

Oceanography (B.S.) (3 Tracks: OOST, MESH and OC)

Draft Degree Plan:

<p>Year 1 – Semester 1 OCNG 251 Oceanography* (3) OCNG 252 Oceanography Lab* (1) CHEM 101/111 Fundamental Chemistry (4) MATH 151 Engineering Math I (4) ENGL 104 Comp and Rhetoric (3) GEOS 101 First Year Experience (1)</p> <p>Total: 16 Credit hours (undergraduate)</p>	<p>Year 1 – Semester 2 CHEM 102/112 Fundamental Chemistry II (4) MATH 152 Engineering Math II (4) PHYS 218 Mechanics (4) History or Political Science elective (3)</p> <p>Total: 15 Credit hours (undergraduate)</p>
<p>Year 2 – Semester 1 Track Requirement (3) [4]** OCNG 203 Communicating Oceanography Lab (1) BIOL 111 Introductory Biology I (4) STAT 211 Principles of Statistics (3) History or Political Science elective (3)</p> <p>Total: 14 [15]** Credit hours (undergraduate)</p>	<p>Year 2 – Semester 2 Track Requirement (3) [4]** BIOL 112 Introductory Biology II (4) PHYS 208 Electricity and Optics (4) COM 203 Public Speaking or COM 205 Communication for Technical Professions (3)</p> <p>Total: 14 [15]** Credit hours (undergraduate)</p>
<p>Year 3 – Semester 1 OCNG 410 Physical Oceanography(3) OCNG 420 Biological Oceanography (3) OCNG 456 or OCNG 469 (3) OCNG Track Elective (3) Visual and performing arts elective (3)</p> <p>Total: 15 Credit hours (undergraduate)</p>	<p>Year 3 - Semester 2 OCNG 430 Geological Oceanography (3) OCNG 440 Chemical Oceanography (3) GEOS 470 Data Analysis and Methods in Geoscience (3) OCNG Track Elective (3) History or Political Science elective (3)</p> <p>Total: 15 Credit hours (undergraduate)</p>
<p>Year 4 – Semester 1 OCNG 489 Oceanographic Field and Laboratory Methods (3) OCNG 481 Seminar in Oceanography (1) OCNG 303 Professional Communication in Ocean Science (3) OCNG Track Elective (3) OCNG or Technical elective (3) [2]** Social and Behavioral Sciences elective (3)</p> <p>Total: 16 [15]** credit hours</p>	<p>Year 4 – Semester 2 OCNG 461 – Advanced Oceanographic Data Analysis and Communication (Capstone Course) (3) OCNG or Technical elective (3) [2]** OCNG Track Elective(3) Humanities elective (3) History or Political Science elective (3)</p> <p>Total: 15 [14]** credit hours</p>

