

COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENTAL SCIENCES

<https://cafes.calpoly.edu>

Academic Programs

The College of Agriculture, Food and Environmental Sciences (CAFES) prepares students to lead and innovate across the interconnected fields of agriculture, food, life and environmental sciences. Our programs reflect the evolving landscape of these industries and the broad range of skills needed to address the challenges and opportunities of a changing world.

Mission Statement

The College of Agriculture, Food and Environmental Sciences fosters teaching, scholarship and service in a Learn by Doing environment where students, faculty and staff are partners in discovery.

Learning Outcomes

All students who complete a program in CAFES should be able to:

- Demonstrate expertise in and the use of technology in their respective discipline.
- Demonstrate effective oral and written communication skills.
- Make choices based on an understanding of personal and professional ethics and respect for diversity of people and ideas.
- Recognize leadership principles and skills.
- Evaluate and solve problems using critical thinking.
- Demonstrate an appreciation for sustainability and global perspectives.

Student Life

At Cal Poly, CAFES students dive into their major from day one. Early, hands-on coursework connects classroom learning to real-world applications, linking science, technology and the liberal arts to the challenges and opportunities of modern agriculture, food and environmental systems. This early start also helps students discover their strengths, shape their goals, and confirm their career path.

Collaboration is central to the CAFES experience. Students work closely with expert faculty and peers who share their passion for solving real-world problems. Through strong partnerships with industry, government and community organizations, students gain practical experience through internships, enterprise projects, study abroad and research opportunities.

Our faculty are more than educators - they are mentors, innovators and partners in discovery. They take pride in helping students grow as leaders ready to make an impact.

College Advising

Academic Advising is provided to all students through the CAFES Advising Center and their major department in the college. This includes: Professional Academic Advisors, Faculty Advisors, and Peer Advisors. Academic Advising is designed to help students reach their educational and career goals; it is a shared task between an advisor and a student. Students are encouraged to meet with their advisors quarterly to plan their schedule, review curriculum information, discuss career opportunities, and receive information on internships, enterprise projects and cooperative learning. The CAFES Advising Center provides guidance on university and college policies and procedures including course transfers, substitutions and other general information.

Peer Academic Mentoring

The Multicultural Agriculture Program (MAP) is available to provide academic and personal support to undergraduate students of all cultural backgrounds in the College of Agriculture, Food, and Environmental Sciences with a peer-based structure that cultivates student achievement and a sense of community.

College Clubs and Organizations

Student clubs are active in every department. The College's 52-plus clubs, many of which are affiliated with national professional organizations, provide an excellent forum for student and faculty interactions. Active club members may practice leadership skills, and attend national, state and local professional meetings, as well as participate in a variety of professional and social events.

Agricultural Lands and Outdoor Laboratories

Cal Poly's College of Agriculture, Food and Environmental Sciences (CAFES) offers students unparalleled access to nearly 6,000 acres of on-campus land dedicated to agricultural production, processing and research. These living laboratories give students direct, hands-on experience that enhances and expands upon classroom learning - building a foundation of discovery.

The university's extensive specialized teaching facilities include a winery and dairy; beef, horse, sheep, swine, and poultry centers; horse training and show arenas; an animal nutrition center; meat processing center; veterinary clinic; and rodeo grounds. Additional resources include rangeland, irrigated and dryland crop fields, orchards, vineyards, an irrigation demonstration field, erosion research site, large-scale composting operation, hoop houses, greenhouses, nurseries, and an arboretum. CAFES also maintains eleven acres of certified organic farmland supporting its thriving organic agriculture program.

Other Labs and Special Facilities

Specialized teaching and research facilities include the Boswell Ag Tech center which serves as a hub for innovation in food safety, culinary development, sensory evaluation and nutrition, as well as experience innovation; the Oppenheimer Family Equine Center which includes a riding arena, and foaling, stallion and hay barn; the JUSTIN and J. LOHR Center for Wine and Viticulture which includes a 15,000 square foot working winery and viticulture and enology labs; and more. Other laboratories are dedicated to soil, plant and water testing, engineering testing and manufacturing shops, complete food processing units for dairy products, meats, fruit and vegetables, four biotechnology and embryology laboratories. In the coming year a new Plant Sciences Lab Building and Animal Health Center will open, providing additional opportunities for discovery.

Santa Cruz County Properties

The 3,200 acre Swanton Pacific Ranch in Santa Cruz County was generously donated by Al Smith, alumnus of Cal Poly's former Crop Science Department. This property provides students with an opportunity to live and work on a commercial farm with forestry, watershed and rangeland management, cattle and organic crop production activities. The lands also support a wide range of research topics for undergraduate and graduate students.

Enterprise Projects/Experiential Learning

Cal Poly students have the unique opportunity to gain hands-on experience in business enterprises or through work experience on campus.

These experiences serve to strengthen students' academic studies, while at the same time providing the knowledge and skills that lead to a better understanding and appreciation for important production, managerial and marketing challenges employees face in the workplace. Students participating in enterprise projects earn units that are reflected on their Cal Poly transcript.

Enterprise projects are available in various departments in the college. In some projects, profits from enterprises will be shared among participating students, with a percentage also going to the department coordinating the activity. If an enterprise loses money, the department conducting the project absorbs the loss. This financial, risk-free opportunity provides students with high impact learning experiences.

Research Programs

The college sponsors a 10-week Summer Undergraduate Research Program (SURP) to provide students the opportunity to experience undergraduate research projects on topics related to their programs or in which they have interest. Students work closely with faculty research leads and receive a stipend. The program is open to all undergraduate students in the college.

Courses

The courses offered in each undergraduate curriculum may be grouped into four areas:

Major

The major courses include a required cluster of courses in which the student expects to graduate. These courses constitute the core of specific preparation for the student's major field.

General Education

Courses are selected from the physical and life sciences, mathematics, communications, arts and humanities, and social, political, and economic institutions. These courses furnish the student with background and support for their academic program as well as providing cultural background for informed and active engagement in a complex global community.

Support

The support courses draw from courses in agriculture, life sciences, and closely allied fields which support and supplement the block of courses constituting the student's major.

