**MARITIME FACULTY**

**Maritime Transportation Engineering Department**

**Course Catalogue Form**

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| **Issue Date :** | **Revision Date:-** | **Revision Number: -** | **Faculty Board Decision Number:** |

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| **Course Name**: **Ship Handling & Manoeuvring** | | | | | **Degree:** Bachelor | | | | |
| **Code** | **Year/Semester** | **Local Credits** | **ECTS Credits** | | **Course Implementation, Hours/Week** | | | | |
| **Course** | | **Tutorial** | | **Workshop** |
| **MTE 005S** | **2/2 (Spring)** | **2** | **5** | | **1** | | - | | **1** |
| **Department** | | **Maritime Transportation Engineering** | | | | | | | |
| **Instructors** | |  | | | | | | | |
| **Contact Information** | |  | | | | | | | |
| **Office Hours** | |  | | | | | | | |
| **Web page** | | <https://www.marplat.eu> | | | | | | | |
| **Course Type** | | Elective | | | **Course Language** | | English | | |
| **Course Prerequisites** | | At discretion of each partner university | | | | | | | |
| **Course Category by Content, %** | | **Basic Sciences** | | **Engineering Science** | | **Engineering Design** | | **Humanities** | |
| 20 | | 50 | | - | | 30 | |
| **Course Description** | | This course forms part of the proposed Modular Framework for vocational and professional qualification based on a degree program in Maritime Transportation Engineering. This unit develops themes introduced in Navigational Watch and is about statutory and international requirements regarding navigation, navigational equipment, the qualifications and fitness of watch-keeping personnel, and the drills for emergencies. It also covers establishing watch-keeping arrangements and the procedures to follow when manoeuvring and handling the ship in all conditions. The Programme gives trainees in-depth expertise in managing a ship as a Deck Officer and ultimately as the captain of the vessel. The specific emphasis is upon ship handling procedures during manoeuvres. | | | | | | | |
| **Course Objectives** | | 1. Establish watch-keeping arrangements and operational and safety procedures to comply with statutory and international requirements regarding navigation  2. Explain internal and external factors affecting ship manoeuvre.  3. Explain ship manoeuvre in restricted waters and condensed traffic areas.  4. Explain manoeuvres for anchorage and boarding  5. Explain how to manoeuvre and handle the ship in emergencies. | | | | | | | |
| **Course Learning Outcomes** | | Trainees passing the course successfully will acquire knowledge and skills as listed below and will be able to.  1. Apply watch-keeping arrangements and operational and safety procedures to comply with statutory and international requirements regarding navigation  2. Estimate internal and external factors affecting ship manoeuvre and take necessary actions  3. Conduct ship manoeuvres in restricted waters and condensed traffic areas.  4. Apply manoeuvres for anchorage and boarding  5. Conduct manoeuvres and handle the ship in emergencies | | | | | | | |
| **Instructional Methods and Techniques** | | Lecturing and Simulator Studies | | | | | | | |
| **Tutorial Place** | | Classroom and Simulator | | | | | | | |
| **Co-term Condition** | | **---** | | | | | | | |
| **Textbook** | | Unit Handout, PowerPoint Slides  Bowditch, N. The American Practical Navigator. Defence Mapping Agency | | | | | | | |
| **Other References** | | 1. STCW Table A-II/1 Competence: 1.2. Maintain a Safe Navigational Watch, 1.9 Manoeuvre the ship 2. Bridge Procedures Guide 3. COLREG 4. IALA Buoyage, System | | | | | | | |
| **Homework & Projects** | | Each group will prepare simple passage planning which will be used during simulator exercise as directed by the lecturer. | | | | | | | |
| **Laboratory Work** | | Simulator Exercise | | | | | | | |
| **Computer Use** | | Bridge and ARPA Radar simulators and Stand Alone Computers simulator (for LO 4 and 5), PowerPoint for lecturing | | | | | | | |
| **Other Activities** | | 5 video tutorials shall be recorded in the simulator/lab from the selected practical training activities, Group Discussions | | | | | | | |

