

MARINE SCIENCES (MARN)

MARN 1001E. The Sea Around Us. (3 Credits)

(Also offered as MAST 1001E.) The relationship of humans with the marine environment. Exploitation of marine resources, development and use of the coastal zone, and the impact of technology on marine ecosystems. Taught at Storrs and Avery Point. CA 3.

Skill Codes: COMP Environmental Literacy

Content Areas: CA3: Science & Technology

Topics of Inquiry: TOI4: Environmental Literacy, TOI6: Science & Empirical Inq

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201001E>)

MARN 1002E. Introduction to Oceanography. (3 Credits)

Processes governing the geology, circulation, chemistry, and biological productivity of the world's oceans. Emphasis on the interactions and interrelationships between humans and the physical, chemical, biological, and geological processes that contribute to both the stability and the variability of the marine environment. Students who complete both MARN 1002 and 1004 will receive credit for a CA 3 laboratory course. CA 3.

Enrollment Requirements: Recommended preparation: A background in secondary school physics, chemistry or biology. Not open to students who have passed MARN 1003, 2002 or 3001.

Skill Codes: COMP Environmental Literacy

Content Areas: CA3: Science & Technology

Topics of Inquiry: TOI4: Environmental Literacy, TOI6L: Science Emp Inq (Lab)

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201002E>)

MARN 1003E. Introduction to Oceanography with Laboratory. (4 Credits)

Processes governing the geology, circulation, chemistry, and biological productivity of the world's oceans. Emphasis on the interactions and interrelationships of humans and the physical, chemical, biological, and geological processes that contribute to both the stability and the variability of the marine environment. Laboratory experiments, hands-on exercises, and field observations. CA 3-LAB.

Enrollment Requirements: Recommended preparation: A background in secondary school physics, chemistry, or biology. Not open to students who have passed MARN 1002, 2002, or 3001.

Skill Codes: COMP Environmental Literacy

Content Areas: CA3LAB: Science & Tech Lab

Topics of Inquiry: TOI4: Environmental Literacy, TOI6L: Science Emp Inq (Lab)

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201003E>)

MARN 1004. Oceanography Laboratory. (1 Credit)

Laboratory experiments, hands-on exercises, and field observations (including required cruise on research vessel) that teach fundamental oceanographic concepts emphasizing physical, chemical, and biological processes and their interaction in the marine environment. First semester (Avery Point). First and second semester (Storrs). Students who complete both MARN 1002 and 1004 will receive credit for a CA 3 laboratory course.

Enrollment Requirements: MARN 1002E, which may be taken concurrently. Not open to students who have passed MARN 1003 or 1003E.

Content Areas: CA3LAB: Science & Tech Lab

Topics of Inquiry: TOI6: Science & Empirical Inq

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201004>)

MARN 1160. Introduction to Scientific Diving. (2 Credits)

Introduction to scuba diving history, physics and physiology of diving, dive planning, open-circuit diving equipment, and marine environments. Open-water diving certification possible with successful completion of course. Approved medical questionnaire and liability waiver required.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201160>)

MARN 1893. International Study. (1-6 Credits)

Special topics taken in an international study program. Consultation with Marine Sciences program coordinator recommended prior to the student's departure.

May be repeated for a total of 6 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201893>)

MARN 1996. Introduction to Research. (1-6 Credits)

Investigation of a special problem involving field and/or laboratory observations in marine sciences.

Enrollment Requirements: Instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%201996>)

MARN 2801WE. Marine Sciences and Society. (3 Credits)

Scientific analysis of coastal zone issues and interdisciplinary implications for society, including theories, observations, and models of how humans impact the health and well-being of the natural world and how the natural world impacts the health of humans. Topics incorporate public policies, legal frameworks, and moral and/or ethical dimensions regarding the environment. Written analysis and discussion of primary literature.

Enrollment Requirements: MARN 1002 or MARN 1003; ENGL 1007 or 1010 or 1011 or 2011.

Skill Codes: COMP Environmental Literacy, COMP Writing Competency

Topics of Inquiry: TOI4: Environmental Literacy

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%202801WE>)

MARN 2893. International Studies. (1-6 Credits)

Special topics taken in an international study program. Consultation with Marine Sciences program coordinator recommended prior to the student's departure.

May be repeated for a total of 6 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%202893>)

MARN 2996. Directed Research 1. (1-6 Credits)

Investigation of a special problem involving field and/or laboratory observations in marine sciences.

Enrollment Requirements: Instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%202996>)

MARN 3000E. The Oceans and Global Climate. (3 Credits)

Understanding human impacts on the global climate system; the basics of domestic and international climate policy; and strategies for communicating climate-change science to the broader public, with special emphasis on the oceans. Topics include the Earth's energy budget and carbon cycle; the properties of greenhouse gases; historical and future changes in Earth's climate; impacts of global change on the oceans; and the implications of climate change for human behavior and energy usage. CA 3.

