

# MART - MARINE TRANSPORTATION (MART)

## MART 103 Basic Safety and Lifeboatman Training

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Introduction to lifesaving equipment and apparatus, personal survival techniques, personal social and environmental responsibility and introductory medical first aid and CPR; practical lifeboat and survival training for the U.S. Coast Guard certification as life boatman. **Prerequisite:** Admission to license option program.

## MART 104 Maritime Shipboard Leadership

**Credits 3. 3 Lecture Hours.** Principles of leadership and management aboard merchant vessels; outline global and organizational duties and responsibilities of various departments found aboard merchant vessels; development of an understanding of social responsibilities of merchant marine ship's officer in regard to laws, regulations, and management; engagement in critical thinking of decision making during daily operations aboard merchant vessels. **Prerequisites:** Admission to deck license option program.

## MART 115 Seamanship I

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** (STCW). Theory and application of traditional seamanship, such as handling of natural fiber, synthetic and wire ropes, block and tackle and marlinespike; introduction to competencies of the deck department, including safe systems of work, inspections and maintenance, anchoring, mooring operations, ladder use, crane operations and duties of the lookout and quartermaster. **Prerequisite:** Admission to deck license option program.

## MART 130 Introduction to Maritime Law

**Credit 1. 1 Lecture Hour.** Introduction to the various statutes which govern the operation of watercraft subject to U.S. jurisdiction; emphasis on the International Navigational Rules Act of 1977 which implemented the 72COLREGS, the regulations resulting from the 1972 Convention on International Regulations for Preventing Collisions at Sea. **Prerequisites:** Admission to Deck License Option program; freshman classification.

## MART 200 Deck Sea Training I: Basic Communications, Navigation and Seamanship

**Credits 4. 4 Other Hours.** Practical application of shoreside studies aboard training ship during first training cruise; basic projects in communications, navigation, seamanship and rules of the road. **Prerequisites:** Grade of C or better in MART 103, MART 115 or MART 203, MART 201, and MART 204, or concurrent enrollment, or approval of MART department head; admission into Deck License Option Program.

## MART 201 Vessel Structure and Ship Knowledge

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Introduction to ship nomenclature and design, types and methods of ship construction, admeasurement and typical outfitting of various types of commercial vessels; classification societies, shipbuilding materials and methods, structural components and appurtenances of vessels. **Prerequisite:** Admission to deck license option program.

## MART 202 Ship Stability and Trim

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Principles of flotation and buoyancy; inclining experiments; free surface; transverse and longitudinal stability; trim; motion of ship in waves and seaways; application of stability, trim and stress tables; effect of center of gravity on seaworthiness and stability; actions in event of partial loss of intact buoyancy; fundamentals of watertight integrity. **Prerequisites:** Grade of C or better in MART 103, MART 115, MART 200, MART 201, and MART 204; and grade of D or better in PHYS 201, or approval of MART department head.

## MART 204 Terrestrial Navigation I

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** (STCW). Technical and practical concepts of terrestrial navigation; includes fundamentals of terrestrial coordinates, piloting, chart construction and development, aids to navigation, useful publications, compass corrections, and the use of sailings to determine rhumb line course and distances. **Prerequisites:** Admission to deck license option program; MATH 140.

## MART 205 Marine Surveying

**Credits 3. 3 Lecture Hours.** Fundamentals of marine surveying using the various types of maritime surveys; writing survey reports by meeting regulatory and industry standards for submission to maritime clients. **Prerequisites:** Grade of C or better in MART 115, MART 201, MART 202, MART 212, MART 215 (MART Majors); or MARA 205 (MARA Majors); or MARE 100 (MARR Majors); or approval of department head.

## MART 208 Maritime Meteorology

**Credits 3. 3 Lecture Hours.** Weather and forecasting techniques used by merchant mariners to determine cloud formation, precipitation, visibility, atmospheric pressure, fronts, ocean currents, weather and voyage routing and ship maneuvering based upon ship's technology and reporting equipment; ocean passage planning. **Prerequisites:** Grade of C or better in MART 225 and MART 300 or MART 350, or approval of department head.

