NAUTICAL SCIENCE (NAU) SOLANO CAMPUS

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NAU Courses

NAU 1102 Navigation I (3 units)
Term Typically Offered: F
Prerequisite: MTH 100 or MTH 1100. Concurrent: NAU 102L or NAU 1102L.

Introduces the basic tools and theory of piloting. Elements include basic coastal piloting, using terrestrial features and various plotting systems and techniques. Chart interpretation, plotting, and correction are emphasized, as are passage planning and navigation cross-checking. Emphasis is placed on neatness and precision and, toward the end of the course, speed in arriving at basic piloting solutions. Foundation upon which all subsequent navigation courses will build. 3 lectures. Formerly NAU 102 at Cal Maritime.

NAU 1102L Navigation I Laboratory (1 unit)
Term Typically Offered: F
Concurrent: NAU 102 or NAU 1102.

Navigation I laboratory. 1 laboratory. Formerly NAU 102L at Cal Maritime.

NAU 1103 Marine Transportation (3 units)
Term Typically Offered: F

Introduction to the field of commercial marine transportation. Broad understanding of the maritime industry and relates work and studies at Cal Maritime to the maritime world. American maritime history, governmental policies and regulations, vessel and stevedore company organization, principles of foreign trade, documentation, and the various related organizations, both public and private. 3 lectures. Formerly NAU 103 at Cal Maritime.

NAU 1104 Shipboard Security and Responsibility (1 unit)
Term Typically Offered: F, SP
CR/NC

Requirements of Vessel Personnel with Designated Security Duties (VPDSD) and Personal Safety and Social Responsibility (PSSR) that Seafarers must complete prior to being assigned responsibilities on board a vessel. Satisfies the requirements of STCW Table A-VI/6-1 Security Awareness, STCW Table A-VI/6-2 Seafarers with Designated Security Duties and STCW Table A-VI/I-4 Personal Safety and Social Responsibility. Credit/No Credit grading only. 1 lecture. Formerly NAU 104 at Cal Maritime.

NAU 1105 Ship Structure (2 units)
Term Typically Offered: F

Survey course of ship design and construction, emphasizing nomenclature and structural components, hull strength and vessel performance characteristics. 2 lectures. Formerly NAU 105 at Cal Maritime.

NAU 1108 Operational Command at Sea (2 units)
Term Typically Offered: F

Introduction to controlling the operation of the ship and care for persons on board at the operational level. Working knowledge of shipboard personnel management and training. A knowledge of related international maritime conventions and recommendations, and national legislation. Applying task and workload management. Effective knowledge of resource management and decision making techniques. 2 lectures. Formerly NAU 108 at Cal Maritime.

NAU 1109 Industrial Equipment and Safety (2 units)
Term Typically Offered: F

Prepares Marine Transportation majors to safely enter into learning and work assignments aboard the Training Ship. Basic safe work practices, personal protective equipment, hazard recognition, and regulatory requirements. 2 lectures. Formerly NAU 109 at Cal Maritime.

NAU 1110 Seamanship (3 units)
Term Typically Offered: SP
Prerequisite: NAU 105 or NAU 1105.

Basic seamanship, including sea terms and nomenclature, small boats, merchant ship characteristics, deck fittings, rigging, equipment, appliances, life-saving devices, and emergency procedures. Attention to the duties of a lookout/helmsman prepares students for duties on Sea Training I (Deck). 3 lectures. Formerly NAU 110 at Cal Maritime.

NAU 1120 Marine Engineering (3 units)
Term Typically Offered: SP
Concurrent: ENG 120L or ENG 1120L.

Shipboard engineering equipment, systems, and procedures associated with the propulsion and control of steam, diesel, and gas- turbine-powered merchant ships. Several auxiliary systems such as electrical distribution, deck machinery, cargo pumps/valves, and steering gears. 3 lectures. Formerly NAU 120 at Cal Maritime.

NAU 2205 Ship Stability (3 units)
Term Typically Offered: SP
2026-28 or later catalog: GE Area 2
2020-26 catalogs: GE Area B4
Prerequisite: MTH 100 or MTH 1100; NAU 105 or NAU 1105; PHY 100 or PHY 1100 with a grade of C- or better; and PHY 100L or PHY 1100L with a grade of C- or better.

Statics of naval architecture for ship hulls, Stability, trim, volume, and moment calculations by the ship's officer. Methods of calculation of intact, upright stability and trim, including free surface corrections. Stress calculations and damage stability. Use of software for vessel stability calculations. 3 lectures. Fulfills GE Area 2 with a grade of C- or better (GE Area B4 for students on the 2020-26 catalogs). Formerly NAU 205 at Cal Maritime.

