

BAILEY COLLEGE OF SCIENCE & MATHEMATICS

<https://cosam.calpoly.edu>

Mission

The mission of the Bailey College of Science and Mathematics is to facilitate learning, understanding, and appreciation of science and mathematics as a basis for creative endeavors, intellectual pursuits, careers, and critical consideration of issues confronting society. The College has two equally important roles: (1) to provide specialized coursework for students enrolled in the College's undergraduate, graduate and minor programs, and (2) to provide support and breadth courses in science and mathematics for all students of the university. Cal Poly is a national leader in preparing college students for careers in science, technology, engineering, and mathematics (STEM) professions, including science and mathematics teaching careers.

The Bailey College of Science and Mathematics has a tradition and reputation for excellence in teaching and faculty mentored student research and is dedicated to both undergraduate and graduate instruction. The College provides a student-centered learning environment consistent with the University's "learn by doing" philosophy. In laboratories, students have access to modern instrumentation and computer technology. Classroom instruction is done in relatively small classes so that a personal approach by instructors is possible. Because of the College's large role in offering support courses to the rest of the university community, the number of faculty in each department is relatively large and favors student-faculty interaction, both inside and outside of the classroom.

Faculty Mentors

Faculty members are subject-matter experts in their field and take an active role in academic and career advising. It is especially valuable to consult with faculty about curriculum decisions within the major, extracurricular activities, involvement in research/internships, and career/professional opportunities. Students are encouraged to obtain both faculty and professional academic advising to choose appropriate coursework to complement their interests and career goals.

Applying to Graduate School

Bailey College of Science and Mathematics faculty have earned advanced degrees from a wide variety of universities and are excellent sources for information and advice about graduate programs, prerequisites and application procedures. Applications to graduate programs should be made in the fall for admission to the following fall term. The Graduate Record Exam (GRE) should be taken early in the application cycle. Generally, two or more letters of reference from faculty are required. Most Ph.D. granting institutions offer financial support in the form of teaching assistantships and research fellowships.

Bailey College of Science and Mathematics Student Services

Science North (Bldg. 53), Room 211

Phone: 805.756.2615

<https://csmadvising.calpoly.edu>

Vision

Bailey College Student Services aspires to be a visible, accessible, inclusive, informative, and supportive environment that promotes success for ALL students.

Mission

Bailey College Student Services is dedicated to connecting with students to understand and support their unique journeys. Through collaborative guidance from our campus partners, we empower students to make informed, self-directed decisions as they define and pursue their academic and professional goals.

Guiding Principles

- **Relational** - We build meaningful, trust-based relationships by listening with empathy, collaborating intentionally, and treating every individual with respect. We strive to create an environment where students feel supported and empowered throughout their journey.
- **Holistic Advising** - We support the development of the whole student by addressing academic, personal, and pre-professional needs. Our approach prepares students for both their academic paths and future careers in the health professions.
- **Student-Centered** - We meet students where they are, recognizing and honoring their unique identities, goals, and lived experiences. Advising is tailored to support each student's individual success.
- **Inclusion** - We are committed to creating an inclusive, welcoming culture and climate—both physically and virtually—that is accessible to all students. We actively work to reduce barriers and promote equity in advising.
- **Informative & Responsive** - We provide accurate, timely information and adapt quickly to students' needs. Our communication is proactive and clear, ensuring students feel informed and confident in their decision-making.
- **Encouragement & Advocacy** - We encourage students to take ownership of their goals by equipping them with tools and knowledge. We advocate for student needs and strive to remove systemic barriers to access and success.

Services Provided

Services include assistance with developing long-range academic plans, interpreting university and college policy and procedures, understanding articulation agreements, scheduling classes, planning for study abroad and clarifying graduation requirements. The Advising Center provides pre-health career advising services and resources for Cal Poly students and alumni pursuing careers in the health professions. Students are encouraged to seek advising early and often throughout their time at Cal Poly. For more information, please refer to: pre-health career advising (<https://catalog.calpoly.edu/welcome/academic-services-programs/pre-health-career-advising/>).

School of Education

The School of Education prepares students to be effective, ethical and informed teachers, counselors and administrators, who have a particular expertise relative to current state and national needs in their respective fields through an inquiry-focused clinical approach. The School of Education offers a range of programs: multiple subject and single subject teaching credentials; agriculture specialist credential; integrated credential and M.S. in Special Education; integrated credential and M.A. Educational Leadership and Administration; M.A. in Curriculum and Instruction; and M.S. Higher Education Counseling and Student Affairs. Single subject credential programs are offered in Agriculture, English, Biology, Chemistry, Mathematics, Physics, Social Science and World Languages.