Enrollment Requirements: CHEM 1127Q; PHYS 1201Q or 1401Q or 1501Q or 1601Q. Recommended preparation: EARTH 1051 and MARN 1002.

Skill Codes: COMP Environmental Literacy

Content Areas: CA3: Science & Technology

Topics of Inquiry: T014: Environmental Literacy

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203000E>)

MARN 3001. Foundations of Marine Sciences. (4 Credits)

Biological, chemical, physical and geological structure and function of coastal systems; with a special focus on field observations in three important coastal habitats: beaches and rocky shores, marshes, and estuaries.

Enrollment Requirements: MARN 1002 or 1003; MATH 1110Q or 1071Q or 1131Q; BIOL 1107 and 1108; CHEM 1127Q and 1128Q; and PHYS 1201Q or 1401Q.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203001>)

MARN 3002. Foundations of Marine Sciences. (3 Credits)

Relationships between biological and physical processes in the ocean. Topics include spatial structure of physical properties, patterns and mechanisms of circulation, biological production, food web structure and function, recycling and export of nutrients and organic matter.

Enrollment Requirements: MARN 1002 or 1003; MATH 1110Q or 1071Q or 1131Q; BIOL 1107 and 1108; CHEM 1127Q and 1128Q; and PHYS 1201Q or 1401Q. Not open for credit to students who have passed MARN 2002.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203002>)

MARN 3012. Marine Invertebrate Biology. (3 Credits)

Comparative examination of major adaptations and functional responses of marine invertebrates to biotic and abiotic factors in the marine environment. Field trips required.

Enrollment Requirements: BIOL 1107 and 1108. Recommended preparation: MARN 1002 or 1003 or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203012>)

MARN 3014. Marine Biology. (3 Credits)

(Also offered as EEB 3230.) The study of the kinds and distributions of marine organisms. Particular attention is paid to biotic features of the oceans, organism-habitat and relationships and general ecological concepts influencing marine populations and communities. Field trips are required.

Enrollment Requirements: One year of laboratory biology.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203014>)

MARN 3015. Techniques in Marine Molecular Biology. (3 Credits)

Principles and technology in molecular genetics, including nucleic acid purification and manipulation, DNA fingerprinting, gene cloning and sequencing, phylogenetic analysis, and detection of gene expression.

Enrollment Requirements: BIOL 1107 and 1108 or BIOL 1107 and 1110; or consent of instructor.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203015>)

MARN 3017. Plankton Ecology. (3 Credits)

Ecology of planktonic organisms (bacteria, protista and metazoa). The evolutionary ecology concept, methods of research, special features of aquatic habitats; adaptations to aquatic environments; population biology; predation, competition, life histories, community structure, and role of plankton in ecosystem metabolism.

Enrollment Requirements: MATH 1060Q or 1131Q; PHYS 1201Q or 1401Q; CHEM 1122Q or equivalent; BIOL 1107 and 1108. Recommended preparation: MARN 1002. Consent of instructor for graduate students in lieu of requirements. Not open for credit to students who have passed both 5014 and 5016.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203017>)

MARN 3030. Coastal Pollution and Bioremediation. (3 Credits)

Overview of processes and compounds leading to pollution in the nearshore marine environment. The impact of pollution on the marine foodweb and its response is emphasized. Alleviation of pollution through metabolism of organisms, including bacteria, seagrasses, and salt marshes.

Enrollment Requirements: BIOL 1107 and 1108 ; CHEM 1127Q and 1128Q, or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203030>)

MARN 3060. Coastal Circulation and Sediment Transport. (3 Credits)

Circulation and mixing in estuaries and the inner continental shelf, including surface gravity waves, tides, and buoyancy and wind-driven circulation. Coastal sediments, geomorphology, and processes of sedimentation, erosion and bioturbation. Required field trips.

Enrollment Requirements: MARN 3001.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203060>)

MARN 3230. Beaches and Coasts. (3 Credits)

(Also offered as EARTH 3230.) Introduction to the processes that form and modify coasts and beaches, including tectonic setting, sediment supply, coastal composition, energy regimes and sea level change; tools and techniques utilized in marine geologic mapping and reconstruction of submerged coastal features; field trips to selected coastal features. Formerly offered as GSCI 3230.

Enrollment Requirements: MARN 1002 or MARN 1003 or EARTH 1050 or EARTH 1051, or consent of instructor.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203230>)

MARN 3505. Remote Sensing of Marine Geography. (3 Credits)

(Also offered as GEOG 3505.) Introduction to remote sensing applications in oceans and seas. Applications include image analysis of sea surface temperature, winds, altimetry, sea ice, chlorophyll, primary productivity, and bathymetry.