Free Electives

Course selection from electives is designed to provide freedom for students to pursue interests of their choosing in any university department.

Recommended Preparation

In addition to pursuing the CSU mandated and Cal Poly recommended entrance requirements, high school and community college students are encouraged to participate in co-curricular activities as part of their preparation for admission to majors in Cal Poly's College of Agriculture, Food and Environmental Sciences. These activities could include, but are not limited to, FFA, 4-H, leadership roles in school clubs, meaningful work experience and community organizations.

Undergraduate Programs

- Agricultural Business (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agribusiness/agricultural-business-bs/>)
- Agricultural Communication (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-education-communication/agricultural-communication-bs/>)
- Agricultural Science (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-education-communication/agricultural-science-bs/>)
- Agricultural Systems Management (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/bioresource-agricultural-engineering/agricultural-systems-management-bs/>)
- Animal Science (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/animal-science/animal-science-bs/>)
- BioResource and Agricultural Engineering (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/bioresource-agricultural-engineering/bioresource-agricultural-engineering-bs/>)
- Dairy Science (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/animal-science/dairy-science-bs/>)
- Environmental Earth and Soil Sciences (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/environmental-earth-soil-sciences-bs/>)
- Environmental Management and Protection (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/environmental-management-protection-bs/>)
- Experience and Event Management (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/experience-industry-management/experience-and-event-management-bs/>)
- Food Science (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/food-science-bs/>)
- Forest and Fire Sciences (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/forest-fire-sciences-bs/>)
- Marine Transportation (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/marine-transportation-bs/>)
- Nutrition (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/nutrition-bs/>)
- Plant Sciences (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/plant-sciences-bs/>)
- Wine and Viticulture (BS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/wine-viticulture/wine-viticulture-bs/>)

Undergraduate Minors

- Agribusiness Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agribusiness/agribusiness-minor/>)
- Agricultural Communication Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-communication-minor/>)
- Agricultural Education Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-education-communication/agricultural-education-minor/>)
- Agricultural Leadership Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-leadership-minor/>)
- Crop Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/crop-science-minor/>)
- Dairy Industries Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/animal-science/dairy-industries-minor/>)
- Environmental Soil Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/environmental-soil-science-minor/>)
- Event Planning and Experience Management Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/experience-industry-management/event-planning-experience-management-minor/>)
- Fire Ecology and Wildfire Hazard Planning Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/fire-ecology-wildfire-hazard-planning-minor/>)
- Food Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/food-science-minor/>)
- Fruit Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/fruit-science-minor/>)
- Geographic Information Systems for Agriculture Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/geographic-information-systems-for-agriculture-minor/>)
- Horticulture Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/horticulture-minor/>)
- Indigenous Principles in Natural Resources and the Environment Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/indigenous-principles-natural-resources-and-the-environment-minor/>)
- Land Rehabilitation and Restoration Ecology Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/land-rehabilitation-restoration-ecology-minor/>)
- Meat Science and Processing Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/animal-science/meat-science-processing-minor/>)
- Military Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/military-science/minor/>)
- Naval Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/naval-science-minor/>)
- Nutrition Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/nutrition-minor/>)
- Plant Protection Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/plant-protection-minor/>)

- Rangeland Ecology and Management Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/animal-science/rangeland-ecology-management-minor/>)
- Sustainable Agriculture Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/plant-sciences/sustainable-agriculture-minor/>)
- Water Science Minor (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/water-science-minor/>)

Graduate Programs

- Agricultural Education (MAGEd) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agricultural-education-communication/agricultural-education-maged/>)
- Agriculture, Specialization in Animal Science (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-animal-science-ms/>)
- Agriculture, Specialization in BioResource and Agricultural Systems (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-bioresource-agricultural-systems-ms/>)
- Agriculture, Specialization in Crop Science (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-crop-science-ms/>)
- Agriculture, Specialization in Dairy Products Technology (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-dairy-products-technology-ms/>)
- Agriculture, Specialization in Environmental Horticultural Science (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-environmental-horticultural-science-ms/>)
- Agriculture, Specialization in Irrigation (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-irrigation-ms/>)
- Agriculture, Specialization in Plant Protection Science (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-plant-protection-science-ms/>)
- Agriculture, Specialization in Water Engineering (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/agriculture-water-engineering-ms/>)
- Environmental Sciences and Management (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/natural-resources-management-environmental-sciences/environmental-sciences-management-ms/>)
- Food Science (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/food-science-ms/>)
- Nutrition (MS) (<https://catalog.calpoly.edu/agriculture-food-environmental-sciences/food-science-nutrition/nutrition-ms/>)

AG Courses

AG 2200 Special Problems for Undergraduates (1-3 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Consent of rodeo coach or instructor.

Individual investigation, research, studies, or surveys of special problems. Repeatable to 6 units. Credit can only be used to satisfy free electives. Credit/No Credit grading only. Formerly AG 200.

AG 2210 Agricultural Leadership Experience (1 unit)

Term Typically Offered: F, SP

Participation in activities promoting personal growth and leadership development, including team work, cooperation, communication, problem solving, time management, and organization. Support CAFES in recruitment, public awareness, educational programs, campus tours, fundraising, and youth career development events. The Class Schedule will list subtitle selected. Repeatable up to 2 units. 1 activity. Formerly AG 210.

AG 2212 Leadership Experience: Cal Poly Rodeo (3 units)

Term Typically Offered: SP

Introduction to practical application of project and event management under the Rodeo program. Event planning, cooperation, communication, problem solving, teamwork, and organizational skills are emphasized. Participation in activities and events to support the Rodeo, focusing on Poly Royal Rodeo. 1 lecture, 2 activities.

AG 2243 Practical Applications in Rodeo (2 units)

Term Typically Offered: F, SP

CR/NC

Foundations and beginning skills in the event areas of rodeo. Safety, animal welfare, saddle bronc, bareback, and bull riding. Calf, team, and breakaway roping. Steer wrestling, goat tying, and barrel racing. Credit/No Credit grading only. 2 activities.

AG 3315 Principles of Organic Crop Production (3 units)

Term Typically Offered: SP

2026-28 or later: Upper-Div GE Area 2/5

2020-26 catalogs: Upper-Div GE Area B

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); and completion of GE Area 5 (GE Areas B1 to B3 for the 2020-26 catalogs).