To prepare students in these fields, faculty from agriculture, science, mathematics, and the liberal arts work collaboratively with faculty in the School of Education to provide outstanding programs that maintain a balance of coursework in subject matter, foundations of education, and pedagogy, integrated with field experiences for applied practice. In the Liberal Studies Program, students can pursue a pre-professional program that leads to a B.S. degree and includes preparation toward a multiple subject credential to teach in elementary school. Cal Poly takes pride in producing school teachers and leaders through a balanced curriculum. More information on the programs offered can be found in the School of Education (<https://catalog.calpoly.edu/science-mathematics/education/>) section of this catalog.

Undergraduate Programs

- Biochemistry (BS) (<https://catalog.calpoly.edu/science-mathematics/chemistry-biochemistry/biochemistry-bs/>)
- Biological Sciences (BS) (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/biological-sciences-bs/>)
- Chemistry (BS) (<https://catalog.calpoly.edu/science-mathematics/chemistry-biochemistry/chemistry-bs/>)
- Kinesiology (BS) (<https://catalog.calpoly.edu/science-mathematics/kinesiology-public-health/kinesiology-bs/>)
- Liberal Studies (BS) (<https://catalog.calpoly.edu/science-mathematics/liberal-studies/liberal-studies-bs/>)
- Marine Sciences (BS) (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/marine-sciences-bs/>)
- Mathematics (BS) (<https://catalog.calpoly.edu/science-mathematics/mathematics/mathematics-bs/>)
- Microbiology (BS) (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/microbiology-bs/>)
- Oceanography (BS) (<https://catalog.calpoly.edu/science-mathematics/oceanography-bs/>)
- Physics (BA) (<https://catalog.calpoly.edu/science-mathematics/physics/physics-ba/>)
- Physics (BS) (<https://catalog.calpoly.edu/science-mathematics/physics/physics-bs/>)
- Public Health (BS) (<https://catalog.calpoly.edu/science-mathematics/kinesiology-public-health/public-health-bs/>)
- Statistics (BS) (<https://catalog.calpoly.edu/science-mathematics/statistics/statistics-bs/>)

Undergraduate Minors

- Actuarial Preparation Minor (<https://catalog.calpoly.edu/science-mathematics/actuarial-preparation-minor/>)
- Astronomy Minor (<https://catalog.calpoly.edu/science-mathematics/physics/astronomy-minor/>)
- Biology Minor (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/biology-minor/>)
- Biotechnology Minor (<https://catalog.calpoly.edu/science-mathematics/biotechnology-minor/>)
- Cross Disciplinary Studies Minor in Bioinformatics (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/cross-disciplinary-studies-minor-bioinformatics/>)
- Cross Disciplinary Studies Minor in Data Science (<https://catalog.calpoly.edu/science-mathematics/statistics/cross-disciplinary-studies-minor-data-science/>)
- Environmental Studies Minor (<https://catalog.calpoly.edu/science-mathematics/environmental-studies-minor/>)
- Equity in Education Minor (<https://catalog.calpoly.edu/science-mathematics/education/equity-in-education-minor/>)
- Exercise and Sport Studies Minor (<https://catalog.calpoly.edu/science-mathematics/kinesiology-public-health/exercise-sport-studies-minor/>)
- Geology Minor (<https://catalog.calpoly.edu/science-mathematics/physics/geology-minor/>)
- Mathematics Minor (<https://catalog.calpoly.edu/science-mathematics/mathematics/mathematics-minor/>)
- Microbiology Minor (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/microbiology-minor/>)
- Physics Minor (<https://catalog.calpoly.edu/science-mathematics/physics/physics-minor/>)
- Statistics Minor (<https://catalog.calpoly.edu/science-mathematics/statistics/statistics-minor/>)