Total undergraduate credit hours: 120

* Sections for majors

** The MESH and OC track requirements include two 4 credit courses in year 2.

TRACK Requirements and Electives

<p><u>Ocean Observing System Track (OOST)</u></p> <p>Required: STAT 212 - Principles of Statistics II (3) OCNG 404 – Ocean Observing Systems (3)</p> <p>Electives: OCNG 350 – Marine Pollution (3) OCNG 456 – MatLab Programming Lab for Ocean Science (3) OCNG 469 – Python for Geoscience (3)</p> <p>ATMO 201 – Weather and Climate (3)* ATMO 203 – Weather Forecasting Laboratory (1)* ATMO 251 – Weather Observations and Analysis (3) GEOG 361 - Remote Sensing in Geosciences (4) STAT 407 – Principles of Sample Surveys (3)</p>	<p><u>Marine Ecosystem Science and Health (MESH)</u></p> <p>Required: CHEM 227/237 – Organic Chem (4) CHEM 228/238 – Organic Chem (4)</p> <p>Electives: OCNG 350 – Marine Pollution (3) OCNG 425 – Microbial Oceanography (3) OCNG 456 – MatLab Programming Lab for Ocean Science (3) OCNG 469 – Python for Geoscience (3) OCNG 489 – Mid ocean Ridge and Hydrothermal Vents (3)</p> <p>ATMO 363 Introduction to Atmospheric Chemistry and Air Pollution (3) BIOL 213 Molecular Cell Biology (3) BIOL 214 – Genes, Ecology and Evolution (3) BIOL 351 Fundamentals of Microbiology (4) CHEM 315 Quantitative Analysis (3) CHEM 362 – Descriptive Inorganic Chemistry (3) CHEM 383 Chemistry of Environmental Pollution (3) CHEM 415 Analytical Chemistry (3) GENE 302 – Principles of Genetics (3)</p>
<p><u>Ocean Climate (OC)</u></p> <p>Required: MATH 251 Engineering Math III (4) MATH 308 Differential Equations (4)</p> <p>Electives: OCNG 451 – Mathematical Modeling of Ocean Climate (4) OCNG 456 – MatLab Programming Lab for Ocean Science (3) OCNG 469 – Python for Geoscience (3)</p> <p>ATMO 324 - Physical and Regional Climatology (3) ATMO 441 - Satellite Meteorology and Remote Sensing (3) GEOG 442/GEOS 442 - Past Climates (3) MATH 304 – Linear Algebra (3) PHYS 221 – Optics and Thermal Physics (3) STAT 212 - Principles of Statistics II (3)</p>	

* majors section

Degree Elements:

120 credits

Major Coursework (30 hours)

- OCNG 251/252 (4) – [section for majors attribute]
- OCNG 281 Seminar in Communicating Oceanography (1)
- OCNG 410 Physical Oceanography (3)
- OCNG 420 Biological Oceanography (3)
- OCNG 430 Geological Oceanography (3)
- OCNG 440 Chemical Oceanography (3)
- OCNG 456 Matlab Programming for Ocean Science or OCNG 469 Python for Geoscientists (3)
- OCNG 481 Seminar (1)
- OCNG 489 Oceanographic Field and Laboratory Methods (3)
- OCNG 89 Professional Communication in Ocean Science (3)
- GEOS 470 Data Analysis and Methods in Geoscience (3)

Track Coursework (18 hours)

- 6 [8] hours required based on track
- 12 [10] hours from track electives

Supporting Coursework (10 hours)

- 9 hours OCNG or technical electives
- GEOS 101 (1) – First Year Experience [for majors]

Life and Physical Sciences (24 hours)

- CHEM 101/111 (4)
- CHEM 102/112 (4)
- BIOL 111 (4)
- BIOL 112 (4)
- PHYS 218 (4)
- PHYS 208 (4)

Mathematics (11 hours)

- MATH 151 (4)
- MATH152 (4)
- STAT 211 (3)

Citizenship (12 hours):

- 6 hours in History [KHIS attribute]
- 6 hours in Political Science (POL 206 and 207)

Communication (6 hours)

- 6 hours communication requirement (ENGL 104 and COM203 or205)

Social Science (3 hours)

- 3 hours social science elective (recommend GEOG 201)

Creative Arts (3 hours)

- 3 hours Creative arts elective [KCRA attribute]

Language,Philosophy and Culture (3 hours)

- 3 hours Lang, Phil, Cul [KLPC attribute]

Overview

The BS in Oceanography provides students with an interdisciplinary education and training in one of three areas of ocean science: Ocean Observing Systems and Technology (OOST), Ocean Climate (OC) and Marine Ecosystem Science and Health (MESH). All students will gain skill in handling, evaluating and analyzing large datasets.

The BS in Oceanography curriculum: 1) Provides students with an interdisciplinary understanding of the oceans and the processes affecting them for use in careers in marine science or other related fields; 2) Provides students with the skills to retrieve, evaluate, and analyze large oceanographic datasets such as those generated from long term oceanographic studies and observing systems; and 3) Emphasizes critical thinking and problem solving skills.

Students planning on attending graduate school are encouraged to also complete a minor in a STEM field. Many graduates will obtain jobs in a variety of fields including marine technical support, energy and transportation industries, insurance industries, hazard mitigation, marine operations, homeland security, oil spill response, etc.