University of California, Santa Barbara
Program Learning Outcomes

PhD in Earth Science

Students graduating with a PhD in Earth Science should be able to:

(Items listed in italics are considered highly desirable outcomes but are not required for degree completion.)

Core Knowledge

- Demonstrate knowledge of Earth Science. This could entail, for example, an understanding of Physical Geology, including Plate Tectonics, Earth History, and Earth's interior.
- Demonstrate specialized knowledge of a field within Earth Science sufficient to conduct substantive independent research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in Earth Science research and critically read research that uses these methods.
- Discover and critically read published research in Earth Science and related fields.
- Frame empirical research and/or theory guided by prior knowledge.
- Design and implement a rigorous and original study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data resulting in original and appropriate findings and interpretations.

Independent Research

- Develop and implement their own research projects that meet high standards of theoretical and methodological rigor and significantly extend the boundaries of knowledge.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.

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Program Learning Outcomes, continued

- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.
- *Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.*

Professionalism

- Select appropriate fellowship and grant opportunities and prepare competitive proposals.
- Select appropriate conference venues for their research and submit competitive abstracts for papers, posters and/or symposia.
- Prepare and present rigorous and innovative papers and posters at research conferences and/or departmental Research Review.
- *Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.*
- *When demanded, demonstrate collaboration, leadership and teamwork through participation in research teams and lab groups.*
- *Make effective contributions to university, community and professional service.*

Pedagogy

- Communicate effectively to large and small groups in both lecture and more informal formats.
- *Assess students' academic performance using appropriate measures and rubrics.*