Origins, application, regulation, and technology of organic crop production. Theoretical and practical issues surrounding organic crop production from a cross-disciplinary perspective. History of the organic movement, current regulation and certification, and field management practices and technologies. Features industry guest lecturers. Field trip required. 2 lectures, 1 activity. Crosslisted as AG/PLSC 3315. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly AG/PLSC 315.

AG 3330 Cal Poly Land: Nature, Technology, and Society (3 units)

Term Typically Offered: SP

2026-28 or later: Upper-Div GE Area 2/5

2020-26 catalogs: Upper-Div GE Area B

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); completion of GE Area 5A (GE Area B1 for the 2020-26 catalogs); and completion of GE Area 5B (GE Area B2 for the 2020-26 catalogs).

Scientific investigation of the natural features of the Cal Poly landscape and their transformations by land management technology. Environmental, economic, social, and political effects of agriculture, resource extraction, construction technology. Educational, land-use, long term planning issues. Field trip required. 3 lectures. Crosslisted as AG/ISLA/SCM/UNIV 3330. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly AG/ISLA/SCM/UNIV 330.

AG 3339 Internship in Agriculture (1-12 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Consent of instructor.

Career experience with an approved agricultural firm. Apply and develop production and managerial skills and abilities. Repeatable up to 12 units. Credit/No Credit grading only. Formerly AG 339.

AG 3350 The Global Environment (3 units)

Term Typically Offered: F, SP

2026-28 or later: Upper-Div GE Area 2/5

2020-26 catalogs: Upper-Div GE Area B

Sustainability Focused

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); and completion of GE Area 5 (GE Areas B1 to B3 for the 2020-26 catalogs).

Interdisciplinary investigation of how human activities impact the Earth's environment on a global scale. Examination of population, resource use, climate change, and biodiversity from scientific/technical and social/economic/ historical/political perspectives. Use of remote sensing maps. Sustainable solutions. Course may be offered in classroom-based, online, or hybrid format. 3 lectures. Crosslisted as AG/EDES/ENGR/GEOG/ISLA/SCM/UNIV 3350. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly AG/EDES/ENGR/GEOG/ISLA/SCM/UNIV 350.

AG 3360 Holistic Management (3 units)

Term Typically Offered: SP

2026-28 or later: Upper-Div GE Area 2/5

2020-26 catalogs: Upper-Div GE Area B

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs); and completion of GE Area 5 (GE Areas B1 to B3 for the 2020-26 catalogs).

Application of holistic management, a goal-oriented, value-driven framework for making ecologically, economically, and socially sound decisions. Holistic approach to management, especially of land-based resources, aimed toward greater biodiversity and sustainability. Field trip may be required. 2 lectures, 1 laboratory. Crosslisted as AG/ASCI 3360. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly AG/ASCI 360.

AG 4400 Special Problems for Advanced Undergraduates (1-3 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Consent of instructor or rodeo coach.

Individual investigation, research, studies, or surveys of special problems. Repeatable up to 3 units. Credit/No Credit grading only. Formerly AG 400.

AG 4410 Advanced Agricultural Leadership Experience (1 unit)

Term Typically Offered: F, SP

Prerequisite: Consent of instructor. Recommended: AG 210 or AG 2210.

Participation in activities promoting personal growth and development from a leadership perspective. Attention on recruiting, organizing, and engaging volunteers. Team building, cooperation, communication, problem solving, time management, and organization skills are emphasized. Guiding students in serving others in major student activities. Class schedule will list subtitle selected. Repeatable up to 2 units. 1 activity. Formerly AG 410.

AG 4452 Leadership Seminar on Issues Affecting California Agriculture, Food Systems, and Natural Resources (4 units)

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Interactive seminars with speakers from government and industry covering policy and regulations affecting California agriculture, food systems and natural resources. Contemporary challenges in California agriculture, food systems, and natural resources. Field trip required. 4 seminars. Formerly AG 452.

AG 4485 Cooperative Education Experience (1-9 units)

Term Typically Offered: TBD

CR/NC

Prerequisite: Sophomore standing and consent of instructor.

Part-time work experience in business, industry, government, and other areas of career interest. Positions are paid, usually require relocation, and extend beyond one term. Formal report and evaluation by work supervisor required. Repeatable up to 9 units. Credit/No Credit grading only. Formerly AG 485.

AG 4495 Cooperative Education Experience (1-12 units)

Term Typically Offered: TBD

CR/NC

Prerequisite: Sophomore standing and consent of instructor.

Full-time work experience in business, industry, government, and other areas of career interest. Positions are paid, usually require relocation, and extend beyond one term. Formal report and evaluation by work supervisor required. Repeatable up to 12 units. Credit/No Credit grading only. Formerly AG 495.

AG 5500 Individual Study (1-3 units)

Term Typically Offered: F, SP

Prerequisite: Consent of department head.

Advanced independent study planned and completed under the direction of a member of the college faculty. Repeatable up to 6 units. Formerly AG 500.

AG 5539 Graduate Internship in Agriculture (1-6 units)

Term Typically Offered: F, SP

Prerequisite: Consent of instructor.

Application of theory to the solution of problems of agricultural production or related businesses in the field. Analyze specific management problems and perform general management assignments detailed in a contract between the student, the firm or organization, and the faculty advisor before internship commences. Repeatable up to 6 units. Formerly AG 539.

AG 5581 Graduate Seminar (1 unit)

Term Typically Offered: SP

CR/NC

Prerequisite: Graduate standing or consent of instructor.

Advanced issues in agriculture and natural resources. Group study of current research and industry trends. Invited speakers covering a variety of issues. Repeatable up to 2 units. 1 seminar. Formerly AG 581.

AG 5585 Cooperative Education Experience (1-6 units)

Term Typically Offered: TBD

CR/NC

Prerequisite: Graduate standing and consent of instructor.

Advanced study analysis and part-time work experience in career field; current innovations, practices, and problems in administration, supervision, and organization of business, industry, and government. Positions are paid, usually require relocation, and extend beyond one term. Repeatable up to 6 units. Credit/No Credit grading only. Formerly AG 585.