## MART 210 Integrated Navigation I: RADAR/ARPA/ECDIS

**Credits 4. 3 Lecture Hours. 3 Lab Hours.** Theory, operation and interpretation of marine radar and automatic radar plotting aids (ARPA) and Electronic Chart Display Systems (ECDIS); introductory level watchkeeping, including applied use of radar, ARPA and ECDIS; U.S. Coast Guard Certification as "RADAR Observer" and Standards of Training, Certification and Watchkeeping (STCW) Radar and ARPA endorsements. **Prerequisites:** Grade of C or better in MART 200 and MART 225 or approval of department head.

## MART 212 Marine Dry Cargo Operations

**Credits 3. 3 Lecture Hours.** Modern dry cargo principles associated with handling of general cargo, refrigerated cargo, dangerous cargo, containers, roll-on roll-off; cargo ventilation, securing of cargo, stability and trim, cargo gear stresses and heavy lift operations; documentation required for cargo operations, along with practical stowage problems. **Prerequisites:** Grade of C or better in MART 200; concurrent enrollment in MART 202; or approval of department head.

## MART 213 Liquefied Gas Tankers

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Preparation as cargo officer for loading, discharging and transit of liquefied gas cargoes; emphasis on physical and chemical properties, operations, safety, firefighting and pollution prevention; completion required for registration in a MART 350 LNG commercial assignment. **Prerequisites:** MART majors - Grade of C or better in MART 200; or approval of department head; MARE majors - Grade of C or better in MARE 200 or MART 200, or approval of MART department head. Completion of this course is required for assignment to a MART 350 oil or chemical tanker commercial internship.

## MART 215 Seamanship II

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Topics include mechanical appliances aboard ship, accident prevention, vessel sanitation, vessel operations, United States marine inspection laws and regulations, communication, ship's business, and International Conventions and Codes. **Prerequisites:** Grade of C or better in MART 200 or approval of department head.

## MART 225 Terrestrial Navigation II

**Credits 3. 3 Lecture Hours.** (STCW). Builds upon MART 204; includes in-depth analysis of the earth's magnetic field, the ship's magnetic field, magnetic compass adjustment, and the sailings; introduction to propeller slip, ocean voyage planning, tide and tidal current theory, current sailing and major ocean circulation; discussion concerning the knowledge of the principles of magnetic compasses; required for Deck License Option. May be taken two times for credit. **Prerequisites:** Grade of C or better in MART 200 and MART 204; MATH 142, or approval of department head.

## MART 265 Introduction to Dynamic Positioning OSVDPA Phase I

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Basic understanding and operation of Dynamic Positioning technology; theory and nomenclature of Dynamic Positioning principles and equipment; practical training utilizing Class C simulators; operating, maneuvering and familiarization with simulated DP vessels; satisfactory completion of this course provides the student entry in to the Off Shore Service Vessel Dynamic Positioning Authority (OSVDPA) scheme. **Prerequisites:** Grade of C or better in MART 201, MART 204, and MART 200; sophomore or junior classification.

## MART 285 Directed Studies

**Credits 1 to 4. 1 to 4 Lecture Hours.** Directed study in problems in marine transportation not covered by other courses in the department. **Prerequisite:** Approval of department head.

## MART 289 Special Topics in Marine Transportation

**Credits 1 to 4. 1 to 4 Lecture Hours.** Study of selected topics in an identified area of marine transportation or nautical science. **Prerequisite:** Approval of department head.

## MART 300 Deck Sea Training II: Intermediate Communications, Navigation and Seamanship

**Credits 4. 4 Other Hours.** Practical application of shoreside studies aboard training ship during second training cruise; intermediate projects in communications, navigation, seamanship and rules of the road. **Prerequisites:** Grade of C or better in MART 200 or NAUT 200; grade of C or better in MART 202, MART 210 or MART 306, MART 212 or MART 312, MART 215 or MART 301, MART 303 and MART 321, or concurrent enrollment; junior or senior classification or approval of MART department head.

## MART 303 Celestial Navigation

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Full range of celestial navigation; survey of nautical astronomy, sight reduction, sextants, compass error determination, and solutions of the navigational triangle by various methods. **Prerequisites:** Grade of C or better in MART 200, MART 204, and MART 225, or approval of MART department head, and junior or senior classification.

## MART 307 Global Maritime Distress Safety System

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Requirements, regulations, equipment, principles and hands-on operating procedures of each Global Maritime Distress Safety System subsystem, including: SARTS, EPIRBs, NAVTEX, INMARSAT, SAFETYNET, VHF Survival Craft Transceivers, DSC, and HF Radio telephone; USCG and FCC certification as GMDSS Operator; minimum passing grade 75%. **Prerequisites:** Grade of C or better in MART 300 or MART 350.

