



University of California, Santa Barbara
Program Learning Outcomes

PhD in Marine Science

Students graduating with a PhD from the Interdepartmental Graduate Program in Marine Science should be able to:

Core Knowledge

- Demonstrate a broad knowledge of marine science and oceanography, including areas outside their specific areas of research. For example, students conducting research in phytoplankton ecology in the ocean would draw on their knowledge of physical oceanography, meteorology, and chemistry oceanography to interpret field observations collected during an oceanographic cruise.
- Demonstrate a sufficiently deep and broad understanding of marine science to conduct significant independent research.
- Formulate research questions to address significant topics and issues in marine science.

Research Methods and Analysis

- Understand a variety of research methods used in marine science such as laboratory, modeling, remote sensing, and field (e.g. ship- and land-based) approaches.
- Study current literature to understand and implement new research methods and analytical approaches and procedures.
- Understand successful research methods used previously in their areas of specialization.
- Identify and employ appropriate research procedures to conduct significant, original research.

Pedagogy

- Communicate in English their research results to a range of audiences in a variety of oral presentation formats including seminars, interviews, and short presentations.
- Summarize scientific results and related materials in written English to a broad range of audiences including the lay public.
- Teach effectively in venues such as lectures, classroom demonstrations, group projects, and small group discussions.
- Manage the classroom effectively.

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University of California, Santa Barbara Program Learning Outcomes, continued

Scholarly Communication

- Communicate in English the results of their original research with scientific peers in marine science and related disciplines.
- Understand the scientific literature and explain how their results advance the state of knowledge in their research areas.
- Review and judge the quality, relevance, and originality of scientific papers in their areas of specialization.
- Write effectively at the levels found in relevant peer-reviewed journals, conference proceedings, posters, and other written formats.

Professionalism

- Conduct themselves in an ethical manner in all aspects of their scientific careers.
- Understand alternate career paths, including non-academic paths, following completion of their degrees.
- Contribute to professional societies in their areas of specialization.
- Contribute to the peer review process by serving as manuscript and proposal reviewers and serving on review panels.
- Treat with consideration and respect their scientific peers, students, technicians, staff, and others involved in the scientific enterprise.

Independent Research

- Conduct creative, independent scientific research projects to meet the high standards of their areas of specialization.
- Produce scholarship comparable to that found in peer-reviewed articles in marine science and related disciplines.