AG 5595 Cooperative Education Experience (1-6 units)

Term Typically Offered: TBD

CR/NC

Prerequisite: Graduate standing and consent of instructor.

Advanced study analysis and full-time work experience in career field; current innovations, practices, and challenges in administration, supervision, and organization of business, industry, and government. Positions are paid, usually require relocation, and extend beyond one term. Repeatable up to 6 units. Credit/No Credit grading only. Formerly AG 595.

AG 5599 Thesis (1-6 units)

Term Typically Offered: F, SP

Prerequisite: Graduate standing and consent of instructor.

Systematic research of a significant problem. Thesis will include problem identification, significance, methods, data analysis, and conclusion. Repeatable up to 6 units. Formerly AG 599.

CRU Courses

CRU 1100 Sea Training I - Deck (8 units)

Term Typically Offered: SU

Prerequisite: DL 100 or DL 1100; DL 105 or DL 1105L; DL 1105X or DL 105X; DL 110 or DL 1110; DL 120 or DL 1120; FF 100 or FF 1100; NAU 102 or NAU 1102, and NAU 102L or NAU 1102L with grades of C- or better; NAU 104 or NAU 1104; NAU 109 or NAU 1109; NAU 110 or NAU 1110; and a valid passport.

First sea training experience. During this period of training aboard the Training Ship, the emphasis is on ship familiarization, safety drills and training, basic deck watchstanding skills as helmsman and lookout, vessel maintenance and sanitation, and practical seamanship. Demonstrated competencies in selected STCW topics will be required. Formerly CRU 100 at Cal Maritime.

CRU 1150 Sea Training I - Engine (8 units)

Term Typically Offered: SU

Prerequisite: DL 105 or DL 1105; DL 105L or DL 1105L; DL 105X or DL 105X; EPO 110 or EPO 1110; EPO 125 or EPO 1125; FF 100 or FF 1100; and NAU 104 or NAU 1104. Corequisite: EPO 220 or EPO 220.

First at-sea experience on the training ship. Introduction to the fundamentals of engineering systems operations and shipboard routine, including operation and monitoring techniques for diesel propulsion, electrical power generation, and evaporators and support equipment. Duties during emergency situations such as fire, abandon ship, and rescue are also learned. Demonstrate the required STCW competencies and understand basic power plant operation and maintenance. Formerly CRU 150 at Cal Maritime.

CRU 2200 Sea Training II - Deck (5 units)

Term Typically Offered: SU

Prerequisite: DL 225 or DL 2225; DL 225L or DL 2225L; EGL 100 or EGL 1100; NAU 205 or NAU 2205; and NAU 230 or NAU 2230. Concurrent: CRU 200L or CRU 2200L.

Second at-sea training experience. Participate in a sea training program aboard an approved commercial or federal vessel. Period of onboard training consists of a minimum period of time, as specified in Cal Maritime's program approval letter, to meet Coast Guard sea service requirements. Document and analyze various aspects of shipboard operation and procedures as prescribed by the department. Guided analysis will constitute their project. Formerly CRU 200 at Cal Maritime.

CRU 2200L Sea Training II Lab (Deck) (3 units)

Term Typically Offered: SU

CR/NC

Prerequisite: DL 225 or DL 2225; DL 225L or DL 2225L; DL 240L or EL 2240L; EGL 100 or EGL 1100; NAU 205 or NAU 2205; and NAU 230 or NAU 2230. Concurrent: CRU 200 or CRU 2200.

Observations and tasks required by STCW. Completes a comprehensive check list that parallels the STCW standards for which they will be certified. Check list parallels STCW competencies but does not provide certification or equivalency. Credit/No Credit grading only. 3 laboratories. Formerly CRU 220L at Cal Maritime.

CRU 2250 Sea Training II - Engine (8 units)

Term Typically Offered: SU

Prerequisite: CRU 150 or CRU 1150; EPO 210 or EP 2210; EPO 213 or EPO 2213; EPO 215 or EPO 2215; EPO 220 or EPO 2220; and NAU 104 or NAU 1104 with grades of C- or better.

Sea training experience aboard a commercial or government vessel for students pursuing a USCG Third Assistants Engineer License. Comprehensive engineering report and performance evaluations by the ship's engineering officers. Commercial Cruise Project includes a journal of operational and maintenance experiences, technical descriptions and drawings of shipboard engineering systems, and a summary of measures to implement environmental and SOLAS regulations. Formerly CRU 250 at Cal Maritime.

CRU 3300 Sea Training III - Deck (8 units)

Term Typically Offered: SU

Prerequisite: CRU 200 or CRU 2200; DL 310 or DL 3310; DL 311 or DL 3311; DL 320 or DL 3320; NAU 300 or NAU 3300; NAU 300L or NAU 3300L; NAU 302 or NAU 3302; NAU 302L or NAU 302L; NAU 325 or NAU 3325; NAU 330 or NAU 3330; and FF 300 or FF 3300.

Third sea training experience. Period of training aboard the Training Ship, with emphasis on ship maneuvering skills, celestial navigation, collision avoidance, weather reporting, radio, communications, bridge team management, supervision of vessel maintenance, and bridge watchstanding as the cadet in charge. Demonstrate required competencies in STCW selected topics. Formerly CRU 300 at Cal Maritime.

CRU 3350 Sea Training III - Engine (8 units)

Term Typically Offered: SU

Prerequisite: CRU 250 or CRU 2250; and ENG 250L or ENG 250L; or ET 250L or ET 2250L; EPO 235 or EPO 2235; EPO 310 or EPO 3310; EPO 322 or EPO 3322; and EPO 322L or EPO 3322L.

During the sea training function as the supervisor and assumes responsibility for the proper performance of the first sea training students in engineering tasks. Responsibility as watch engineer, directly responsible to a licensed watch officer for the operation of all systems, ensuring that all data is properly taken and recorded and all duties properly performed. Responsibility as daywork assistant, maintaining and repairing equipment and systems under the supervision of an instructor. Responsibility as engineering assistant, carrying out Third Assistant duties under the supervision of the Chief Engineer. Demonstrate required STCW competencies and be ready to stand watch as a Third Assistant Engineer. Formerly CRU 350 at Cal Maritime.

