

MARINE SCIENCE (MSCI)

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MSCI Courses

MSCI 1100 Orientation to Marine Sciences (1 unit)

Term Typically Offered: F

CR/NC

Prerequisite: Marine Sciences major.

Introduction to Marine Sciences faculty, the Biology Department and campus resources, research opportunities, possible careers, studying science, and current topics in marine sciences. Field trip may be required. Credit/No credit grading only. 1 lecture. Formerly MSCI 100.

MSCI 1111 The Oceans (3 units)

Term Typically Offered: F, SU

2026-28 or later catalog: GE Area 5B

2020-26 catalogs: GE Area B2

Sustainability Focused

Introduction to biological, chemical, geological, and physical features and processes of Earth's oceans. Survey of marine biodiversity, organismal adaptations and ecological significance. Focus on select marine and coastal ecosystems. Interaction between humans and sea (climate change, ocean acidification, pollution, overfishing). Course may be offered in classroom-based or online format. 3 lectures. Fulfills GE Area 5B (GE Area B2 for students on the 2020-26 catalogs). Formerly MSCI 111.

MSCI 1112 The Oceans Laboratory (1 unit)

Term Typically Offered: F, SP

Corequisite: MSCI 111 or MSCI 1111.

Hands-on exploration of the physical and chemical properties of seawater and how they influence biology within the ocean. Explore oceanographic principles, create and interpret figures and data, and examine the ocean as a part of the Earth's systems and cycles. Field trip required. 1 laboratory.

MSCI 3300 Marine Ecology (4 units)

Term Typically Offered: F, SP

Prerequisite: BIO 150 or BIO 1150; BIO 161 or BIO 1151; and one of the following: BIO 263, BIO 2253, MSCI 111, or MSCI 1111. Recommended: STAT 218 or STAT 1110.

Introduction to the ecology of marine organisms and the processes that underlie their patterns of distribution and abundance in open oceans, coastal regions, and estuaries. Field trip required. 2 lectures, 2 laboratories. Formerly MSCI 300.

MSCI 3301 Biological Oceanography (3 units)

Term Typically Offered: F

Prerequisite: BIO 150 or BIO 1150; BIO 161 or BIO 1151; CHEM 124, CHEM 127, or CHEM 1120; CHEM 125, CHEM 128, or CHEM 1122; MSCI 300 or MSCI 1111 and MSCI 1112; and PSC 201 or PSC 2201. Recommended: STAT 218 or STAT 1110.

Interdisciplinary study of marine organisms, how they interact with each other and their physical, chemical, and geological environment. Emphasis on how these interactions impact abundance, diversity, and temporal and spatial distributions. 3 lectures. Formerly MSCI 301.

MSCI 3303 Ocean Technologies and Data (3 units)

Term Typically Offered: F

Prerequisite: PSC 201 or PSC 2201; and STAT 218 or STAT 1110.

Overview of ocean data sensors and technologies. Introduction to scientific computing and data analysis techniques in oceanography, ocean observing systems and data portals, data visualization, time series methods, and spatial data analysis. Field trip required. 2 lectures, 1 activity.

MSCI 3324 Marine Mammals, Birds, and Reptiles (4 units)

Term Typically Offered: SP

Prerequisite: BIO 150 or BIO 1150; and BIO 161 or BIO 1151. Recommended: STAT 218 or STAT 1110.

Introduction to the biology, ecology, and evolution of mammals, birds, and/or reptiles of the marine environment, including diversity patterns, evolutionary relationships, adaptations to the ocean, and conservation issues, with an emphasis on Central California species. Field trip required. 3 lectures, 1 laboratory. Formerly MSCI 324.

MSCI 4401 Marine Science Outreach (1-2 units)

Term Typically Offered: F, SP

CR/NC

Prerequisite: Junior standing; one of the following: MSCI 300, MSCI 301, MSCI 3300, MSCI 3301, PSC 201, or PSC 2201; and consent of instructor.

