

## New Academic Program: B.S. in Oceanography

### BACKGROUND

#### Program Proposed Start Date

Summer 2022

#### Program Description

This proposal is to create a new Bachelor of Science (B.S.) degree in Oceanography to replace the existing Ocean Science option under OSU's B.S. degree in Earth Sciences. The Earth Sciences B.S. had three options: Climate Science, Geology, and Ocean Science. New B.S. degrees to replace the Climate Science and Geology options were approved in spring 2021; Ocean Science is the final option that is proposed to transition to a new degree.

The B.S. degree in Oceanography is a four-year degree that prepares students to understand the ocean in its totality, from the large-scale tectonic structure of ocean basins and their history to the inter-related biological, chemical, geological, and physical processes that shape its current behavior and future evolution in the face of myriad human-related pressures. Based on long-standing strengths within the College of Earth, Ocean, and Atmospheric Sciences (CEOAS) in the areas of biological, chemical, geological, and physical oceanography as well as allied disciplines (e.g., geography, geology & atmospheric science) the program provides a rigorous, high-quality curriculum that will prepare students for careers in applied marine sciences, environmental sciences, science education and research, or the pursuit of a graduate degree in oceanography and related fields.

#### Program Context

The primary justification for replacing an existing Earth Sciences option with a standalone B.S. degree in Oceanography is name recognition within and outside the university. Within the university, the proposed Oceanography major will join several existing but non-duplicative marine-related programs (e.g., Marine Biology option, Marine Studies, Fisheries and Wildlife Sciences) that are part of the Marine Studies Initiative (MSI). Having a rigorous, clearly defined Oceanography B.S. degree will assist students in finding an appropriate major and facilitate advising across the MSI. The new major will also increase Oceanography's visibility outside the university by using a name that aligns with competing programs regionally and nationally.

The Oceanography major requires credits in seven categories: 49 credits in the baccalaureate core (BC); 45-49 credits of basic science and math; 12 credits of earth science foundation courses; 42-43 credits of oceanography core courses; 3 credits of experiential learning; 18 credits of oceanography elective specialization courses; and 20-25 credits of general elective courses (depends on the number of BC electives that will also meet requirements of the major).

The university baccalaureate core course requirement is met with 49 credits and a writing intensive course (WIC). The oceanography student satisfies the general education requirement by selecting 31 unrestricted credits from the general list of approved BC courses and 18 credits from a restrictive list of BC courses in mathematics, natural sciences, and contemporary global issues, which simultaneously satisfy requirements for the Oceanography major.

The proposed B.S. in Oceanography will be offered on-campus, at the OSU main campus in Corvallis, with some classes at the Hatfield Marine Science Center (HMSC) in Newport. The

“Supporting Math and Science” courses (mathematics, physics, chemistry, biology and statistics) are taught multiple quarters during the academic year. The pre-approved electives include many options in the fields of oceanography, climate science, geology, and biology so students will be able to find electives that fit into their schedules and further their knowledge and skill set development in allied fields.

The degree will largely follow existing modes of delivery, which emphasize active learning in laboratories and recitations, where students will gain “hands-on” experience with techniques and problem solving, in both individual and group settings; and through the long-standing focus in oceanography-related curricula for experiential learning where students are exposed to oceanographic problems in a real-world context, whether in analytical or computer laboratories or on the deck of one of OSU’s ships. This approach promotes applied learning and provides context for material learned from other sources. It includes field trips to the HMSC and the nearby Yaquina Bay and coastal ocean as integral components of courses of all levels, as well as in designated field courses.

### **Program Purpose/Relationship to University Mission and Strategic Plan**

The proposed B.S. in Oceanography directly addresses Goal 1 of OSU's mission to "provide outstanding academic programs that further strengthen performance and pre-eminence in the three Signature Areas of Distinction: Advancing the Science of Sustainable Earth Ecosystems, Improving Human Health and Wellness, and Promoting Economic Growth and Social Progress." Oceanography graduates will be prepared to address a wide range of issues associated with living and non-living marine resources, water column and seafloor processes, and natural hazards associated with our changing planet and the needs of the people living on it. Additionally, oceanography is by nature an experiential learning science, and the experiences that students will encounter during their education – on land and at sea – will involve them in cutting edge research or relevant internships during their time at OSU.

OSU’s highly skilled and nationally and internationally recognized faculty address Goal 2 of OSU's mission to "provide an excellent teaching and learning environment and achieve student access, persistence and success through graduation and beyond that matches the best land grant universities in the country." The program will provide a distinctive curriculum not available anywhere else in Oregon and incorporate innovative pedagogy and experiential learning throughout the curriculum in courses, research projects, theses, or internships. Oceanography faculty members are nationally and internationally recognized teachers and researchers.

### **Need for the Program**

The Oceanography degree program will contribute to improved educational attainment in Oregon and the Pacific Northwest in several ways. The study of oceanography offers an opportunity to understand Oregon’s fascinating coastal interactions, which extends from the crest of the Cascades to the deep sea 400 miles offshore, the myriad processes shaping the coast, and how humans can sustainably coexist with the ocean in the 21<sup>st</sup> century and beyond. Oceanography students become adept at placing skills and knowledge they learn in the classroom into a broader perspective and begin understanding how the ocean shapes nearly everything on our planet. Additionally, students often use real-world data in oceanography courses that help them develop quantitative skills, presentation skills, and a motivation for understanding how the ocean affects their lives.

The ocean plays a crucial role in Oregon’s social, economic, and environmental systems.

Graduates of the Oceanography program will be prepared to address marine-related challenges (e.g., ocean acidification, sea level rise, plastic pollution) and pursue adaptation and mitigation solutions to these problems. The program will have positive economic and environmental impacts on the Pacific Northwest, especially the economically challenged coast. Additionally, baccalaureate core course offered to the broader OSU community (e.g., OC 103, OC 201, OC 202, OC 333) will provide students with knowledge and skills relevant to their own fields, whether they be physics or art majors.

The Oceanography B.S. degree prepares students for civic and cultural responsibilities on several levels. The knowledge and training gained through the program will allow students to understand ocean-related issues on local, state, national and global levels. This understanding allows students to assess complex issues and respond as an informed voter, donor, and activist or, for students advancing to higher degrees, as a researcher or educator. In all cases, the Oceanography program will prepare students for the responsibilities of citizenship in a 21<sup>st</sup>-century democracy.

### **Program Financials**

Oceanography is an existing degree option (as Ocean Science) within the Earth Sciences B.S. degree; thus no budgetary impact is expected from elevating the option to a stand-alone degree. However, it is expected that marketing the degree as a B.S. in Oceanography as part of the university-wide Marine Studies Initiative will increase student recruitment by promoting visibility of the degree program.

The Ocean Science option currently has 93 students eligible to enroll, with roughly a third as new students as of fall 2021. Since its inception in summer 2014, the Ocean Science option has seen consistent growth and OSU expects it to continue to grow. Historically, the number of students graduating from the Ocean Science option degree on a yearly basis has averaged 12 students/year over the last five years.

### **RECOMMENDATION**

All appropriate university committees and the OSU Faculty Senate have positively reviewed the proposed program. The Provost recommends that the Academic Strategies Committee approve the establishment of a B.S. in Oceanography, effective in summer 2022, pending the support of the Statewide Provosts Council and the approval of the Higher Education Coordinating Commission.