Graduate Programs

- Biological Sciences (MS) (<https://catalog.calpoly.edu/science-mathematics/biological-sciences/biological-sciences-ms/>)
- Curriculum and Instruction (MA) (<https://catalog.calpoly.edu/science-mathematics/education/curriculum-instruction-ma/>)
- Educational Leadership and Administration (MS) (<https://catalog.calpoly.edu/science-mathematics/education/educational-leadership-administration-ms/>)
- Higher Education Counseling and Student Affairs (MS) (<https://catalog.calpoly.edu/science-mathematics/education/higher-education-counseling-student-affairs-ms/>)
- Mathematics (MS) (<https://catalog.calpoly.edu/science-mathematics/mathematics/mathematics-ms/>)
- Polymers and Coatings Science (MS) (<https://catalog.calpoly.edu/science-mathematics/chemistry-biochemistry/polymers-coatings-science-ms/>)
- Special Education (MS) (<https://catalog.calpoly.edu/science-mathematics/education/special-education-ms/>)
- Statistics (MS) (<https://catalog.calpoly.edu/science-mathematics/statistics/statistics-ms/>)

School of Education Programs

See the School of Education (<https://catalog.calpoly.edu/science-mathematics/education/>) section for further information.

OCN Courses

OCN 1100 Marine Biology (3 units)

Term Typically Offered: F

2026-28 or later catalog: GE Area 5B

2020-26 catalogs: GE Area B2

Introduction to organismal biology using marine examples. Origin and diversity of marine life including prokaryotes, protists, marine invertebrates and vertebrates. Mendelian genetics, speciation, reproduction, basic cellular physiology. 3 lectures. Fulfills GE Area 5B (GE Area B2 for students on the 2020-26 catalogs). Formerly OCN 100 at Cal Maritime.

OCN 1100L Marine Biology Laboratory (1 unit)

Term Typically Offered: F

2026-28 or later catalog: GE Area 5C

2020-26 catalogs: GE Area B3

Corequisite: OCN 100 or OCN 1100.

Introduction to stereo and compound microscopes, plankton collections and enumeration of phytoplankton and zooplankton, fouling invertebrates and marine invasive species, invertebrate and vertebrate dissections. 1 laboratory. Fulfills GE Area 5C (GE Area B3 for students on the 2020-26 catalogs). Formerly OCN 100L at Cal Maritime.

OCN 1105 Introduction to Oceanography (3 units)

Term Typically Offered: F, SP

2026-28 or later catalog: GE Area 5A

2020-26 catalogs: GE Area B1

An exploration of the chemical, geological, physical and biological processes occurring within Earth's Oceans. Topics include: the formation of the universe, plate tectonics, atmospheric circulation, hurricanes, global climate change, ocean circulation, El Nino, waves, tsunamis, tides, origin of life on Earth, deep-sea environments, ocean resources, and marine pollution. 3 lectures. Fulfills GE Area 5A (GE Area B1 for students on the 2020-26 catalogs). Formerly OCN 105 at Cal Maritime.

OCN 1110 Marine Ecology (3 units)

Term Typically Offered: SP

2026-28 or later catalog: GE Area 5B

2020-26 catalogs: GE Area B2

Introduction to marine ecology of diverse habitats including the estuarine, intertidal, epipelagic, and deep sea, coral reefs and polar ecosystems. 3 lectures. Fulfills GE Area 5B (GE Area B2 for students on the 2020-26 catalogs). Formerly OCN 110 at Cal Maritime.

OCN 1110L Marine Ecology Laboratory (1 unit)

Term Typically Offered: SP

2026-28 or later catalog: GE Area 5C

2020-26 catalogs: GE Area B3

Corequisite: OCN 110 or OCN 1110.

Laboratory/field-based course working in local marine environments, including estuarine, wetland, rocky intertidal and beach communities, to understand marine ecology. Service-learning course that will partner with state, federal, or non-governmental agencies to collect and interpret ecological data. 1 laboratory. Fulfills GE Area 5C (GE Area B3 for students on the 2020-26 catalogs). Formerly OCN 110L at Cal Maritime.

OCN 1195 Special Topics (1-3 units)

Term Typically Offered: F, SP

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 OCN 195 at Cal Maritime.

OCN 2200 Oceanography I: Geology and Chemistry (3 units)

Term Typically Offered: F

Prerequisite: MTH 100 or MTH 1100 with a grade of C- or better.

History of oceanography, seafloor features, plate tectonics, marine sediments, chemistry of seawater, dissolved gases, and ocean resources. 3 lectures. Formerly OCN 200 at Cal Maritime.

OCN 2200L Introduction to Oceanography Laboratory (1 unit)

Term Typically Offered: F

2026-28 or later catalog: GE Area 5C

2020-26 catalogs: GE Area B3

Corequisite: OCN 200 or OCN 2200.