Volunteer or internship experience in a marine science business, industry, government agency or informal science center. Positions require communicating science to the public. Formal report and evaluation by work supervisor required. Field trip required. Repeatable up to 5 units. Credit/No credit grading only. Formerly MSCI 401.

MSCI 4403 Field Oceanography (4 units)

Term Typically Offered: TBD

Prerequisite: One of the following: CHEM 302, CHEM 3370, MSCI 301, or MSCI 3301; MSCI 300 or MSCI 1111 and MSCI 1112; and PSC 201 or PSC 2201.

Advanced exploration of coastal ocean ecosystems. Focus on oceanographic field work, including trips to local marine ecosystems and hands-on laboratory investigations. Integration of biological, chemical, physical, and geological observations to gain a holistic understanding of oceanography. Field trip required. 2 lectures, 2 laboratories. Formerly MSCI 403.

MSCI 4410 Scientific Diving (2 units)

Term Typically Offered: SU

Prerequisite: MSCI 111 or MSCI 1111; and consent of instructor. Recommended: MSCI 300 or MSCI 3300.

Professional diver training with a focus on scientific methodology and underwater sampling techniques. Satisfies standards of American Academy of Underwater Sciences. Combination of theory, techniques and scuba diving. Experience collecting data and handling scientific equipment underwater. To enroll in the course, student must have an open water diving certificate, first aid and CRP certification, a current diving medical exam, scuba equipment service documentation, medical insurance that covers hyperbaric oxygen treatment for injured divers, and an application for the course. Additional fees required. Field trip required. 1 laboratory, 1 activity. Formerly MSCI 410.

MSCI 4437 Marine Botany (4 units)

Term Typically Offered: F

Prerequisite: One of the following: BIO 263, BIO 2253, MSCI 300, or MSCI 3300; or graduate standing.

Comprehensive examination of the ecology, life histories, functional morphology, physiology, and taxonomy of marine algae and marine plants. Laboratory emphasizes species endemic to the central coast of California. Field trip required. Course may be offered in classroom-based or hybrid format. 3 lectures, 1 laboratory. Formerly MSCI 437.

MSCI 4438 Aquaculture (4 units)

Term Typically Offered: F

Prerequisite: One of the following: BIO 263, BIO 2253, BRAE 220, BRAE 2220, MSCI 300, or MSCI 3300.

Propagation and rearing of fishes, invertebrates, and algae from marine, freshwater, and estuarine habitats. Global perspectives including aquaculture development and current status in developed and developing countries for food production. Current culture methodologies and examination of system design constraints. 3 lectures, 1 laboratory. Crosslisted as BRAE/MSCI 4438. Formerly MSCI 438.

MSCI 4439 Marine Fisheries and Conservation (4 units)

Term Typically Offered: TBD

Prerequisite: MSCI 300 or MSCI 3300; or graduate standing.

Scientific investigation of the management and conservation of marine fisheries and ecosystems. Integration of ecology, oceanography, socio-economic, and political science disciplines using field, wet-lab, and analytical/computational methods to assess and achieve sustainable fisheries and healthy ecosystems in the ocean. Field trip required. Course may be offered in classroom-based or hybrid format. 3 lectures, 1 laboratory. Formerly MSCI 439.

MSCI 4440 Communicating Ocean Sciences to Informal Audiences (3 units)

Term Typically Offered: F

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 5B (GE Area B2 for the 2020-26 catalogs); and one of the following: BIO 211, BIO 322, BIO 336, BIO 3210, BIO 3322, BIO 3326, MSCI 300, MSCI 3300, PSC 201, or PSC 2201.

Development of knowledge of ocean sciences and advanced educational approaches for communicating that knowledge. Teaching skills developed through coursework, outreach events and collaborative projects. Present ocean-themed inquiry-based science exhibits to improve scientific literacy of audiences of all ages. Field trip required. 1 lecture, 2 activities. Formerly MSCI 440.