NAU 2230 Rules of the Road (2 units)
Term Typically Offered: F
Prerequisite: Sophomore standing; and CRU 100 or CRU 1100.

Comprehensive study of the international rules of the road (COLREGS), including their origin, purpose, history, technical provisions, and application. Comparative study of both international and inland rules, along with their interpretation and practical application, as well as a study of case histories and legal interpretations resulting from collisions at sea. 2 lectures. Formerly NAU 230 at Cal Maritime.

NAU 2240 Electricity/Electronics (3 units)
Term Typically Offered: SP
Prerequisite: MTH 100 or MTH 1100; PHY 100 or PHY 1100; and PHY 100L or PHY 1100L. Concurrent: NAU 240L or NAU 2240L.

Theory of alternating current electricity, circuits, generators, motors, and semiconductors. Shipboard systems, using STCW guidelines, to include regulatory and classification society requirements. Radio communication theory is covered to the depth necessary for Global Maritime Distress Safety Systems. 3 lectures. Formerly NAU 240 at Cal Maritime.

NAU 2240L Electricity/Electronics Laboratory (1 unit)
Term Typically Offered: SP
Prerequisite: MTH 100 or MTH 1100; PHY 100 or PHY 1100; and PHY 100L or PHY 1100L. Concurrent: NAU 240 or NAU 2240.

Hands-on experience in the use of electrical/electronic test equipment such as multimeters and oscilloscopes, the reading and interpretation of schematics, and the use of technical manuals for trouble-shooting and for routine electrical/electronic maintenance. 1 laboratory. Formerly NAU 240L at Cal Maritime.

NAU 3300 Celestial Navigation (3 units)
Term Typically Offered: SP
Prerequisite: NAU 102 or NAU 102; and NAU 102L or NAU 1102L. Concurrent: NAU 300L or NAU 3300L.

Celestial navigation, including sun, moon, stars, and planets. Use of modern sight reduction methods by table and calculator. Emphasis is placed on USCG/STCW requirements. 3 lectures. Formerly NAU 300 at Cal Maritime.

NAU 3300L Celestial Navigation Laboratory (1 unit)
Term Typically Offered: SP
Concurrent: NAU 300 or NAU 3300.

Celestial navigation laboratory, including sun, moon, stars, and planets. Use of modern sight reduction methods by table and calculator. Emphasis is placed on USCG/STCW requirements. 1 laborartory. Formerly NAU 300L at Cal Maritime.

NAU 3302 Advanced Navigation (2 units)
Term Typically Offered: F
Prerequisite: NAU 102 or NAU 102; and NAU 102L or NAU 102L. Concurrent: NAU 302L or NAU 3302L.

Fundamental principles of electronic navigation systems and basic computational forms of the sailings will be covered. Sailings, hyperbolic and radio navigation systems, and Global Positioning System. Integrated Bridge Systems. The concept of navigational crosschecking will permeate all subjects. Emphasis is placed on accuracy, neatness, precision and the good judgment required of a modern merchant mariner. 2 lectures. Formerly NAU 302 at Cal Maritime.

NAU 3302L Advanced Navigation Laboratory (1 unit)
Term Typically Offered: F
Concurrent: NAU 302 or NAU 3302.

Fundamental principles of electronic navigation systems and basic computational forms of the sailings will be covered. Sailings, hyperbolic and radio navigation systems, and Global Positioning System. Integrated Bridge Systems. The concept of navigational crosschecking will permeate all subjects. Emphasis is placed on accuracy, neatness, precision and the good judgment required of a modern merchant mariner. 1 laboratory. Formerly NAU 302L at Cal Maritime.

NAU 3320 Tank Vessel Operations (3 units)
Term Typically Offered: F
Prerequisite: One of the following: NAU 105, NAU 1105, ENG 430, or ENG 4430.

Ocean transportation of bulk liquid cargo. Tanker construction and design, petroleum cargo characteristics, oil cargo planning and operations, ballasting, pollution control, safety, and U.S. Coast Guard regulations. 3 lectures. Formerly NAU 320 at Cal Maritime.

NAU 3325 Port and Cargo Operations (3 units)
Term Typically Offered: SP
Prerequisite: NAU 105 or NAU 1105; DL 120 or DL 1120; and NAU 205 or NAU 2205.

Overview of port operations, including containers/cargo, policies, management, competition, tariffs and regulatory affairs. Introduction to marine terminals, including characteristics/types, capacity, handling equipment/technology, labor/management, safety/security, operations and harbor drayage. Shipping topics include the role of the ship's officer in relation to cargo handling. Stowage of various commodities, cargo plans and planning of stowage, inspections and trim and stability considerations. 3 lectures. Formerly NAU 325 at Cal Maritime.