CRU 3390 Independent Study (1-3 units)

Term Typically Offered: F, SP, SU

Prerequisite: Consent of department.

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

CRU 3395 Special Topics (1-3 units)

Term Typically Offered: F, SP, SU

Prerequisite: Consent of instructor.

Special topic courses are intended to enable 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 CRU 395 at Cal Maritime.

DL Courses**DL 1100 Small Craft Operations (1 unit)**

Term Typically Offered: SP

Prerequisite: DL 105 or DL 1105; DL 105L or DL 1105L; and one of the following: PE 101, PE 1101, PE 102, PE 1102 or swimming assessment test.

Instruction in small boat/motor lifeboat operation. Practical training in small boat handling, with emphasis on maneuvering characteristics, relative motion, and small engine operation. Develop and practice their leadership skills by acting as the boat operator/coxswain. As such, the acting boat operator/coxswain will be in charge of organizing the vessel crew into a functioning team able to carry out all aspects of small boat operations, from tying up and letting go to emergency procedures. 1 laboratory. Formerly DL 100 at Cal Maritime.

DL 1105 Marine Survival (1 unit)

Term Typically Offered: F, SP

Prerequisite: One of the following: PE 101, PE 1101, PE 102, or PE 1102. Concurrent: DL 105L or DL 1105L; and DL 105X or DL 1105X.

Preparation for the U.S. Coast Guard Lifeboatman's Endorsement. Conforms to the STCW Requirements for personal survival training as well as components of the social responsibility requirement. Preparation, embarkation, and launching of survival craft and familiarity with the correct use of all survival equipment, as well as the proper actions to take to preserve the lives of those in their charge. 1 lecture. Formerly DL 105 at Cal Maritime.

DL 1105L Marine Survival Laboratory (1 unit)

Term Typically Offered: F, SP

CR/NC

Prerequisite: One of the following: PE 101, PE 1101, PE 102, or PE 1102. Concurrent: DL 105 or DL 1105; and DL 105X or DL 1105X.

Hands-on training in basic personal and group survival techniques. Combination of multiple pool sessions and actual operation of survival craft, required for the practical section of the U.S. Coast Guard Lifeboatman's Endorsement. Conforms to STCW requirements for personal survival training as well as components of the social responsibility requirement. Credit/No Credit grading only. 1 laboratory. Formerly DL 105L at Cal Maritime.

DL 1105X United States Coast Guard Lifeboatman's Exam (0 units)

Term Typically Offered: F, SP

CR/NC

Corequisite: DL 105 or DL 1105; and DL 105L or 1105L.

Exam for Lifeboat Endorsement on Merchant Mariner's Document. Credit/No Credit grading only. Formerly DL 105X at Cal Maritime.

DL 1110 Ship Operations I (1 unit)

Term Typically Offered: SP

CR/NC

Prerequisite: NAU 109 or NAU 1109. Corequisite: DL 115 and DL 1115.

Introduction to day-to-day shipboard operational and maintenance routines under supervision from upperclass cadets and ship's officers. Structural maintenance, cleaning, lubrication, and various other work projects expected of the ordinary seaman. Instructed on power and specialty tools, safe work practices, and HAZMAT/pollution procedures. Credit/No Credit grading only. 1 laboratory. Formerly DL 110 at Cal Maritime.

DL 1115 Marlinspike (1 unit)

Term Typically Offered: F

Marlinspike seamanship, rope work, knots and splices, rigging and unrigging a bosun's chair, mooring equipment and safety. 1 laboratory. Formerly DL 115 at Cal Maritime.

DL 1120 Cargo Operations (1 unit)

Term Typically Offered: SP

Practical instruction in various types of cargo handling equipment and rigs. Theoretical stress evaluation and cargo gear maintenance, cargo lifting, and securing arrangements. Practice on cargo rig models, the Academy's ship, and boat rigs, as well as taking field trips to observe local cargo handling facilities. Forklift training and safety certification are course requirements. Field trip required. 1 laboratory. Formerly DL 120 at Cal Maritime.

DL 2225 Radar/Arpa (2 units)

Term Typically Offered: F, SP

Prerequisite: Sophomore standing; MTH 100 or MTH 1100; and NAU 102 or NAU 1102. Concurrent: DL 225 or DL 2225. Corequisite: NAU 102L or NAU 102L; and NAU 230 or NAU 2230.

Comprehensive STCW course emphasizing an elementary understanding of radar/ARPA theory, factors affecting performance and accuracy, and the limitations of contact detection. Satisfactory completion of this course is a requirement for the issuance of a USCG Third Mate's License. 2 lectures.

DL 2225L RADAR/ARPA Laboratory (2 units)

Term Typically Offered: F, SP

CR/NC

Radio detection and ranging (RADAR) and automatic radar plotting aid laboratory. Credit/No Credit grading only. 2 laboratories. Concurrent DL 225 or DL 2225. Formerly DL 225 at Cal Maritime.

DL 2240 Global Maritime Distress Safety System (GMDSS) (2 units)

Term Typically Offered: SP

Prerequisite: MTH 100 or MTH 1100; PHY 100 or PHY 1100; and PHY 100L or PHY 1100L. Concurrent: DL 240L or DL 2240L.

Comprehensive STCW compliant course designed to explore use of marine VHF radio, the Maritime Mobile Service and the Maritime Mobile Satellite Service. Equipment compliance, electronic communications systems, calling procedures, distress alerting techniques, and marine safety information. FCC licensing for Marine Radio Operator Permit and GMDSS Operator's License. 2 lectures. Formerly DL 2240 at Cal Maritime.

DL 2240L Global Maritime Distress Safety System (GMDSS) 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: DL 240 or DL 2240.

Comprehensive STCW compliant lab with hands-on experience using equipment in the Maritime Mobile Service and the Maritime Mobile Satellite Service. 24-hour communications watch required. 1 laboratory. Formerly DL 240L at Cal Maritime.