Enrollment Requirements: Recommended preparation: GEOG 2300 or MARN 1002.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203505>)

MARN 3811. Seminar on Marine Mammals. (3 Credits)

Instructors from different areas of expertise discuss the natural history, evolution, anatomy, physiology, husbandry, and conservation of marine mammals. Current research is emphasized. (Special registration: Contact Mystic Marinelife Aquarium, Mystic, CT 06355. 860-572-5955.)

Enrollment Requirements: One year college laboratory biology. Offered at the Mystic Marinelife Aquarium.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203811>)

MARN 3812. Seminar in Marine Biodiversity and Conservation. (3 Credits)

Critical examination of state-of-the-art research, policy and regulatory frameworks of marine conservation biology and associated environmental, cultural, and socio-economic implications. Topics may include aquaculture, endangered species, strandings, biomedicine, ocean pollution, and marine protected areas. Research projects to be conducted at Mystic Aquarium.

Enrollment Requirements: MARN 2801WE or EEB 2244E or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203812>)

MARN 3893. International Study. (1-6 Credits)

Consent of Department Head required, preferably prior to the student's departure.

May be repeated for a total of 6 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203893>)

MARN 3899. Independent Study. (1-6 Credits)

May be repeated for credit

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203899>)

MARN 3995. Special Topics. (1-6 Credits)

Prerequisites and recommended preparation vary.

May be repeated for credit

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203995>)

MARN 3996. Directed Research 2. (1-6 Credits)

Investigation of a special problem involving field and/or laboratory observations in marine sciences.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 12 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%203996>)

MARN 4001. Measurement and Analysis in Coastal Ecosystems. (4 Credits)

Examination of oceanographic processes in local coastal systems; collection and analyses of samples from field trips and lab experiments; data analysis using computers. Required field trips.

Enrollment Requirements: MARN 3001 and MARN 3002.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204001>)

MARN 4002. Science and the Coastal Environment. (3 Credits)

Specific cases of multiple impacts on environmental resources and coastal habitats. Current scientific understanding as a basis for sociopolitical decision-making (e.g., land-use impacts on coastal processes in relation to zoning regulation and water-quality criteria).

Enrollment Requirements: MARN 4001 or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204002>)

MARN 4010. Biological Oceanography. (3 Credits)

Structure and function of marine food webs, from primary producers to top trophic levels; interaction of marine organisms with the environment; energy and mass flow in food webs; elemental cycling; coupling between pelagic and benthic environments.

Enrollment Requirements: CHEM 1128Q; MATH 1122Q or 1132Q; PHYS 1202Q or equivalent; BIOL 1107 and 1108.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204010>)

MARN 4018. Ecology of Fishes. (3 Credits)

General concepts in fish ecology such as distribution, feeding, bioenergetics, growth, larval fish ecology, biotic interactions, life history evolution and other contemporary research topics.

Enrollment Requirements: MARN 3014.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204018>)

MARN 4019. Algae and the Environment. (3 Credits)

Fundamentals of algae, interactions of algae with the environment, and applications for environmental conservation and human uses. Introduction to the evolution and diversity of marine and selected freshwater algae and major ecological characteristics and responses to environmental variability. Applications may include exploitation of algae for green energy, environmental bioremediation, food, and bioproducts.

Enrollment Requirements: BIOL 1108 or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204019>)

MARN 4030W. Chemical Oceanography. (3 Credits)

Composition, origin, and solution chemistry of seawater and the marine biogeochemical cycles of salts, elements, and gases. Distributions and transfer in the marine environment through chemical equilibria, rates, redox, partitioning, ocean circulation, biological cycles, and crustal exchanges.

Enrollment Requirements: CHEM 1128Q; MATH 1132Q; PHYS 1202Q or equivalent; ENGL 1010 or 1011 or 2011.

Skill Codes: COMP. Writing Competency

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204030W>)

MARN 4050. Geological Oceanography. (3 Credits)

Concepts in geological oceanography, including the role of plate tectonics in the control of the Earth and ocean system, fundamentals of biosphere-geosphere interaction over geologic timescales, and the reconstruction of past climates using marine sediment archives.

Enrollment Requirements: EARTH 1051 or MARN/ERTH 3230 or instructor consent.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204050>)

MARN 4052. Paleooceanography. (3 Credits)

Exploration of how the geologic record, geochemical proxies and model simulations can be used to understand climate change at centennial and longer timescales, with an emphasis on oceanographic processes. Topics include global overturning circulation, carbon cycle dynamics, and feedback mechanisms that govern long-term climate variability.