Quantitative problem-solving in oceanography, application of open source oceanographic data. Sampling the San Francisco Estuary. 1 laboratory. Fulfills GE Area 5C (GE Area B3 for students on the 2020-26 catalogs). Formerly OCN 200L at Cal Maritime.

OCN 2210 Oceanography II: Physics and Biology (3 units)

Term Typically Offered: SP

Prerequisite: MTH 100 or MTH 1100 with a grade of C- or better. Concurrent: OCN 210L or OCN 2210L.

Introduction to atmosphere-earth-ocean interactions, global climate processes, ocean circulation, waves, tidal processes, plankton, nekton, and benthic organisms. 3 lectures. Formerly OCN 210 at Cal Maritime.

OCN 2210L Introduction to Oceanography Laboratory II (1 unit)

Term Typically Offered: SP

Concurrent: OCN 210 or OCN 2210.

Quantitative problem-solving in physical and biological oceanography using a combination of simulation laboratory exercises, application of real, open source oceanographic data and field sampling in the San Francisco Estuary. 1 laboratory. Formerly OCN 210L at Cal Maritime.

OCN 2225 Environmental Sustainability (3 units)

Term Typically Offered: F, SP

Cycles and interconnectedness of the Earth system. The history of sustainability and its place within the political agenda. Large to small scale, including personal, transitions toward sustainable living, assessment and analysis of solutions. Emphasis on water resource sustainability. 3 lectures. Formerly OCN 225 at Cal Maritime.

OCN 3300 Global Education (3 units)

Term Typically Offered: SU

OCN 3305 Introduction to Ocean Science Research (1 unit)

Term Typically Offered: F

Prerequisite: OCN 200 or OCN 2200; and OCN 210 or OCN 2210.

Critical study, analysis, and evaluation of primary scientific literature. Oral and written presentations of recent scientific papers. Projects include an annotated bibliography using an electronic reference management system and an oceanography research proposal. 1 seminar. Formerly OCN 305 at Cal Maritime.

OCN 3310 Oceanographic Instruments and Analysis (2 units)

Term Typically Offered: SP

Prerequisite: OCN 200 or OCN 2200; and OCN 210 or OCN 2210. Concurrent: OCN 310L or OCN 3310L.

Oceanographic sampling techniques, modern instrumentation, and laboratory analyses. Techniques for measuring ocean temperature, salinity, dissolved oxygen, phosphate, chlorophyll-a, pH and carbon dioxide, and submarine light. 2 lectures. Formerly OCN 310 at Cal Maritime.

OCN 3310L Oceanographic Instruments and Analysis Laboratory (1 unit)

Term Typically Offered: SP

Prerequisite: OCN 200 or OCN 2200; and OCN 210 or OCN 2210. Concurrent: OCN 310 or OCN 3310.

Laboratory. Ocean sampling techniques, practical training in modern instrumentation and laboratory analyses. Techniques for measuring ocean temperature, salinity, dissolved oxygen, phosphate, chlorophyll-a, pH and carbon dioxide, and submarine light. 1 laboratory. Formerly OCN 310L at Cal Maritime.

OCN 3320 Oceans and Climate (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 210 or MTH 2210; and one of the following: PHY 100, PHY 1100, PHY 200, or PHY 2200.

A physics-based description of the atmosphere-ocean global (large-scale) circulation and its driving forces. Exploration of the earth-system's climate and the potential implications of climate change. 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 OCN 320 at Cal Maritime.

OCN 3330 Marine Microbial Ecology (3 units)

Term Typically Offered: F

Prerequisite: OCN 100 or OCN 1100; OCN 110 or OCN 1110; and OCN 210 or OCN 2210.

Ecology of microbes in the oceans including diversity, biomass and metabolic activity. Role in oceanographic processes and marine biogeochemical cycles. Prokaryotes (archaea and bacteria), autotrophic, heterotrophic and mixotrophic protists described and interactions with non-microbial organisms. 3 lectures. Formerly OCN 330 at Cal Maritime.

OCN 3340 Chemical Oceanography (3 units)

Term Typically Offered: F

Prerequisite: and CHE 210 or CHE 2210; and OCN 200 or OCN 2200.

Chemical description of the ocean, past and present. Elemental cycling, the effects of biological, chemical, geological and physical processes on chemistry of seawater, and the distribution of gases, ions, nutrients and trace metals. 3 lectures. Formerly OCN 340 at Cal Maritime.

