**Oceanography**

**LOWER DIVISION**

**OCN 109. General Oceanography** (3) FS. Extent of the oceans; chemical nature of sea water; causes/effects of currents, tides, and waves; animal and plant life in the sea; features of the ocean floor. [Coreq: OCN 109L. Weekly: 3 hrs lect, 3 hrs lab. GE.]

**OCN 109L. General Oceanography Laboratory** (1) FS. Introductory laboratory activities to develop understanding of fundamental concepts from geological, chemical, physical, and biological oceanography and the inter-relationship between those concepts. [Prereq: OCN 109 (C). GE.]

**OCN 260. Sampling Techniques & Field Studies** (1) Introductory course for majors. Biological, chemical, geological, and physical oceanographic methods of sampling and analysis. Shipboard procedures and navigation. [Prereq: OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L.]

**UPPER DIVISION**

**OCN 301. Marine Ecosystems — Human Impact** (3) S. Relationships and interaction between humans and marine life. Living organisms: in history and legend, as food, and as industrial resource. Problems and aesthetic aspects of marine organisms. [Prereq: OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L. Weekly: 2 hrs lect, 1 hr disc. GE.]

**OCN 304. Resources of the Sea** (3) F. Nonliving resources of the ocean floor and water; distribution, origin, and exploitation of minerals; energy production from the ocean; environmental and political problems of ocean exploitation. [Weekly: 2 hrs lect, 1 hr disc. GE.]

**OCN 310. Biological Oceanography** (4) F. Physical, chemical, and biological factors characterizing the marine environment, including factors controlling plant and animal populations. Methods of sampling identification and analysis. [Prereq: BIOL 105 and either OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L. Weekly: 2 hrs lect, 6 hrs lab.]

**OCN 320. Physical Oceanography** (4) S. Physical properties and processes in seas: theory of distribution of variables; current determination; waves and tides. [Prereq: OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L and (MATH 110 or MATH 205) and (PHYP 110 (C) or PHYP 107 (C)). Weekly: 3 hrs lect, 3 hrs lab.]

**OCN 330. Chemical Oceanography** (4). Composition of seawater: Distribution and cycling of important major and minor chemical species throughout the oceans. Marine analytical chemistry. [Prereq: OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L and CHEM 110, or IA. Weekly: 2 hrs lect, 6 hrs lab.]

**OCN 340. Geological Oceanography** (4). Classification/origin of major topographic features on ocean floor: First order plate tectonic theory. Recent marine sediments and sedimentary processes. [Prereq: OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L, GEOL 109, MATH 114 or MATH 115; or IA. Weekly: 3 hrs lect, 3 hrs lab.]

**OCN 370. Library Research & Report Writing Seminar** (2) S. Access oceanographic literature and write reports. [Weekly: 1 hr lect, 3 hrs lab.]

**OCN 410. Zooplankton Ecology** (3) F. Identification, distribution, abundance, adaptations, and life histories of animals in the plankton. Techniques in field/lab studies. [Prereq: (OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L), and (OCN 310 or ZOOL 314); or IA. Weekly: 1 hr lect, 6 hrs lab.]

**OCN 420. Oceans & Climate** (3). Examines the role that oceans play in mediating global climate. Detailed exploration of ocean carbon cycle, consequences of climate change on ocean ecosystems, ocean-related climate feedback loops, and predictions of oceans of the future. [Prereq: CHEM 107 or CHEM 109, MATH 105 or MATH 109, OCN 109 (if taken prior to fall 2015) or OCN 109 and OCN 109L, PHYP 107 or PHYP 109.]

**OCN 485. Undergraduate Seminar** (1) F. Study literature to prepare oral scientific reports. [Prereq: senior standing and at least one of the following: OCN 310, OCN 320, OCN 330, OCN 340, or IA.]

**OCN 495. Field Cruise I** (3) S. Develop a research proposal. Conduct research on extended cruise. Use oceanographic techniques and theory onboard ship. [Prereq: oceanography major with junior standing or greater; Rep twice.]

**OCN 496. Field Cruise II** (2) F. Process oceanographic samples and analyze research data. Prepare a final cruise report. [Prereq: OCN 495.]

**OCN 499. Directed Study** (1-2) FS. Original research on assigned topic. Lab work, field work, or literature surveys. [Prereq: senior oceanography major and IA. Rep.]

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Sustainability-focused; Sustainability-related; activity; (C) may be concurrent; coreq corequisite(s): CR/NC mandatory credit/no credit; IA dept approval; disc discussion;