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| **Assessment Criteria** | **Activities** | **Quantity** | **Effects on Grading, %** |
| Attendance |  |  |
| Midterm | **1** | **30** |
| Quiz | **2** | **10** |
| Homework | **2** | **10** |
| Term Paper/Project |  |  |
| Laboratory Work |  |  |
| Practices |  |  |
| Tutorial |  |  |
| Seminar |  |  |
| Presentation |  |  |
| Field Study |  |  |
| Final Exam | **1** | **50** |
| **TOTAL** |  | **100** |
| Effects of Midterm on Grading, % |  | **50** |
| Effects of Final on Grading, % |  | **50** |
| **TOTAL** |  | **100** |

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| **ECTS/**  **WORKLOAD TABLE** | **Activities** | **Count** | **Hours** | **Total**  **Workload** |
| Lecture | **7** | **2** | **14** |
| Midterm | **1** | **10** | **10** |
| Quiz | **2** | **5** | **10** |
| Homework | **2** | **10** | **20** |
| Term Paper/Project |  |  |  |
| Laboratory Work |  |  |  |
| Practices | **7** | **5** | **35** |
| Tutorial | **7** | **2** | **14** |
| Seminar |  |  |  |
| Presentation | **5** | **2** | **10** |
| Field Study |  |  |  |
| Final Exam | **1** | **10** | **10** |
| **Total Workload** |  |  | **123** |
| **Total Workload/25** |  |  | **123/25** |
| **Course ECTS Credits** |  |  | **5** |

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| **Week** | **TOPICS** | **Course Outcomes** |
| **1** | **Establish watch-keeping arrangements and operational and safety procedures to comply with statutory and international requirements regarding navigation**   * Statutory and international requirements regarding navigation, navigational equipment and Select position fixing methods from those available * Selection of appropriate primary and secondary position fixing methods depending on circumstances and conditions. Intervals between fixes * Reliability of fixes. Use of systems for the continuous monitoring of positioning | I |
| **2** | **Establish watch-keeping arrangements and operational and safety procedures to comply with statutory and international requirements regarding navigation**   * Limitations and guidelines for passage planning and selection of route * Procedures and checks prior to arrival and before sailing and on approaching the areas of high traffic density or navigational hazards on route * Positive reporting of readiness regarding cargo security, watertight integrity, engines, communication equipment, navigation equipment | I |
| **3** | **Estimate internal and external factors affecting ship manoeuvre and take necessary actions**   * Manoeuvre and handle the ship * Ship design features affecting the manoeuvrability including:   Propulsion systems and configurations  Steering devices  Thrusters | II |
| **4** | **Estimate internal and external factors affecting ship manoeuvre and take necessary actions**   * Manoeuvring data for a range of ship types   Stopping distances and emergency stops  Turning circles  Speeds at various RPM, critical and minimum engine speeds | II |
| **5** | **Estimate internal and external factors affecting ship manoeuvre and take necessary actions (continue)**  - Manoeuvring data for a range of ship types  Stopping distances and emergency stops  Turning circles  Speeds at various RPM, critical and minimum engine speeds | II |
| **6** | **Estimate internal and external factors affecting ship manoeuvre and take necessary actions**   * Other factors affecting manoeuvrability include:   Trim, list, and draft  Shallow water effects  Bow and stern wave effects  Interaction  Weather and tidal conditions | II |
| **7** | **Explain ship manoeuvre in restricted waters and condensed traffic areas**   * The procedures relating to Manoeuvring in routine circumstances include:   Picking up and dropping a pilot  In the vicinity of offshore installations  Operating with tugs and small craft  Operating with helicopters  Heavy weather including a TRS | III |
| **8** | **Explain ship manoeuvre in restricted waters and condensed traffic areas**   * The procedures relating to manoeuvring in routine circumstances include:   Narrow channels  In or near ice  When affected by ice accretion  In or near VTS and TSS | III |
| **9** | **Explain manoeuvres for anchoring and berthing**   * Manoeuvring procedures when berthing and unberthing, in all conditions of wind, current and tidal stream, with and without tugs:   At the fixed pier, jetty, and single or multi buoy moorings  Entering and leaving locks and dry docks  Warping along jetties  Turning short round  Berthing alongside other vessels including for lightening operations | IV |
| **10** | **Explain manoeuvres for anchoring and berthing**   * The procedures when manoeuvring the vessel for anchoring In all conditions of wind, current and tidal stream   Single and multi-anchor operations  Use of anchor when berthing  Turning on an anchor  Dragging anchor and countermeasures  Weighing and leaving the anchorage | IV |
| **11** | **Conduct manoeuvres and handle the ship in emergencies**   * The procedures relating to manoeuvring in emergencies include:   Manoverboard  Launch and recovery of survival/rescue craft | V |
| **12** | **Conduct manoeuvres and handle the ship in emergencies**   * The procedures relating to manoeuvring in emergencies include:   Collision  Beaching | IV |
| **13** | **Conduct manoeuvres and handle the ship in emergencies**  The procedures relating to manoeuvring in emergencies include:  Loss of propulsion and/or steering  Emergency towing  Use of anchor in emergency | V |
| **14** | **Conduct manoeuvres and handle the ship in emergencies**  The procedures relating to manoeuvring in emergencies include:  SAR situations | v |

