** | * Demonstrate and apply a rigorous, efficient, and responsible attitude towards the work performed showing a real ethical commitment, in solving problems and making decisions.
* Develop the capacity necessary to make the most appropriate decisions for solving complex situations at sea.
* Develop the capacity to react effectively in dangerous situations and to take specific measures in such situations.
* Efficient use of interpersonal communication techniques in a multicultural team, on various hierarchical levels, oral and written communication, effective collaboration with specialists in multiple fields.
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| **Competence** | * The student can describe fundamental theoretical bases regarding the principles of ship handling.
* The student can describe use of bridge equipment and systems.
* The student can apply emergency checklists in different situations.
* The student can organize and lead the activities of OOW in the most complex/ dangerous situations at sea.
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| **Verification of learning outcomes*** **Observation**:
	+ The theoretical part will be uploaded as prerequisite on *marplat.eu* platform and the practical stage of ship handling and bridge watchkeeping training will be conducted on the Integrated Navigation and Ship Handling Simulator.
* **Tests**:
	+ The assessment strategy is based on conducting safe navigation and watchkeeping on a specific scenario that includes response to an emergency situation (Integrated Navigation and Ship Handling Simulator).
* **Evaluation**:
	+ The observation and the practical test(s) result in the overall grading of the module. Qualified individual feedback will be provided to each participant.
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| **Module details** |
| **Main Topic** | **Recom-mended** **WH** | **Details** |
| Ship handling simulator overview and familiarization – training on INSS | 4 | * Bridge system components.
* Conning display and ship’s controls.
* Visualization channel.
* ECDIS station.
* Generic Radar/ ARPA station.
* GMDSS station.
* Pilot card –interpretation of the ship’s characteristics and its ship handling qualities.
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| Standard commands and communication on navigation bridge | 1 | * Standard communication on navigation bridge according to SMCP.
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| Ship handling forces.Propellers and rudders.Bow and stern thrusters.Turning circles and stopping distances – training on INSS | 3 | * The steering effect of the rudder and propeller.
* Steering the ship using the combined effects of the rudder and propeller in ahead/ astern gear.
* Demonstration of steering effects on twin-propeller and bow-thruster/ stern-thruster vessels.
* Bow/ stern thrusters.
* The ship's turning circle.
* Stopping distances.
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| Berthing and unberthing.Mooring and unmooring – training on INSS | 4 | * Ship's lines and their effects on the ship's maneuver.
* Maneuvering the ship with lines along the quay.
* Demonstration of the effects of the ship's lines on ship handling.
* Side berthing maneuver at the quay in different situations and departure from the berthing place.
* Stern berthing maneuver at the quay with and without anchoring and departure from the berthing place.
* Maneuvering the ship on specific courses entering ports and traffic separation schemes.
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| Anchoring – training on INSS | 2 | * Ship’s maneuver for anchoring.
* Anchoring with a single anchor.
* Safety precautions while anchored.
* Anchor departure maneuver.
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| Safe execution of watchkeeping – training on INSS | 4 | * Preparations for arrival/ departure.
* Change of watch at sea.
* Responsibilities of the watch officer to observe, avoid collision and shipwreck according to COLREGs.
* Responsibilities of the watch officer regarding the supervision of navigation equipment and the management of the ship in various navigation situation.
* Safe execution of the navigation watch in narrow areas, in traffic separation schemes or in straits.
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| Navigation in restricted visibility or heavy weather – training on INSS | 2 | * Navigation and maintaining safe watchkeeping in restricted visibility.
* Navigation and maintaining safe watchkeeping in heavy weather.
* Responsibilities of the watch officer.
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| Navigation with main engine or steering failure – training on INSS | 2 | * Navigation and maintaining safe watchkeeping with main engine failure.
* Navigation and maintaining safe watchkeeping with steering failure.
* Responsibilities of the watch officer.
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| MOB maneuvers – training on INSS | 2 | * Applying different “Man Overboard” maneuvers.
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| Final evaluation | 4 | * The final assessment consists in conducting safe navigation and watchkeeping on a specific scenario that includes response to an emergency situation.
* The student's decisions and actions will be evaluated.
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| **Total lecture WH** | **28** |  |
| **Additional hours (WH) to increase the learning outcomes** |
| Self-Study | 22 | **References:*** \*\*\*, COLREG
* \*\*\*, International Chamber of Shipping, *Bridge Procedures Guide*
* \*\*\*, NTPRO 5000 Navigational Bridge
* Cockcroft, A. ,N., Lameijer, J., N., *A Guide to the Collision Avoidance Rules*, Elsevier, Oxford, 2006
* *\*\*\*, Radar Navigation, Radar Plotting and Use of ARPA*, IMO, Londra, 1999
* Crenshaw, R.S.Jr, *Naval Shiphandling*, Annapolis, Maryland, Naval Institute Press, 1985
* Rowe, R.W., *The Shiphandler`s Guide,* The Nautical Institute, London,2000
* Herve Baudu, *Ship handling*, Dokmar Maritime Publishers, 2020
* Kobayashi, Hiroaki, *Techniques for Ship Handling and Bridge Team Management*, Routledge, 2020
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| **Total WH** | **50** | 28 residential hrs (10 teaching hrs + 14 practical exercises + 4 final assessment);22 self-study. |

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| **List of Abbreviations:** |
| RO………………………………………………………………………………………RomaniaRNA……………..…………………………..…Romanian Naval Academy “Mircea cel Bătrân”ECTS……………………………………...European Credit Transfer and Accumulation SystemNTPRO……………………………………….…………………..…...Navi Trainer ProfessionalCEFR……………………….……..Common European Framework of Reference for LanguagesB1…………………………………...…………………………….…Common Reference LevelsNATO……………………………….………………………North Atlantic Treaty OrganisationSTANAG…………………………………………………………....Standardization AgreementSMCP……………………………………….……...Standard Maritime Communication PhrasesCOLREG………………………………………………………….………Collision RegulationsECDIS……………………………………....Electronic Charts Display and Information SystemOOW………………………………………….………………………….…Officer of the WatchWH………………………………………………………………………………..Working HourINSS………………………………………..Integrated Navigation and Ship handling SimulatorARPA……………………………………………………...…Automatic Radar and Plotting AidGMDSS……………………………………………Global Maritime Distress and Safety SystemMOB…………………………………………………………………………....Man Overboard |