DL 3301 Navigation Piloting Laboratory (1 unit)

Term Typically Offered: F, SP

Prerequisite: CRU 200 or CRU 2200. Concurrent: NAU 302 or NAU 3302; and NAU 302L or NAU 3302L.

Practical instruction in terrestrial and electronic navigational techniques aboard academy power-driven vessels while underway in San Francisco Bay in actual piloting situations. Voyage planning and navigation accuracy cross-checking are emphasized in real-time transit. 1 laboratory. Formerly DL 301 at Cal Maritime.

DL 3305 Tug and Barge (1 unit)

Term Typically Offered: F, SP

Prerequisite: CRU 200 or CRU 2200; DL 100 or DL 1100; DL 240 or DL 2240 DL 225 or DL 2225; NAU 120 or NAU 1120; and NAU 230 or NAU 2230.

Introduces the specific operations required of towing and pushing vessels. Supervised use of the Academy's tug and barge in specific towing operations. 1 laboratory. Formerly DL 305 at Cal Maritime.

DL 3310 Marine Supervisory Laboratory (1 unit)

Term Typically Offered: F

Prerequisite: CRU 200 or CRU 2200; DL 110 or DL 1110; DL 115 or DL 1115; and NAU 109 or NAU 1109.

Introduction into the supervisory skills required of first-level managers through supervising and directing groups of persons to competently accomplish individual work projects. Job planning, resource allocation, labor relations and personnel safety assurance are the primary objectives of the course. 1 laboratory. Formerly DL 310 at Cal Maritime.

DL 3311 Marine Management Laboratory (1 unit)

Term Typically Offered: SP

Prerequisite: CRU 200 or CRU 2200; DL 110 or DL 1110; DL 115 or DL 1115; DL 310 or DL 3310; and NAU 109 or NAU 1109.

Continuation of Marine Supervisory Lab with emphasis on comprehensive project management. Topics include labor relations, resource allocation, safety, weather, and regulatory compliance. Project organization, pre-planning, implementation, and material acquisition in preparation of vessels for cruise departure, with accountability central to project completion. 1 laboratory. Formerly DL 311 at Cal Maritime.

DL 3320 Introduction to Bridge Simulator (2 units)

Term Typically Offered: SP

CR/NC

Prerequisite: One of the following: CRU 200L, CRU 2200L, CRU 225L or CRU 2225L. Corequisite: DL 240 or DL 2240; and DL 240L or DL 2240L.

Introduction to California Maritime's bridge simulator. Instruction on standardized watchstanding methodology, practices, and task priorities. Credit/No Credit grading only. 2 lectures. Formerly DL 320 at Cal Maritime.

DL 3335 Integrated Bridge - Engine Room Watch Management (1 unit)

Term Typically Offered: TBD

CR/NC

Prerequisite: CRU 200 or CRU 2200.

Platform to gain experience in handling complex situations involving the engine plant and how they affect vessel operation as a whole. Work with multiple vessels. Flexible course for MT majors. Runs concurrently with various sessions of Watch Team Management for MET and ME License cadets. Repeatable up to 2 units. Credit/No Credit grading only. 1 laboratory. Formerly DL 335 at Cal Maritime.

DL 3390 Independent Study (1-3 units)

Term Typically Offered: F, SP, SU

CR/NC

Prerequisite: Consent of the department.

Substantial study above and beyond the regular offerings in the Academy catalog. One to three units of credit, determined prior to registration, will be granted for Independent Study. Arrangement with an Academy faculty member to be the Independent Study Advisor. Approved Application for Independent Study must be on file. Formerly DL 390 at Cal Maritime.

DL 3395 Special Topics (1-3 units)

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Special topic courses are intended to enable 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 DL 395 at Cal Maritime.

DL 4405 Shipboard Medical (1 unit)

Term Typically Offered: F, SP

Prerequisite: Senior Standing. Concurrent: DL 405L or DL 4405L.

Practical application of the principles of Advanced First Aid. Diagnosis and treatment of traumatic injuries, cardio-pulmonary resuscitation, shipboard sanitation, including certificates necessary for licensing and for Level 3 STCW. 1 lecture. Formerly DL 405 at Cal Maritime.

DL 4405L Shipboard Medical Laboratory (1 unit)

Term Typically Offered: F, SP

Prerequisite: Senior Standing. Concurrent: DL 405L or DL 4405.

Shipboard Medical Laboratory. 1 laboratory. Formerly DL 405L at Cal Maritime.

DL 4410 Ship Handling (1 unit)

Term Typically Offered: F, SP

Prerequisite: CRU 200 or CRU 2200; CRU 200L or CRU 2200L; and DL 100 or DL 1100.

Practical experience in shiphandling with vessels large enough to gain an appreciation for ship-handling problems encountered with much larger vessels. Exercises in "soft" landings, emergency procedures, mooring techniques and line handling, and collision avoidance. 1 laboratory. Formerly DL 410 at Cal Maritime.

DL 4420 Watchstanding Simulation (2 units)

Term Typically Offered: F

CR/NC

Prerequisite: CRU 300 or CRU 3300; DL 240 or DL 2240; and DL 240L or 2240L.

Full mission bridge watchstanding simulator designed as a capstone course for senior students. Assess basic watchstanding skills at the STCW 95 OICNW level. Credit/No Credit grading only. 2 lectures. Formerly DL 420 at Cal Maritime.

LDR Courses

LDR 1101 Emotional Intelligence 1.0: Self-Awareness and Self-Management (1 unit)

Term Typically Offered: F, SP

Explores the concept of Emotional Intelligence (EI) with an emphasis on self-awareness and self-management and its pivotal role in leadership development. 1 seminar. Formerly LDR 101 at Cal Maritime.

LDR 1102 Emotional Intelligence 2.0: Social-Awareness and Relationship Management (1 unit)

Term Typically Offered: F, SP

Explores the concept of Emotional Intelligence (EI) with an emphasis on social-awareness and relationship-management and its pivotal role in leadership development. 1 seminar. Formerly LDR 102 at Cal Maritime.

