

New Academic Program: B.S. in Climate Science

BACKGROUND

Program Proposed Start Date

Fall 2021

Program Description

This proposal is to create a new Bachelor of Science (B.S.) degree in Climate Science to replace the existing Climate Science Option under OSU's existing B.S. degree in Earth Sciences. The Earth Sciences degree currently has three options: Climate Science, Geology, and Ocean Science. New B.S. degrees to replace the Geology and Ocean Science options will be proposed separately.

The Climate Science degree builds on existing educational and research strengths within the College of Earth, Ocean, and Atmospheric Science (CEOAS) in the areas of atmospheric science, oceanography, geology, and geography. The degree centers on the physical science of climate and climate change, and the interconnectedness of the physical climate with human and natural systems. Experiential learning is a key component of the curriculum, and transferable skills are scaffolded across the curriculum. Students build knowledge and proficiency in preparation for a range of careers addressing the challenges of climate change and pursuing opportunities for solutions.

Program Context

In the five years since the creation of the Climate Science Option, enrollment has grown to approximately 40 students. Once the option is converted to a major, student demand for the program is expected to increase as the program becomes more visible. Current and previous students have indicated initial difficulty finding the program and expressed support for the creation of a Climate Science major to enhance cohort identity and name recognition.

The program is interdisciplinary with coursework spanning atmospheric science, oceanography, geology, and geography. A focus of the program is on transferable skills, such as programming, data analysis and visualization, and written and oral communication, which are integrated in courses throughout the curriculum. Required courses include a field course to multiple sites in Oregon, independent research or an internship, and a capstone course, which culminates in a comprehensive written report and oral presentation targeted for a regional stakeholder on some aspect of Pacific Northwest climate.

The proposed B.S. in Climate Science will be offered on-campus at OSU's Corvallis campus. The Climate Science major requires credits in seven categories: 34-36 credits of Foundational Math and Science; a 15-credit Earth Science foundation; a 35-credit Climate Science Core; 21 credits of Climate Science electives (in the areas of Mitigation, Energy, and Climate Policy; Social Sciences and Humanities; Related Physical and Biological Sciences; and Skills); 3 credits of research or internship; 34 baccalaureate core credits beyond those taken as part of the required Climate Science courses; and 36-38 general electives.

Program Purpose/Relationship to University Mission and Strategic Plan

The proposed new B.S. in Climate Science directly supports OSU's mission as a land-, sea-, space- and sun-grant institution “to promote economic, social, cultural and environmental progress for the people of Oregon, the nation and the world.” Climate Science intersects with all three of OSU’s Signature Areas: the science of sustainable Earth ecosystems, health and wellness, and economic prosperity and social progress. Anthropogenic climate change is a threat to human health and wellness, the economy, and the ecosystems of Oregon, the United States, and the world. In the Pacific Northwest, climate change will impact the natural resource economy; heritage and quality of life; water, transportation, and energy infrastructure; and health and social systems.

The Climate Science degree is fully aligned with OSU’s Strategic Plan 4.0 (<https://leadership.oregonstate.edu/strategic-plan>) and supports the envisioned 2030 strengths of Innovation in Education, Inclusion and Collaboration; Revolutionary Earth Systems Science; Leading in Health and Wellness; and Advancing Economic Prosperity and Social Progress.

The program is committed to enhancing student access and diversity. Courses within the program help students understand the differential effects of climate change and climate solutions on vulnerable populations. Online Baccalaureate Core classes provide opportunities for students outside of the Corvallis campus, and many of the courses require no textbook or use free online resources. Furthermore, the department is collaborating with community colleges to improve pathways for transfer students.

Need for the Program

Professionals who understand climate science and can make linkages to natural and human systems are needed to address the challenges of climate change and meet global, national, and state goals for climate mitigation and adaptation. Despite the huge effect that climate change will have on society, only a few universities in the US offer a B.S. in Climate Science, and many of these programs are built primarily on discipline-based coursework. As one of only two land, sea, space, and sun grant universities, Oregon State University is uniquely positioned to offer one of the few interdisciplinary B.S. degrees in Climate Science in the nation.

Graduates of the program will be prepared for positions in local, state, and federal governments; utilities; consulting firms; non-profits; and private industry; as well as further study in graduate school. The need for climate scientists is expected to increase as governments and businesses incorporate more specialized climate planning related to mitigation and adaptation solutions. The program will have positive economic and environmental impacts on the Pacific Northwest, which is highly dependent on natural resources that are in jeopardy due to climate change. Climate Science graduates will be able to infuse an understanding of climate science and climate change into a wide variety of fields ranging from natural sciences to human systems. Additionally, climate students will learn how to work with large, complex data sets, preparing them for data-heavy jobs of the 21st century in unrelated fields.

Program Financials

Climate Science is an existing degree option within the Earth Sciences degree, and all required courses are taught by current faculty. Thus, no net budgetary impact is expected from elevating this degree option to a stand-alone degree. A faculty search is currently underway, independent of the creation of this degree, resulting in a short-term cost but long-term gain as the new hire ramps up their teaching portfolio and grant funding.

With increased visibility, fall enrollment is expected to grow to roughly 70 students, with 15-20 graduates per year.

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 Climate Science, effective in fall 2021, pending the support of the Statewide Provosts Council and the approval of the Higher Education Coordinating Commission.