## MART 308 Fast Rescue Craft

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Search and rescue techniques through fast rescue craft maneuvers and team management; description of various rescue craft and U.S. Coast Guard "Fast Rescue Craft" Standard of Watchkeeping endorsement. **Prerequisites:** MART majors - Grade of C or better in MART 200 or NAUT 200; grade of C or better in MART 103, MART 115 or MART 203, MART 201 and MART 204, or concurrent enrollment or approval of department head; MARE majors - Grade of C or better in MARE 200 or MARR 200; grade of C or better in MART 103.

## MART 310 Integrated Navigation II: Electronic Navigation

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Theory, operation and application of marine electronic navigation systems and aids; includes marine gyrocompass, vessel steering systems, hydrosonic systems, satellite navigation systems, AIS and VDR; intermediate level watchkeeping, including applied use of radar, ARPA and ECDIS. **Prerequisites:** Grade of C or better in MART 300 or MART 350; concurrent enrollment and grade of C or better in MART 321; or approval of department head.

## MART 311 Tug and Towing Operations

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Knowledge associated with the safe, efficient operation of towing vessels through classroom discussion and through underway, hands-on vessel training aboard the T/V Ranger and barges. **Prerequisites:** Grade of C or better in MART 200 or concurrent enrollment; junior or senior classification.

## MART 313 Marine Liquid Cargo Operations

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Principles and practice of bulk liquid, gas handling and carriage by water craft; theoretical and practical problems involved in loading, stowing and discharging of petroleum, chemical, elevated temperature and cryogenic cargoes; marine pollution abatement, personnel safety and firefighting techniques and systems; completion of course required for assignment to a MART 350 oil or chemical tanker commercial internship. **Prerequisites:** MART majors - Grade of C or better in MART 200; or approval of department head; MARE majors - Grade of C or better in MARE 200 or MART 200, or approval of MART department head.

## MART 315 Integrated Navigation III - Shiphandling for the Mariner

**Credits 2. 1 Lecture Hour. 3 Lab Hours.** Principles and methods of propulsion and steering of ships including hull, propeller and rudder design; ship handling at sea, in narrow channels, docking, undocking, mooring; study of the principles of hydrodynamics that govern ship movement. **Prerequisites:** Grade of C or better in MART 300 or MART 350, and in MART 321, or approval of MART department head.

## MART 321 Navigation Rules - International and Inland

**Credits 2. 2 Lecture Hours.** Purpose, application and knowledge of the International Regulations for Preventing Collision at Sea (COLREGS) and the Inland Navigation Rules and Regulations (Inland Rules). **Prerequisites:** Grade of C or better in MART 300 or MART 350; and grade of C or better in MART 130; or approval of department head.

## MART 350 Deck Sea Training II – Commercial Internship

**Credits 4. 4 Other Hours.** Practical application of shoreside studies aboard an assigned merchant vessel during second training cruise; intermediate projects in communications, navigation, seamanship, rules for the road and other subjects pertaining to the maritime industry. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisites:** Grade of C or better in MART 200 or NAUT 200, MART 202, MART 210 or MART 306, MART 212 or MART 312, MART 215 or MART 301, MART 303, and MART 321, or concurrent enrollment; junior or senior classification or approval of MART department head.

## MART 400 Deck Sea Training III: Advanced Communications, Navigation and Seamanship

**Credits 4. 4 Other Hours.** Practical application of shoreside studies aboard training ship during third training cruise; advanced projects in communications, navigation, seamanship and rules of the road. **Prerequisites:** Grade of C or better in MART 300, MART 350, or NAUT 300; grade of C or better in MART 307, MART 310 or MART 304, and MART 313 or MART 406, or concurrent enrollment; junior or senior classification or approval of MART department head.

## MART 401 Maritime Security

**Credits 3. 3 Lecture Hours.** Presentation and analysis of historical and current maritime security issues, leading to the understanding of, and proficiency in, security-related duties and responsibilities of licensed Deck Officers aboard ship and of maritime industry personnel ashore. **Prerequisites:** Grade of C or better in MART 300 or 350, senior classification, or approval of MART department head.