OCN 3350 Physical Oceanography (3 units)

Term Typically Offered: SP

Prerequisite: MTH 210 or MTH 2210; OCN 210 or OCN 2210; and PHY 100 or PHY 1100.

Conservation of momentum and vorticity with particular attention to the boundary layer dynamics of ocean circulation. Introduction to wave-driven boundary layer dynamics and its effects on mixing. 3 lectures. Formerly OCN 350 at Cal Maritime.

OCN 3360 Marine Geology (3 units)

Term Typically Offered: F

Prerequisite: OCN 200 or OCN 2200.

Plate tectonic theory. Origin and description of ocean floor morphology. Marine sediments / sedimentary processes. Processes of sea level change. Sedimentary shelf environments. Biological proxies of environmental change and paleoclimate. 3 lectures. Formerly OCN 360 at Cal Maritime.

OCN 3380 Directed Research/Cooperative Education Experience (1 unit)

Term Typically Offered: F, SP, SU

Prerequisite: OCN 305 or OCN 3305. Concurrent: OCN 380L or OCN 3380L.

Collaborative research / work experience in the field of marine science, oceanography, marine / estuarine natural resource management. Demonstrate competence in hypothesis testing, gathering and analyzing oceanographic data. Placement in Co-Op experiences must be approved by major advisor. 1 lecture. Formerly OCN 380 at Cal Maritime.

OCN 3380L Directed Research Cooperative Education Laboratory (2 units)

Term Typically Offered: F, SP, SU

Prerequisite: OCN 305 or OCN 3305. Concurrent: OCN 380 or OCN 3380.

Collaborative research/work laboratory experience in the field of marine science, oceanography, marine / estuarine natural resource management. Demonstrate competence in hypothesis testing, gathering and analyzing oceanographic data. Placement in Co Op experiences must be approved by major advisor. 2 laboratories. Formerly OCN 380L at Cal Maritime.

OCN 3390 Independent Study (1-3 units)

Term Typically Offered: TBD

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 OCN 390 at Cal Maritime.

OCN 3395 Special Topics (3 units)

Term Typically Offered: SP

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 OCN 395 at Cal Maritime.

OCN 4410 Phycology (3 units)

Term Typically Offered: TBD

Prerequisite: OCN 100 or OCN 1100; and OCN 330 or OCN 3330.

Taxonomy, phylogeny, morphology, physiology, and ecology of marine and freshwater algae. 3 lectures. Formerly OCN 410 at Cal Maritime.

OCN 4420 Marine Biological Invasion (3 units)

Term Typically Offered: F, SP

Prerequisite: OCN 100 or OCN 1100.

Biology, evolution, and ecological impacts of aquatic introduced species on the marine environment. Emphasis on marine invertebrates. Discussion of strategies for prevention, detection, and management of impacts to human systems as well as the role of climate change on biotic homogenization of marine systems. 3 lectures. Formerly OCN 420 at Cal Maritime.

OCN 4430 Fisheries Oceanography (3 units)

Term Typically Offered: TBD

Prerequisite: Junior standing.

Introduction to fish biology, identification, systematics and classification, with an emphasis on commercially important species. basic physiology. Mechanisms of fish stock abundance and recruitment within an ecological context. Explore policy approaches and ecosystem-based resource management to sustainable fisheries practices. 3 lectures. Formerly OCN 430 at Cal Maritime.

OCN 4440 Introduction to Ocean Remote Sensing (3 units)

Term Typically Offered: F, SP

Prerequisite: OCN 200 or OCN 2200; and OCN 210 or OCN 2210.

General theory underlying ocean remote sensing; Application of techniques; Methods for accessing, manipulating, Combining and interpreting remotely sensed data. 3 lectures. Formerly OCN 440 at Cal Maritime.

OCN 4450 Coastal and Estuarine Dynamics (3 units)

Term Typically Offered: TBD

Prerequisite: Junior standing.

Shallow water system dynamics and the response to local atmospheric, wave and tidal forcing. The effects of estuarine geometry and characterization of mixing and sediment re-suspension. 3 lectures. Formerly OCN 450 at Cal Maritime.

OCN 4460 Air-Sea Interactions (3 units)

Term Typically Offered: TBD

Prerequisite: Junior standing.

Turbulent transfer of mass, momentum and energy near the air-sea interface. In-depth study of the structure of the air-sea interface and methods for measuring fluxes of heat, momentum and energy. Introduction to the role of surface gravity waves in the transfer dynamics. 3 lectures. Formerly OCN 460 at Cal Maritime.