LDR 1103 Navigating Leadership Through Influential Leadership Texts (1 unit)

Term Typically Offered: F, SP

Engage with a rotating selection of influential books on leadership, exploring key leadership principles and different perspectives on leadership. Through in-depth reading, discussion, and reflection activities, examine how the selected book's ideas can be applied to real-world leadership challenges while gaining practical tools for improving their own leadership skills. 1 seminar. Formerly LDR 103 at Cal Maritime.

MPM Courses

MPM 1190 TSGB/International Experience Preparation (1 unit)

Term Typically Offered: SP

Prerequisite: Consent of instructor.

Offered in the Spring term prior to participation in any of the international experiences. Complete all necessary pre-trip plans, including document collection, medical information training, language primers, and associated tasks. Plan and arrange for site visits, factory or transport enterprise visits, seminars, and other activities to be conducted while in port, and/or during voyages. 1 lecture. Formerly MPM 190 at Cal Maritime.

MPM 1195 TSGB/International Experience Special Topics (3 units)

Term Typically Offered: SU

Corequisite: MPM 190 or MPM 1190.

Special topics course to be taught to Business and Global Studies students participating in their TSGB cruise or their international experiences. Topics will be related to the specific destinations, and reflect the expertise and interest of the instructor as well as the nature of the itinerary. 3 lectures. Formerly MPM 195 at Cal Maritime.

MSL Courses

MSL 1101 Foundation of Officership I (1 unit)

Term Typically Offered: F

Introduction to issues and competencies of the Army officer profession. Stereotypes about the military, the role of the Army officer, customs and traditions within the military, and personal and physical development. Not open to students with credit in MSL 212 or MSL 2212. 1 lecture. Formerly MSL 101.

MSL 1102 Foundation of Officership II (1 unit)

Term Typically Offered: SP

The role of leadership within a large organization. Definition of leadership, leadership framework, individual and organizational core values, and the moral responsibility of leadership. Not open to students with credit in MSL 212 or MSL 2212. 1 lecture. Formerly MSL 102.

MSL 1110 Basic Exercises in Military Leadership (1 unit)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Enrollment in any MSL course or consent of department head. Recommended: Concurrent enrollment in MSL 1101, MSL 1102, MSL 2201, or MSL 2202.

Small-unit military operations. Incorporation of the military decision-making process in the planning, execution and conducting of a wide variety of squad, platoon, and company sized missions. Credit/No Credit grading only. 1 activity. Formerly MSL 110.

MSL 1111 Orienteering (2 units)

Term Typically Offered: SP

Principles of orienteering, basic map reading, and compass skills, including practical land navigation techniques. 2 lectures. Formerly MSL 111.

MSL 1112 Basic Army Physical Training Program (1 unit)

Term Typically Offered: F, SP

The Army Physical Fitness Program and its proper execution. Physical training to the Army standards with the goal of successfully passing the Army Combat Fitness Test. 1 laboratory. Formerly MSL 112.

MSL 2201 Foundations of Leadership I (2 units)

Term Typically Offered: F

First of two courses taken sequentially for the development of individual leadership traits and capabilities using the Army officer as a model. The Army's problem solving methods, written and oral communications, tactics, and group leadership. Not open to students with credit in MSL 212 or MSL 2212. 2 lectures. Formerly MSL 201.

MSL 2202 Foundations of Leadership II (2 units)

Term Typically Offered: SP

Continuation of the development of individual leadership traits and capabilities using the Army officer as a model. The Army's problem solving methods, tactics, and group leadership. Not open to students with credit in MSL 212 or MSL 2212. 2 lectures. Formerly MSL 202.

MSL 2212 Leader's Training Course (6 units)

Term Typically Offered: F

Completion of Leader's Training Course (LTC). Five weeks of training off campus at a designated military base. Travel pay and salary provided through the Military Science Department. No obligation. LTC graduates eligible to enroll in ROTC Advanced Program. Not open to students with credit in MSL 101, MSL 102, MSL 201, MSL 202, MSL 1101, MSL 1102, MSL 2201, or MSL 2202. 6 lectures. Formerly MSL 212.

MSL 2240 American Military History and the Evolution of Western Warfare (4 units)

Term Typically Offered: SP

Comprehensive analysis of American military history from the early Anglo-French period to the end of the 20th Century. Examination of the strategies, operations and tactics of military warfare, and exploration of how social, economic, and technological factors produced the distinct patterns of war that characterize the struggles of the past two hundred plus years. 4 lectures. Formerly MSL 240.

MSL 2275 Facilitation and Teambuilding Experiences (3 units)

Term Typically Offered: SP

Techniques and models used in leadership, facilitation, and team building. Emphasis on leadership and facilitation styles and models, team building and group dynamics, and working with various populations. Field trip required. 3 seminars. Crosslisted as EIM/MSL 2275. Formerly MSL/RPTA 275.

MSL 3301 Tactical Leadership I (3 units)

Term Typically Offered: F

Prerequisite: One of the following: MSL 101, MSL 102, MSL 201, MSL 202, MSL 1101, MSL 1102, MSL 2201, or MSL 2202; or equivalent training provided and certified by the United States Army and approved through the Cal Poly ROTC Program (e.g.

Advanced leadership skills through a focus on the Army's Training Management process, the Warfighting Functions, and foundational command and control doctrine. Analyze and apply mission planning tools (OPORDs, METT-TC), rehearse leadership in field scenarios, and engage in peer evaluation, self-development, and professional reading. 3 lectures., U.S. Army Basic Training, U.S. Army ROTC Basic Camp, etc.). Formerly MSL 3301.

MSL 3302 Tactical Leadership II (3 units)

Term Typically Offered: SP

Prerequisite: MSL 301 or MSL 3301.

Applied leadership in small unit operations through experiential learning in tactics, ethical decision-making, and communication. Leadership theory and personality assessment tools, offensive and defensive operational plans, and platoon-level operations. 3 lectures. Formerly MSL 302.

MSL 3310 Intermediate Exercises in Military Leadership (1 unit)

Term Typically Offered: F, SP

CR/NC

Recommended: MSL 301 or MSL 3301.