## MART 403 Advanced Topics in Shipboard Operations

**Credits 3. 3 Lecture Hours.** Advanced shipboard operations focuses on the expectations of the Third Mate, AGT, Oceans as a bridge watchstander or cargo officer on various types of vessels; emphasis on refreshing knowledge covering navigation, cargo handling and stowage, emergency response and onboard ship operations to prepare for immediate employment on board and for USCG examination; links to publications to help with additional knowledge and gain a deeper understanding of each topic; recommended to be taken concurrently with MART 404 during the semester prior to scheduling USCG Examinations. **Prerequisites:** MART 400, or concurrent enrollment or approval of department head.

## MART 404 The Navigator

**Credits 2. 1 Lecture Hour. 3 Lab Hours.** Final advanced navigation course, reviewing and testing in terrestrial, celestial, and electronic navigation in preparation for the Third Mate's License; registration requirement and only permitted in the term immediately prior to taking the USCG License exams. **Prerequisites:** Grade of C or better in MART 400; Senior classification, or approval of MART department head.

## MART 410 Bridge Resource Management

**Credits 2. 1 Lecture Hour. 3 Lab Hours.** Advanced level Bridge Watchkeeping; integration of navigation, communications and seamanship in Bridge Resource Management (BRM) training required under the International Convention on the Standards for Training and Certification of Watchkeepers, using simulator-based teaching techniques. **Prerequisites:** Grade of C or better in MART 300, MART 350, or NAUT 300; grade of C or better in MART 321, MART 210 or MART 306, and MART 310 or MART 304, or concurrent enrollment or approval of MART department head.

## MART 420 Advanced Towing

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Building upon the technical and practical concepts of basic towing covered in MART 311 by completing the required practical USCG Assessments to qualify for the Near Coastal/Oceans Towing Officer Assessment Record (TOAR); successful completion of the TOAR enables graduation with a Mate of Towing endorsement on the USCG Merchant Mariners Credential (MMC) - Third Mate Unlimited license. **Prerequisites:** Grade of C or better in MART 311; junior or senior classification.

## MART 430 Combined Basic & Advanced Training for Personnel on Vessels Subject to the IGF Code

**Credits 3. 3 Lecture Hours.** Combined Basic & Advanced Training for Personnel on Vessels Subject to the IGF Code. Safety duties associated with the care, use or in emergency response to the fuel on board ships subject to the IGF Code; care and use of fuels and fuel systems on ships subject to the IGF Code, the knowledge, understanding and proficiency (KUPs) required to demonstrate competence in safety for ships using gases or other low flashpoint fuels. **Prerequisites:** Grade of C or better in MART 200; grade of C or better in MART 213 or MART 313, or concurrent enrollment; or approval of department head.

## MART 484 Internship

**Credits 0 to 6. 0 to 6 Other Hours.** Special topics and problems in field and/or laboratory work suited to analysis by individuals or small groups concerning internships of marine transportation; may require a report describing techniques and results. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. **Prerequisites:** Junior or senior classification or approval of department head.

## MART 485 Directed Studies

**Credits 1 to 4. 1 to 4 Lecture Hours.** Directed study in problems in marine transportation not covered by other courses in the department. **Prerequisite:** Senior classification or approval of department head.

## MART 489 Special Topics in Marine Transportation

**Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.** Study of selected topics in an identified area of marine transportation or nautical science. **Prerequisites:** Approval of MART department head. Junior or senior classification or approval of instructor.

## MART 491 Research in Marine Transportation

**Credits 0 to 4. 0 to 4 Other Hours.** Research conducted under the direction of faculty member in Marine Transportation. May be repeated 2 times for credit. See academic advisor in department. Registration in multiple sections of this course is possible within a given semester provided that the per semester credit hour limit is not exceeded. **Prerequisites:** Junior or senior classification and approval of instructor.

## MART 498 Maritime Medical Care Provider

**Credits 2. 1 Lecture Hour. 3 Lab Hours.** Basic and advanced training for medical care of the sick and injured in the maritime environment; fundamentals of identification and assessment of and appropriate interventions for life-threats and other medical or trauma related conditions commonly encountered at sea; must complete course within one year of graduation. **Prerequisites:** MART majors - Grade of C or better in MART 300, MART 350, or NAUT 300, or concurrent enrollment or approval of MART department head; MARE majors - Grade of C or better in MARR 300, MARE 300, or MARE 350, or concurrent enrollment or approval of MART department head.