NAU 3330 Meteorology (3 units)
Term Typically Offered: F
2026-28 or later: Upper-Div GE Area 2/5
2020-26 catalogs: Upper-Div GE Area B
Prerequisite: MTH 100 or MTH 1100; PHY 100 or PHY 1100; and PHY 100L or PHY 1100L.

Principles of weather observations and reports; weather forecasting and the development of weather maps; and the study of air masses, fronts, winds and currents. 3 lectures. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly NAU 330 at Cal Maritime.

NAU 3335 Electronic Chart Display and Information Systems (2 units)
Term Typically Offered: F, SP
Prerequisite: DL 225 or DL 2225; DL 225L or DL 2225L; MTH 100 or MTH 1100; NAU 102 or NAU 1102; and NAU 102L or NAU 1102L. Concurrent: NAU 335L or NAU 3335L. Corequisite: NAU 302 or NAU 3302; and NAU 302L or NAU 3302L.

Theory and practical use of Electronic Chart Display and Information Systems (ECDIS). Raster and vector charts, use of ECDIS in voyage planning and recording, integration with other bridge systems like Raster, ARPA, and AIS, latest developments in ECDIS design and implementation, and current IMO regulations governing use of ECDIS. 2 lectures. Formerly NAU 335 at Cal Maritime.

NAU 3335L Electronic Chart Display and Information Systems Laboratory (1 unit)
Term Typically Offered: F, SP
CR/NC
Prerequisite: DL 225 or DL 2225; DL 225L or DL 2225L; MTH 100 or MTH 1100; NAU 102 or NAU 1102; and NAU 102L or NAU 1102L. Concurrent: NAU 335 or NAU 3335. Corequisite: NAU 302 or NAU 3302; and NAU 302L or NAU 3302L.

Laboratory provides the practical application of skills learned in using electronic charting display and navigational equipment. 1 laboratory. Formerly NAU 335L at Cal Maritime.

NAU 3390 Independent Study (1-3 units)
Term Typically Offered: F, SP, SU
Prerequisite: Consent of the department.

Substantial study above and beyond the regular offerings in the Academy catalog. Arrangement needed with an Academy faculty member to be the Independent Study Advisor. Approved application for Independent Study must be on file. Formerly NAU 390 at Cal Maritime.

NAU 3395 Special Topics (1-3 units)
Term Typically Offered: F, SP, SU
Prerequisite: Consent of instructor.

Special topic courses are intended to enables each department to offer an elective course of study when faculty scholarship activities, the expertise of visiting faculty, or off-campus educational programs may afford a unique and worthwhile learning experience. 1 to 3 lectures. Formerly NAU 395 at Cal Maritime.

NAU 4410 License Seminar (1 unit)
Term Typically Offered: F
Prerequisite: Senior Standing: NAU 205 or NAU 2205; NAU 300 or NAU 3300; NAU 300L or NAU 3300L; NAU 320 or NAU 3320; and NAU 325 or NAU 3325. Concurrent: NAU 410L or NAU 4410L. Corequisite: NAU 302 or NAU 3302; and NAU 302L or NAU 3302L.

Comprehensive course is designed to prepare candidates for the USCG OICNW exams. Synthesize and apply myriad professional subjects learned in previous subject-specific courses, and perform with both precision and accuracy under time pressure. New topics and material pertinent only to USCG testing will be covered, and advanced material will be reviewed in the context of USCG requirements (which differ from practical requirements), and theories and methods of knowledge retention and test-taking strategies will be explored. Rules of the Road, navigation, seamanship, deck safety, environmental protection, cargo, watchstanding and other professional subjects are covered as they pertain specifically to USCG licensing. Course subject matter and strategy necessarily change as the USCG exams continually evolve. 1 seminar. Formely NAU 410 at Cal Maritime.

NAU 4410L License Seminar Laboratory (1 unit)
Term Typically Offered: F
Prerequisite: Senior Standing: NAU 205 or NAU 2205; NAU 300 or NAU 3300; NAU 300L or NAU 3300L; NAU 320 or NAU 3320; and NAU 325 or NAU 3325. Concurrent: NAU 410 or NAU 4410. Corequisite: NAU 302 or NAU 3302; and NAU 302L or NAU 3302L.

