Interested in graduate school in oceanography or a career in oceanographic research?

INFORMATION FOR SKIDMORE STUDENTS:

Oceanography is highly interdisciplinary! Successful graduate students have come from many different undergraduate majors, but they have in common a strong background in at least one of the traditional science fields (biology, chemistry, physics, or Earth science) and ideally, significant preparation in more than one of them. The recommended Skidmore coursework varies depending on the subfield of oceanography in which your primary interests lie. Details are broken out by subfield below. This guide was written for students majoring in Geoscience but contains useful info for students from other majors, too.

Marine Geology

As part of the Geosciences major (or in addition to the requirements of other majors)

- GE-112 as one of your 100-level GE courses
- PY-207 as one of your cognate science electives
- MA-113
- GIS
- Upper-level Geosciences electives in oceanography, geomorphology, Earth history, Earth materials, stratigraphy, geophysics, and tectonics.

Recommended in addition to Geosciences major requirements:

- Additional physical and inorganic chemistry electives beyond CH-125 (for some subfields of Marine Geology)
- Computer programming, either formally (CS coursework or GE-235) or informally (e.g., through research)
- Research (talk to Geoscience faculty for opportunities!)

Chemical Oceanography

As part of the Geosciences major (or in addition to the requirements of other majors)

- GE-112 as one of your 100-level GE courses
- PY-207 as one of your cognate science electives
- MA-113
- Upper level Geoscience electives in oceanography, climatology, and biogeochemistry; also Soil Science (ES-308)

Highly recommended in addition to Geosciences major requirements:

- Organic chemistry (CH-221 and -222) plus additional chemistry courses, particularly Analytical Methods in Chemistry (CH-232), and Atmospheric Chemistry (when offered), also physical, inorganic, and/or biochemistry
- Computer programming, either formally (CS coursework or GE-235) or informally (e.g., through research)
- Research (talk to Geoscience, Chemistry, and Environmental Science faculty for opportunities!)

Other majors that offer good preparation: Chemistry

Physical Oceanography

As part of the Geosciences major (or in addition to the requirements of other majors)

- GE-112 as one of your 100-level GE courses
- PY-207 as one of your cognate science electives
- MA-113
- Upper level Geoscience electives in oceanography, climatology, geophysics, and remote sensing

Highly recommended in addition to Geosciences major requirements:

- Linear Algebra (MA-200) and Differential Equations (MA-270)
- General Physics II (PY-208) and Modern Physics (PY-210)
- Upper level Physics electives in mechanics, thermodynamics, and numerical methods
- Computer programming, either formally (CS, PY coursework or GE-235) or informally (e.g., through research)
- Research (talk to Geoscience and Physics faculty for opportunities!)

Other majors that offer good preparation: Physics, math

Biological Oceanography

As part of the Geosciences major (or in addition to the requirements of other majors)

- GE-112 as one of your 100-level GE courses
- BI-108 as one of your cognate science electives
- Calculus II (MA-113), Statistics (MA-240 or MS-240) or GE-235
- Upper-level Geosciences electives in oceanography, climatology, and biogeochemistry

Recommended in addition to Geosciences major requirements

- Organic chemistry (CH-221 and -222) and Biochemistry (CH-341)
- Molecular and Cell Biology Foundation (BI-107), Marine Biology (BI-140), Ecology (BI-241), Evolution (BI-224), Microbiology (BI-246)
- Research (talk to Geoscience, Biology, and Environmental Science faculty for opportunities!)

Other majors that offer good preparation: Biology, Environmental Science

INFORMATION FOR SKIDMORE ADVISORS:

Students interested in ocean science graduate study should start on their foundational math and science requirements early, so that they have the preparation and schedule flexibility to take upper-level electives later.

For students interested in physical oceanography, undergraduate math through differential equations is normally the minimum required for admission to graduate programs and is a prerequisite for first-year graduate courses.

Students entering programs in biological or chemical oceanography typically have more flexibility to fill gaps after starting graduate study, but they will be stronger candidates for admission if they can demonstrate a strong background in biology or chemistry. Students interested in marine geology will be well-prepared through the Geo major alone but some suggested electives are given above.

Students interested in physical or chemical oceanography, marine geology, and increasingly many fields of biological oceanography should acquire scientific programming skills as undergraduates. This can be done through coursework or informally as part of a research project.

All students planning on graduate school should try to do undergraduate research – either in the summer at Skidmore, through a program elsewhere, or for academic credit during the school year. Geosciences faculty will be able to provide specific suggestions for oceanography research opportunities.