

Earth System Science, Ph.D.

Global change is one of the greatest challenges to sustainability in the 21st century. Earth System Science PhD students join the global scientific community in its effort to define the causes and impacts of climate and other environmental changes and to develop effective solutions for a sustainable future.

Students gain a perspective of the Earth as a coupled system, involving the atmosphere, ocean, land, cryosphere, and humanity, and develop critical research skills. With hands-on training in remote sensing, data analysis, modeling, and science communication, they acquire and hone the know-how for a successful STEM (science, technology, engineering, and mathematics) career. Advanced course work in oceanography, atmospheric chemistry and dynamics, biogeochemistry, ecology, and human systems presents students with the breadth of current research.

Dedicated expert faculty and research staff, state-of-the-art research instrumentation, and a commitment to team science provide an environment for a diverse student population to thrive, to conduct groundbreaking research, and to become the researchers, educators, and leaders of tomorrow.

NOTE: Students are admitted to the Ph.D. program only; the master's degree may be awarded upon progress to the Ph.D.

Course Requirements

Students must complete a minimum of nine 4-unit approved graduate-level courses, including the core curriculum, with an average grade of B or better. All courses must be approved by the student's advisor.

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| A. Complete: | |
| EARTHSS 200 | Global Physical Climatology |
| EARTHSS 204 | Humans in the Earth System |
| EARTHSS 266 | Global Biogeochemical Cycles |
| EARTHSS 298 | Practicum in Earth System Science |
| B. Select at least five additional graduate-level courses, two of which must be offered by the Earth System Science Department. | |

Residency

Academic Senate regulations specify a minimum period of residence of six quarters for Ph.D. candidates. Enrollment in a minimum of 12 units of graduate/upper-division course work per quarter is required. Registration in every regular academic session is necessary until all requirements for the degree have been completed, unless a formal Leave of Absence is granted by the Graduate Division. All Ph.D. requirements must be completed within 15 quarters in residence (five years), excluding summer quarters. Exceptions must be put to a vote of the Earth System Science faculty. The maximum time permitted is seven years.

Comprehensive Examination

Progress toward the degree and readiness to begin research is assessed by a comprehensive examination covering breadth, general knowledge, and the ability to integrate and use information covered in the core curriculum and other course work. At the end of the spring quarter, the ESS Comprehensive Examination Committee administers the written and oral examinations.

Teaching and Seminar

Students are required to complete a teaching assistant training program and to have a minimum of two quarters of experience as a teaching assistant, provided opportunities are available. Students are also expected to participate in the Earth System Science seminar.

Advance to Ph.D. Candidacy

Following completion of the Comprehensive Examination, those students who receive a recommendation to continue Ph.D. work will pursue research on a potential dissertation topic and then take the Advancement to Candidacy Examination. This oral examination is given by a faculty committee. The normative time for advancement for candidacy is two years.

Dissertation

After advancing to candidacy, students are expected to be fully involved in research toward writing their Ph.D. dissertation. Students should keep in steady contact/interaction with their Doctoral Committee. A dissertation based on original research and demonstrating critical judgment, intellectual synthesis, creativity, and clarity in written communication is required for the Ph.D. degree. The dissertation must summarize the results of original research performed by the student under the supervision of a faculty member of the Department. The dissertation will be evaluated by the Dissertation Committee, based on suitability for publication in a peer-reviewed journal of high editorial standards. The dissertation may be a compilation of published papers or manuscripts accepted for publication, so long as the candidate has produced a major proportion of the material independently. The Dissertation Committee approves the format and content, which must meet University requirements for style, format, and appearance.

Additional Requirements

- Completion of course work (9 courses, including core courses)
- Six quarters in residence at UCI

- c. Completion of the Comprehensive Examination, with recommendation to continue for the Ph.D.
- d. Completion of the teaching and seminar requirements
- e. Pass the Advancement to Candidacy Examination
- f. Presentation of an open research seminar
- g. Submission of an acceptable doctoral dissertation and formal defense.