Enrollment Requirements: CHEM 1126Q or 1128Q and PHYS 1202Q or 1402Q.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204052>)

MARN 4060. Physical Oceanography. (3 Credits)

Overview of physical properties and dynamics influencing the oceans and coastal waters. Descriptions of global water property distributions, surface mixed layer, pycnocline, surface heat fluxes, and major ocean currents. Introduction to dynamics of ocean circulation, waves, tides, and coastal circulation.

Enrollment Requirements: PHYS 1202Q, 1402Q, 1502Q or 1602Q; MATH 1122Q or 1132Q.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204060>)

MARN 4066. River Influences on the Marine Environment. (3 Credits)

Influences of rivers on estuaries, coastal and open ocean water properties, energy budgets and ecosystems including inputs of buoyant waters, sediments and pollutants and variability from storms, seasons, human alterations, and climate change.

Enrollment Requirements: Recommended preparation: Calculus and general physics.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204066>)

MARN 4130. Geomicrobiology. (3 Credits)

(Also offered as EARTH 4130.) Microbial diversity and biogeochemistry in aquatic ecosystems, microbe-mineral interactions, fossil record, atmospheric record, microbialites, and research methodology in geomicrobiology. A weekend field trip may be required. Formerly offered as GSCI 4130.

Enrollment Requirements: CHEM 1124Q, 1125Q and 1126Q; or CHEM 1127Q and 1128Q; or EARTH 2500; or permission of instructor.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204130>)

MARN 4160. Scientific Diving. (3 Credits)

Physics and physiology of scuba diving, federal regulation, consensus standards, dive planning, dive accident management and emergency planning, scientific diving methods, diving modes. Scientific diver certification possible with successful completion of course plus CPR, First Aid and Emergency Oxygen certification. Scuba certification and approved diving physical required.

Enrollment Requirements: Recommended preparation: MARN 1160.

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204160>)

MARN 4202Q. Models of the Ocean Carbon Cycle. (4 Credits)

Introduction to the chemical/biological reactions and transport dynamics of ocean models with the focus on attribution of anthropogenic carbon in the global ocean. Quantitative topics include mass balances, the coupled dynamics of oceans and the atmosphere as biogeochemical systems, and parameterizations of important biogeochemical processes. Formerly offered as MARN 3003Q.

Enrollment Requirements: MARN 1002 or 1003; MATH 1110Q or 1071Q or 1131Q or 1151Q or 2141Q; BIOL 1107 and 1108; CHEM 1126Q or 1128Q; and PHYS 1201Q or 1401Q.

Skill Codes: COMP Quantitative Competency

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204202Q>)

MARN 4210Q. Experimental Design in Marine Ecology. (4 Credits)

Introduction to experimental design and data analysis for marine biology and ecology. Analysis and visualization of experimental data using the statistical software package R. Topics include analysis of variance, replication and pseudoreplication, factorial designs, and significance testing.

Enrollment Requirements: MARN 3001 or EEB 3230/MARN 3014; or instructor consent.

Skill Codes: COMP Quantitative Competency

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204210Q>)

MARN 4891. Internship in Marine Sciences. (1-3 Credits)

An internship under the direction of MARN faculty. Placements stress application of academic training. A journal of activities is required. One credit may be earned for each 42 hours of pre-approved activities in a semester to a maximum of three credits. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).

Enrollment Requirements: Instructor consent. Recommended preparation: Nine credits of MARN courses at the junior-senior level.

May be repeated for a total of 9 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204891>)

MARN 4893. International Study. (1-6 Credits)

Special topics taken in an international study program.

Enrollment Requirements: Department Head consent. Consultation with Marine Sciences program coordinator recommended prior to the student's departure.

May be repeated for a total of 6 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204893>)

MARN 4895. Special Topics. (1-6 Credits)

Enrollment Requirements: Prerequisites and recommended preparation vary.

May be repeated for credit

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204895>)

MARN 4897W. Senior Research Thesis. (3 Credits)

Senior thesis reflecting independent research. Not limited to honors students.

Enrollment Requirements: Three credits of MARN 3899, which may be taken concurrently; ENGL 1007 or 1010 or 1011 or 2011. Recommended preparation: MARN 2801WE.

Skill Codes: COMP Writing Competency

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204897W>)

MARN 4898. Variable Topics. (1-3 Credits)

Enrollment Requirements: Prerequisites and recommended preparation vary.

May be repeated for credit

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204898>)

MARN 4996. Independent Research. (1-6 Credits)

Investigation of a special problem involving field and/or laboratory observations in marine sciences.

Enrollment Requirements: Instructor consent.

May be repeated for a total of 12 credits

View Classes (<https://catalog.uconn.edu/course-search/?details&code=MARN%204996>)