OCN 4470 Biogeochemistry (3 units)

Term Typically Offered: F, SP

Prerequisite: CHE 210 or CHE 2210; OCN 200 or OCN 2200; and OCN 340 or OCN 3340.

Introduction to basic concepts in low temperature geochemistry of aqueous and solid environmental systems. Geochemical reactions that shaped earth's early history. Evolution of planet from interactions of geochemical and biological reactions throughout time. Acid/base and redox chemistry and their influence on biogeochemical cycling of carbon, metals, and sulfur in various environments. Role of microbes as catalysts of biogeochemical reactions and the bioenergetics of these reactions that drive biogeochemical cycling in diverse environmental systems. 3 lectures. Formerly OCN 470 at Cal Maritime.

SCM Courses**SCM 1101 Introduction to Health Profession Careers (1 unit)**

Term Typically Offered: SP

CR/NC

Recommended: Completion of GE Area 1A with a grade of C- or better (GE Area A2 for the 2020-26 catalogs).

Introduction to health profession careers. Exploring health careers and creating a pre-health plan that includes course selection, cultivating experiences, and developing core competencies. Intended for students undecided about their health professions career choice. Credit/No Credit grading only. Course may be offered in classroom-based or hybrid format. 1 seminar. Formerly SCM 101.

SCM 1150 Supplemental Workshops in Science and Statistics (1 unit)

Term Typically Offered: F, SP, SU

CR/NC

Concurrent: Enrollment in the designated section of the associated course.

Facilitated study and discussion of the theory, concepts, and applications of content material from selected biology, chemistry, physics, and statistics courses. The Class Schedule will list subtitle selected. Credit/No Credit grading only. Repeatable up to 8 units. 1 laboratory. Formerly SCM 150.

SCM 2220 Seminar for Science and Math Tutors (1 unit)

Term Typically Offered: F, SP

CR/NC

Concepts of teaching and learning as it relates to roles as K-12 grade science and math tutors and/or classroom assistants. Intended for participants in science, engineering, and mathematics tutoring and teaching assistant programs. Participation in public schools requires mandated fingerprint clearance. Credit/No Credit grading only. Repeatable up to 3 units. Course may be offered in classroom-based or online format. 1 activity. Formerly SCM 220.

SCM 2230 Seminar for Learning Assistants (2 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: One of the following: completion of GE Area 5A (GE Area B1 for the 2020-26 catalogs), completion of GE Area 5B (GE Area B2 for the 2020-26 catalogs), or completion of GE Area 5C (GE Area B3 for the 2020-26 catalogs).

Introduction to learning theory and teaching practices for mathematics and science learning assistants regarding conceptual development, questioning techniques, cooperative learning, nature of math and science, and argumentation in mathematics and science. Degree credit limited to 4 units. Repeatable up to 6 units. 2 seminars. Formerly SCM 230.

SCM 2240 Becoming a Responsible Scientist (2 units)

Term Typically Offered: F

Prerequisite: Completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); and one of the following: STAT 217, STAT 218, STAT 251, STAT 301, STAT 312, STAT 1110, STAT 1210, STAT 1510, or STAT 3210.

Establishing science identity and mentoring relationships. Foundational knowledge in responsible conduct of research including research misconduct, rigor, and reproducibility. Building a scientific proposal with emphasis on improving scientific writing and citation. Intended for students with prior research experience. 2 seminars. Formerly SCM 240.

SCM 2270 Special Topics (1-3 units)

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of special topics. The Class Schedule will list topic selected. Repeatable up to 6 units. Course may be offered in classroom-based, online, or hybrid format. 1 to 3 lectures. Formerly SCM 270.

SCM 3300 Early Field Experience (3 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Sophomore standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); and completion of one lower-division course in GE Area 4 (GE Areas D1 or D2 for the 2020-26 catalogs).

Introduction to secondary science and mathematics teaching in California including structure, organization, and culture of schools. Curriculum, instruction, assessment, and classroom management. Structured observation and participation in K-12 public schools is required. Credit/No Credit grading only. 2 seminars, 1 activity. Formerly SCM 300.

SCM 3301 Application Strategies and Preparation for Health Profession Programs (1 unit)

Term Typically Offered: SP

CR/NC

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs); minimum of 3.0 CPSLO GPA; and consent of instructor. Recommended: SCM 101 or SCM 1101; and UNIV 401 or UNIV 4401, or completion of GWR.

