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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 | |
| 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. |
| **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. |
| **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. |
| Standard commands and communication on navigation bridge | 1 | * Standard communication on navigation bridge according to SMCP. |
| 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. |
| 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. |
| Anchoring – training on INSS | 2 | * Ship’s maneuver for anchoring. * Anchoring with a single anchor. * Safety precautions while anchored. * Anchor departure maneuver. |
| 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. |
| 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. |
| 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. |
| MOB maneuvers – training on INSS | 2 | * Applying different “Man Overboard” maneuvers. |
| 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. |
| **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 |
| **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………………………………………………………………………………………Romania  RNA……………..…………………………..…Romanian Naval Academy “Mircea cel Bătrân”  ECTS……………………………………...European Credit Transfer and Accumulation System  NTPRO……………………………………….…………………..…...Navi Trainer Professional  CEFR……………………….……..Common European Framework of Reference for Languages  B1…………………………………...…………………………….…Common Reference Levels  NATO……………………………….………………………North Atlantic Treaty Organisation  STANAG…………………………………………………………....Standardization Agreement  SMCP……………………………………….……...Standard Maritime Communication Phrases  COLREG………………………………………………………….………Collision Regulations  ECDIS……………………………………....Electronic Charts Display and Information System  OOW………………………………………….………………………….…Officer of the Watch  WH………………………………………………………………………………..Working Hour  INSS………………………………………..Integrated Navigation and Ship handling Simulator  ARPA……………………………………………………...…Automatic Radar and Plotting Aid  GMDSS……………………………………………Global Maritime Distress and Safety System  MOB…………………………………………………………………………....Man Overboard |