Comprehensive course is designed to prepare candidates for the USCG OICNW exams. Synthesize and apply myriad professional subjects learned in previous subject-specific courses, and perform with both precision and accuracy under time pressure. New topics and material pertinent only to USCG testing will be covered, and advanced material will be reviewed in the context of USCG requirements (which differ from practical requirements), and theories and methods of knowledge retention and test-taking strategies will be explored. Rules of the Road, navigation, seamanship, deck safety, environmental protection, cargo, watchstanding and other professional subjects are covered as they pertain specifically to USCG licensing. Course subject matter and strategy necessarily change as the USCG exams continually evolve. 1 seminar. Formely NAU 410L at Cal Maritime.

NAU 4415 Transportation Security (2 units)
Term Typically Offered: F
Prerequisite: CRU 200 or CRU 2200; and NAU 325 or NAU 3325.

International Ship and Port Security Code (ISPS) and domestic maritime security policies and requirements as outlined in the Code of Federal Regulations and USCG NVICs. Understand port and ship vulnerability assessments, implement security plans, understand the various levels of shipboard security responsibilities, and security administration. Explore elements of chemical, biological and radiological defense (CBRD), and crisis management. Completion of this course will earn industry-recognized security certificates. 2 lectures. Formerly NAU 415 at Cal Maritime.

NAU 4420 Maritime Casualty Seminar (3 units)
Term Typically Offered: SP
Prerequisite: One of the following: CRU 200, CRU 2200, CRU 250, CRU 2250, CEP 250, CEP 2250, CEP 270, CEP 2270, CEP 300, or CEP 3300.

Commercial maritime casualties that impacted domestic regulatory schemes and international conventions. Focus will be on the human element, and how diverse cultures, languages, and management styles aboard international commercial vessels impact human interactions with each other, with equipment, within watch teams, and with the vessels and agencies of other nations. 3 lectures. Formerly NAU 420 at Cal Maritime.

NAU 4430 Liquefied Gas Cargos (2 units)
Term Typically Offered: SP
Prerequisite: NAU 320 or NAU 3320; or CRU 350 or CRU 3350, and ENG 430 or ENG 4430. Concurrent: NAU 430L or NAU 4430L.

Ocean transportation of liquefied gas cargo's, which includes liquefied natural gas (LNG) and liquefied petroleum gas (LPG). Areas covered include chemistry and physics, hazards, rules and regulations, ship design and cargo containment, cargo handling systems, safety, cargo handling operations, ship/shore interface, and emergency operations. In conjunction with the Liquid Gas Cargo Simulator, will prepare to be a junior officer onboard liquid gas carriers. 2 lectures. Formerly NAU 430 at Cal Maritime.

NAU 4430L Liquefied Gas Cargos Laboratory (1 unit)
Term Typically Offered: SP
CR/NC
Prerequisite: NAU 320 or NAU 3320; or CRU 350 or CRU 3350, and ENG 430 or ENG 4430. Concurrent: NAU 430 or NAU 4430.

Use of simulation to conduct cargo operations and gain system understanding of liquified gas carriers. 1 laboratroy. Formerly NAU 430L at Cal Maritime.

NAU 4435 Marine Transportation: People, Planet and the Profession (3 units)
Term Typically Offered: SP
Prerequisite: Senior standing, DL 300, or DL 3300.

Marine transportation effects the environment and society, not to mention the people who work in the industry. To try to minimize such effects, international governmental, non-governmental, and trade organization have worked together to address a wide array of environmental and social issues. Examine these issues in depth, and apply ethical standards to real-world problems. Personal examination to understand their values, goals, and role in the marine transportation industry. 3 lectures. Formerly NAU 435 at Cal Maritime.

NAU 4440 Dynamic Positioning Induction (3 units)
Term Typically Offered: F, SP
Prerequisite: NAU 102 or NAU 1102; and NAU 230 or NAU 2230. Concurrent: DL 240 or DL 2240; and DL 225 or DL 2225.

Provides basic knowledge about Dynamic Positioning Systems, function and operation, practical use, and limitations. Outlines basic knowledge about sensors and Position Reference Systems, alarm and messages, consequence analysis and rules and regulations. Meets the Nautical Institute DP Operator training scheme requirements to obtain the official DP Operator Certificate/Logbook. 3 lectures. Formerly NAU 440 at Cal Maritime.

NAU 4450 Maritime Informatics (3 units)
Term Typically Offered: SP
Prerequisite: One of the following: MTH 100, MTH 1100, MTH 101, or MTH 1101.

Introduction to the use of information systems, data sharing, and data analytics within maritime transportation. General knowledge of how to work with maritime data programmatically to prepare for interdisciplinary work with data scientists in the growing field of maritime informatics. 3 lectures. Formerly NAU 450 at Cal Maritime.