Analysis of the application timeline and admission requirements, and critique of personal statement. Credit/No Credit grading only. Course may be offered in classroom-based or hybrid format. 1 seminar. Formerly SCM 301.

SCM 3302 The Learn By Doing Lab Teaching Practicum (2 units)

Term Typically Offered: SP

CR/NC

Prerequisite: 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).

Early teaching experience in an informal science, technology, engineering, and mathematics (STEM) teaching and learning environment. Principles of inquiry-driven STEM education, lesson design, implementation and assessment. Intended for undergraduates exploring STEM teaching as a career. Repeatable up to 4 units. Credit/No Credit grading only. 1 seminar, 1 laboratory. Crosslisted as ENGR/HNRS/SCM 3302. Formerly ENGR 322/HNRS 302/SCM 302.

SCM 3316 Environmental Literacy: An Integrative STEM Approach (3 units)

Term Typically Offered: SP

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). Recommended: Introductory statistics course.

Examination of local environmental challenges with systems thinking strategies and tools. Explore natural and human factors shaping coastal watersheds. Design for environmental education, analyze science data and practices, develop critical environmental literacy, and practice culturally inclusive communication strategies. Field trip required. 2 seminars, 1 activity. Crosslisted as NR/SCM 3316. Formerly NR/SCM 316.

SCM 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.

SCM 3340 Responsible Scientists in Society (1 unit)

Term Typically Offered: SP

CR/NC

Prerequisite: Junior standing; completion of GE Area 1 with grades of C- or better (GE Area A for the 2020-26 catalogs). Recommended: SCM 240 or SCM 2240.

Introduction to social contexts around scientific research, including its collaborative nature and social impacts, and navigation of social spaces in the conduct of science. Intended for students with previous research experience. Credit/No Credit grading only. 1 seminar. Formerly SCM 340.

SCM 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.

SCM 3360 Selected Environmental Issues of California's Central Coast (3 units)

Term Typically Offered: 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); 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).

Interdisciplinary investigation of key environmental issues affecting California's Central Coast region. Focuses on the role of science and technology in achieving sustainable food production, energy use, and natural resource management. Field trip required. Course may be offered in classroom-based or hybrid format. 2 lectures, 1 activity. Fulfills GE Areas Upper-Division 2 or Upper-Division 5 (GE Area Upper-Division B for students on the 2020-26 catalogs). Formerly SCM 360.

SCM 3363 Pre-Health Shadowing Fieldwork (1-2 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Sophomore standing; completion of GE Area 1C with a grade of C- or better (GE Area A1 for the 2020-26 catalogs); completion of GE Area 1A with a grade of C- or better (GE Area A2 for the 2020-26 catalogs); minimum GPA of 3.0; and consent of instructor.

Structured observational experiences for pre-health students. Designed to promote awareness and understanding of health careers. Students observe healthcare professionals in their work under the direct supervision of an approved on-site coordinator. Limited space availability. Application for enrollment is available from Bailey College Student Services. Repeatable up to 6 units. Credit/No Credit grading only. Course offered in hybrid format with classroom-based and online learning. 1 to 2 activities. Formerly SCM 363.

SCM 3368 Theory and Practice of STEM Tutoring (3 units)

Term Typically Offered: SP

Prerequisite: Completion of GE Area 2 with a grade of C- or better (GE Area B4 for the 2020-26 catalogs), or completion of one course in GE Area 5A or 5B (GE Areas B1 or B2 for the 2020-26 catalogs).

Theories and practices central to Science, Technology, Engineering, and Mathematics (STEM) tutoring, such as collaborative learning, social dimensions of the peer/tutor relationship, and STEM literacy. Recommended for those interested in tutoring and/or careers in STEM education. Course may be offered in classroom-based, online, or hybrid format. 2 lectures, 1 activity. Formerly SCM 368.

SCM 4470 Special Advanced Topics (1-3 units)

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of special topics for advanced students. The Class Schedule will list topic selected. Repeatable up to 6 units. Course may be offered in classroom-based, online, or hybrid format. 1 to 3 lectures. Formerly SCM 470.

SCM 4471 Special Advanced Laboratory (1-3 units)

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group laboratory study of special topics for advanced students. The Class Schedule will list topic selected. Repeatable up to 6 units. 1 to 3 laboratories. Formerly SCM 471.