Build upon foundational military leadership in leadership roles during training exercises. Leadership of peer teams through drill, tactical training, and fieldcraft. Initiative, accountability, and instructional ability in dynamic environments. Repeatable up to 3 units. Credit/No Credit grading only. 1 activity. Formerly MSL 310.

MSL 3312 Intermediate Army Physical Training Program (1 unit)

Term Typically Offered: F, SP

Recommended: MSL 301, MSL 302, MSL 3301, or MSL 3302.

The Army's Holistic Health and Fitness (H2F) framework. Student-led physical training (PT) at the junior-cadet level. Cadets will lead group PT sessions, incorporating principles of performance readiness, injury prevention, and fitness planning while developing confidence and command presence in physical training environments. 1 laboratory. Formerly MSL 312.

MSL 3314 Leadership Development and Assessment Course (6 units)

Term Typically Offered: F

CR/NC

Prerequisite: MSL 301 or MSL 3301; MSL 302 or MSL 3302; and consent of instructor.

Six-week summer training program required to achieve an Army commission. Testing and training as functional Army officers and determination of potential for service. Travel pay, room and board, and salary provided by the United States Army. Held at Fort Knox, Kentucky. Field trip required. Credit/No Credit grading only. 6 lectures. Formerly MSL 314.

MSL 4401 Developmental Leadership I (3 units)

Term Typically Offered: F

Prerequisite: MSL 302 or MSL 3302.

Knowledge, skills, and attributes expected of future Army officers operating in complex environments. Mission command, multidomain operations, and unit readiness. Assess threats, plan and evaluate training, and operate as leaders within the Army's organizational and operational structures. 3 lectures. Formerly MSL 401.

MSL 4402 Developmental Leadership II (3 units)

Term Typically Offered: SP

Prerequisite: MSL 401 or MSL 4401.

Full spectrum of responsibilities expected of a Company Grade Officer. Multidimensional role of platoon leaders, from fostering ethical climates and mentoring subordinates to ensuring unit readiness, legal compliance, and operational effectiveness. Personal leadership development, military professionalism, and transitioning into officership. 3 lectures. Formerly MSL 402.

MSL 4410 Advanced Exercises in Military Leadership (2 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: MSL 302 or MSL 3302 and MSL 310 or MSL 3310.

The supervision and evaluation of the organization, planning, resourcing, and execution of selected Army tactical missions, and mentoring assigned students. Repeatable up to 3 units. Credit/No Credit grading only. 2 activities. Formerly MSL 410.

MSL 4412 Leadership of Army Physical Training Program (1 unit)

Term Typically Offered: F, SP

Prerequisite: Senior standing and contracted status in Army ROTC. Recommended: MSL 401 or MSL 4401.

Senior-level Cadet's ability to lead, mentor, and evaluate junior-level Cadets through the lens of the Army's Holistic Health and Fitness (H2F) system. Supervise physical training sessions, provide developmental feedback, and assess performance in alignment with Army readiness standards. Leadership in health, wellness, resilience, and physical performance. Repeatable up to 3 units. 1 laboratory. Formerly MSL 412.

MSL 4501 Military Leadership at the Platoon Level (1 unit)

Term Typically Offered: F, SP

Prerequisite: MSL 402 or MSL 4402.

Individual research and study into the Army Leadership Philosophy and its practical application to military leadership at the platoon level. Assess and evaluate multiple military leadership techniques and processes to better prepare for future military career. Repeatable up to 2 units. Formerly MSL 400.

MSL 4502 Military Leadership in an Organizational Staff (1 unit)

Term Typically Offered: F, SP

Prerequisite: MSL 402 or MSL 4402.

Individual research and study into the Army Leadership Philosophy and its practical application to military leadership in an organizational staff. Assess and evaluate multiple military leadership techniques and processes to better prepare for future military career. Repeatable up to 2 units. Formerly MSL 470.

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 laboratory. 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 enable 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. Formerly 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. Formerly 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.

NSC Courses**NSC 1100 Naval Science for the Merchant Marine Officer (3 units)**

Term Typically Offered: F

Introduction to the organization of the U.S. Navy (including the Naval Control of Shipping Organization), with a discussion of the Merchant Marine Naval Reserve commission in order to provide a sound basis for liaisons between the U.S. Navy and the merchant marines. The concept of seapower is analyzed, with emphasis on the merchant marine-Navy interface in common seapower objectives. Underway replenishment and convoy operations are introduced. 3 lectures. Formerly NSC 100 at Cal Maritime.

NSC 2200 Naval Science II for the Strategic Sealift Officer (3 units)

Term Typically Offered: SP

Prerequisite: NSC 100 or NSC 1100.

Nature of a hostile naval threat and types of surface, subsurface, and air attacks to which both U.S. naval and merchant shipping can be subjected. Merchant ship self-defense maneuvers and naval escort defensive actions are analyzed. Proficiency in the merchant marine-Navy communication interface and in ship maneuvering when in convoy. Navy officer communities, administration, and organization are discussed. Warship design, propulsion, and damage control methods are also introduced. 3 lectures. Formerly NSC 200 at Cal Maritime.

NSC 4400 Leadership Ethics and Naval Science for Merchant Marine Reservist II (4 units)

Term Typically Offered: F

Prerequisite: NSC 200 or NSC 2200.

Designed to provide midshipmen with the practical knowledge, leadership, and managerial skills necessary to function as a new naval reserve officer. Merchant marine reserve, officer and enlisted rank structure, administrative duties of an officer, the naval justice system, management techniques, promotions, leadership, ethics, fitness reports and annual training (AT) requirement and procedures. 4 lectures. Formerly NSC 400 at Cal Maritime.

NSC 4450 Advanced Midshipman Naval Training (1 unit)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Consent of department chair.

Intensive training opportunity for midshipmen desiring to increase their practical knowledge of the U.S. Navy's mission. Provides fundamental, intermediate, and upper level leadership experience through practical application of leadership management techniques. Perform in a variety of billets. Eligible cadets participate according to their performance, aptitude, and warfare community interest. Training opportunities include, but are not limited to, field trips to surface, subsurface, aviation, and special operations units; close order drill; inspections; and naval officer career areas. Credit/No Credit grading only. Formerly NSC 450 at Cal Maritime.