MARINE SCIENCE (MSCI)

MSCI Courses

MSCI 100. Introduction to Marine Sciences. 1 unit
CR/NC
Term Typically Offered: F
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. Credit/No credit grading
only. 1 lecture.

MSCI 301. Biological Oceanography. 3 units
Term Typically Offered: F
Prerequisite: BIO 160, BIO 161, BIO 263, PSC 201, CHEM 129, and STAT
218.
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.

MSCI 303. Ocean Sampling Techniques. 3 units
Term Typically Offered: F
Prerequisite: CHEM 302, MSCI 301, and STAT 218.
Introduction to techniques in oceanography and marine sciences. Hands-
on technical training in sampling, measuring, tagging and tracking
of bathymetry and geography; waves, tides and currents; salinity,
temperature and pressure; dissolved oxygen and pH; irradiance and
light scattering; phytoplankton and zooplankton; and benthic fauna and
marine macrofauna. 1 lecture, 2 labs.

MSCI 307. World Aquaculture: Applications, Methodologies and Trends. 4
units
GE Area F
Term Typically Offered: TBD
Prerequisite: Junior standing and completion of GE Area B, including a GE
B2 course in biology with a BIO, BOT, or MCRO, or ZOO prefix.
Life histories and habitats of important species of fishes, invertebrates
and algae. Methodologies for the commercial propagation of specific
forms. Global and regional coverage, including socioeconomic trends,
controversies and applications in developed and less developed regions
of the world. Not open for major credit in Biological Sciences. 3 lectures,
1 activity. Fulfills GE Area F.

MSCI 324. Marine Mammals, Birds and Reptiles. 4 units
Term Typically Offered: TBD
Prerequisite: BIO 162; BIO 263; and STAT 218.
Introduction to the biology, ecology and evolution of mammals, reptiles
and birds of the marine environment, with an emphasis on Central
California species, diversity patterns, evolutionary relationships,
adaptations to the ocean, and conservation issues. Field trips required. 2
lectures, 2 laboratories.

MSCI 328. Marine Ecology. 4 units
Term Typically Offered: W, SP
Prerequisite: BIO 160, BIO 162, and BIO 263. Recommended: STAT 218.
Introduction to the functional biology of marine plants and animals and
the ecological processes that underlie their distribution and abundance
in open oceans, coastal regions, and estuaries. Field trips required. 2
lectures, 2 laboratories.

MSCI 330. Technologies for Ocean Discovery. 4 units
GE Area F
Term Typically Offered: TBD
Prerequisite: Junior standing and completion of GE Area B.
Survey of ocean sensor systems, sensor platforms, and other emerging
technologies that provide new understanding of the ocean, current
issues in marine science, and the social context and societal implications
of discoveries in ocean sciences. Course projects could include
presentations, data analysis, and hands-on design of sensors. Field trip
required. 3 lectures, 1 activity. Fulfills GE Area F.

MSCI 401. Marine Science Outreach. 1-2 units
CR/NC
Term Typically Offered: W
Prerequisite: PSC 201 or MSCI 301 or MSCI 328; Junior standing 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. Major credit limited to 4 units. Total credit
limited to 8 units. Credit/No credit grading only.

MSCI 410. Scientific Diving. 3 units
Term Typically Offered: SU
Prerequisite: BIO 263, open water diving certificate, and instructor
consent. Recommended: MSCI 301 or MSCI 328.
Advanced training in scientific methods associated with practical
training in scuba diving. Satisfies American Academy of Underwater
Sciences standards. Combination of theory, techniques and scuba diving.
Experience collecting data and handling scientific equipment underwater.
AAUS certification will require additional assessments outside of class.
Field trips and additional fee required. 1 lecture, 2 labs.

MSCI 428. Marine Conservation and Policy. 4 units
Term Typically Offered: W
Prerequisite: BIO 160 and BIO 263; BIO 327 or BIO 401 or BOT 326 or
MSCI 328, or Graduate standing in Biological Sciences. Recommended:
PSC 201.
Examination of how science and policy are used to evaluate and
implement marine conservation and resource management. Topics
include endangered species, fisheries, climate change, marine protected
areas, research and conservation topics and developing policy for
management decision-making. Field trip required. 3 lectures, 1 laboratory.
MSCI 437. Marine Botany. 4 units
Term Typically Offered: TBD
Prerequisite: Junior standing and BIO 162.

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. 3 lectures, 1 laboratory.

MSCI 438. Aquaculture. 4 units
Term Typically Offered: TBD
Prerequisite: BIO 160, BIO 162, and BIO 263.

Propagation and rearing of fishes, invertebrates and algae from marine, freshwater, and estuarine habitats. Current methodologies and general life histories. Global perspective including aquacultural development in developed and developing countries. 3 lectures, 1 laboratory.

MSCI 439. Fisheries Science and Resource Management. 4 units
Term Typically Offered: SP
Prerequisite: BIO 162. Recommended: ZOO 322.

Scientific investigation of marine and freshwater fisheries. Methodologies and quantitative strategies for study of finfish and invertebrates. Role of oceanographic or limnological processes on stock maintenance. Impact of human exploitation on maintenance of sustainable yields, including user-group conflict issues, and regional/global controversies. Lab/field protocols, basic fisheries statistical procedures, molecular methods, computer simulations. 3 lectures, 1 laboratory.

MSCI 440. Communicating Ocean Sciences to Informal Audiences. 3 units
Term Typically Offered: TBD
Prerequisite: Junior standing; MSCI 328, PSC 201, ZOO 322, or ZOO 336; completion of GE A with a grade of C- or better; and GE Area B2 or BIO 211.

Simultaneous focus on developing a knowledge of ocean sciences and the advanced educational approaches for communicating that knowledge. Teaching skills developed through coursework, outreach events and design of collaborative projects at museums and aquariums. Primary objective is to learn how to present ocean-themed hands-on, inquiry-based science exhibits, in order to improve the scientific literacy of audiences of all ages. Field trip required. 1 lecture, 2 activities.