

# 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.

## 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 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 200 or NAUT 200, or concurrent enrollment; MART 103, MART 115, MART 201 and MART 204, or concurrent enrollment, or approval of MART department head.

## MART 204 Terrestrial Navigation

**Credits 3. 2 Lecture Hours. 2 Lab Hours.** Fundamentals of piloting, chart construction and development, aids to navigation, useful publications, principles of magnetism and the magnetic compass, great circle, Mercator and middle latitude sailing. **Prerequisites:** Admission to deck license option program; algebra and trigonometry recommended.

## 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 or MART 203, and MART 202 (MART majors); or MARA 205 (MARA majors); or MARR 101 (MARR majors); or MARE 100 (MARR-NLO majors); or approval of instructor.

## 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. **Prerequisite:** MART 204 or concurrent enrollment 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 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.

## MART 212 Marine Dry Cargo Operations

**Credits 3. 3 Lecture Hours.** Modern dry cargo principles associated with handling general cargo, bulk 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 cargo stowage problems. **Prerequisites:** 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.

## 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. **Prerequisites:** MART majors - Grade of C or better in MART 200 or NAUT 200, or concurrent enrollment or approval of MART department head; MARE majors - Grade of C or better in MARE 200 or MARR 200, or concurrent enrollment or approval of MART department head.

## MART 215 Seamanship II

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Topics include mechanical appliances aboard ship, accident prevention, vessel sanitation, vessel operations, marine inspection laws and regulations, communications, ship's business and International Conventions. **Prerequisites:** 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.

## 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 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 MART department head.

## MART 305 Ship Construction and Stability

**Credits 3. 2 Lecture Hours. 3 Lab Hours.** Shipbuilding nomenclature, dimensions, construction and classification. Classification societies, shipbuilding materials and methods, structural components. Ship's line drawing and form calculations; principles of flotation and buoyancy; inclining experiments; free surface; transverse stability; trim and longitudinal stability; motion of ships in waves, seaways and dynamic loads; ship's structure tests and propulsion; labs focus on manual and computer-based stability and trim calculations using standard industry-based software. **Prerequisites:** Junior or senior classification; MART 103, PHYS 201 or PHYS 218 or approval of instructor.

## 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 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.

## 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 2. 1 Lecture Hour. 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 200 or NAUT 200; grade of C or better in MART 204, MART 210 or MART 306, MART 303 and MART 321, or concurrent enrollment or approval of MART 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:** MART 300 or MART 350 or NAUT 300, or concurrent enrollment or approval of department head.

## 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. **Prerequisites:** MART majors - Grade of C or better in MART 200 or NAUT 200; 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, MART 103, or concurrent enrollment or approval of MART department head.

## MART 315 Seamanship III

**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:** MART 300 or MART 350 or NAUT 300, or concurrent enrollment or approval of instructor.

## 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 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.

## 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:** MART 300 or MART 350 or NAUT 300, or concurrent enrollment or approval of department head.

## MART 403 Advanced Topics in Shipboard Operations

**Credits 2. 2 Lecture Hours.** Advanced shipboard operations for the Third Mate, AGT, Oceans as a bridge watchstander or cargo officer on container vessels, bulk carriers, tankers or gas carriers; focus on all areas of concern to a watchstander. **Prerequisites:** MART 300 or MART 350 or NAUT 300, or concurrent enrollment or approval of department head.

## MART 404 The Navigator

**Credits 2. 1 Lecture Hour. 3 Lab Hours.** Intensive application all available means of navigation; including principles of electronic, terrestrial and celestial; demonstration of knowledge, understanding and proficiency in U.S. Coast Guard examination topics. **Prerequisites:** MART 300 or MART 350 or NAUT 300, or concurrent enrollment or approval of department head.

## MART 410 Integrated Navigation III: Bridge Watchstanding

**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 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

**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.