**Relationship between the Course and the Curricula of Maritime Transportation Engineering**

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|  | **Program Outcomes** | **Level of Contribution** | | |
| **1** | **2** | **3** |
| **a** | An ability to apply knowledge of mathematics, science, and engineering |  |  | X |
| **b** | An ability to design and conduct experiments, as well as to analyse and interpret data |  | X |  |
| **c** | An ability to design a system, component or process to meet desired needs |  | X |  |
| **d** | Ability to function on multi-disciplinary teams |  |  | X |
| **e** | An ability to identify, formulate, and solve engineering problems |  |  |  |
| **f** | An understanding of professional and ethical responsibility |  | X |  |
| **g** | An ability to communicate effectively | X |  |  |
| **h** | The broad education necessary to understand the impact of engineering solutions in a global and societal context |  |  |  |
| **i** | A recognition of the need for, and an ability to engage in life-long learning |  |  | X |
| **j** | A knowledge of contemporary issues |  |  | X |
| **k** | An ability to use the techniques, skills and modern engineering tools necessary for engineering practice |  |  |  |
| **l** | An ability to apply legal, societal and environmental knowledge in maritime transport and in all respective modes of transport operations. | X |  |  |
| **m** | An ability to interpret and analysis of the data regarding maritime management and operations, recognition and solution of problems for the decision-making process. | X |  |  |

**1: Small, 2: Partial, 3: Full**

**Program Outcomes & Course Outcomes Connectivity Matrix**

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| **Course**  **Outcomes** | **I** | **II** | **III** | **IV** | **V** |  |  |
| **Program Outcomes** |
| **a** |  |  |  |  |  |  |  |
| **b** |  |  |  |  |  |  |  |
| **c** |  |  |  |  |  |  |  |
| **d** |  |  |  |  |  |  |  |
| **e** |  |  |  |  |  |  |  |
| **f** |  |  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |
| **g** |  |  | |  |  |  | | --- | --- | --- | |  |  |  | |  |  |  |  |
| **h** |  |  |  |  |  |  |  |
| **i** |  |  |  |  |  |  |  |
| **j** |  |  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |
| **k** |  |  | |  |  | | --- | --- | |  |  | |  |  |  |  |
| **l** |  |  | |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | |  |  |  |  |
| **m** |  |  |  |  |  |  |  |

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| ***Prepared by*** | **Date** | Signature |