

Earth, Environmental, and Planetary Sciences

The Department of Earth, Environmental, and Planetary Sciences offers **PhD and AM degrees**. This department is one of the few departments in the country with an integrated program of graduate instruction and research that treats Earth as a planet and that makes direct use of knowledge gained by exploring the solar system. Our field is changing rapidly and becoming more interdisciplinary as links emerge among geology, geochemistry, geophysics and geobiology. New opportunities are developing as research in natural hazards, energy sources and the environment become more important to the global economy and as new space missions are developed to explore the solar system. The relatively small size of the department engenders a friendly and personal place that offers a lot of personal interaction with faculty and researchers. Our graduate students have the opportunity to use cutting-edge laboratory equipment, high-speed parallel computers, and the latest planetary mission data throughout the course of their research. They travel to field sites around the world and publish research in the leading scientific journals.

The PhD program is open to qualified students who have previously specialized in Earth sciences, physics, chemistry, biology, environmental science, soil science, mathematics or engineering. Both students with traditional degrees in geoscience areas and students with diverse academic backgrounds regularly enroll in our program because of the inherently interdisciplinary nature of our field. Doctoral education has a strong research emphasis that begins immediately upon arrival and that emphasizes modern, quantitative approaches to studying Earth, planetary, and environmental systems. Graduate research may involve field and laboratory studies as well as theory and advanced computation. Students earn the AM degree during the first phase of the PhD program; the department generally does not admit students for terminal AM degrees. After degree completion, our graduates go on to careers in academia, research laboratories, government agencies and the private sector, serving as leaders in the field of earth, environmental, and planetary sciences.

Faculty

Chair

David A. Fike (<https://eps.wustl.edu/people/david-fike/>)
Glassberg/Greensfelder Distinguished University Professor of Earth, Environmental, and Planetary Sciences
Director of the Environmental Studies Program
Director of the International Center for Energy, Environment and Sustainability
PhD, Massachusetts Institute of Technology

Associate Chair

Philip A. Skemer (<https://eps.wustl.edu/people/philip-skemer/>)
PhD, Yale University

Endowed Professors

Feng Sheng Hu (<https://eps.wustl.edu/people/feng-sheng-hu/>)
Richard G. Engelsmann Dean of Arts & Sciences
Professor of Biology and of Earth, Environmental, and Planetary Sciences
Lucille P. Markey Distinguished Professor in Arts & Sciences
PhD, University of Washington

Bradley L. Jolliff (<https://eps.wustl.edu/people/bradley-l-jolliff/>)
Director of the McDonnell Center for the Space Sciences
Scott Rudolph Professor of Earth, Environmental, and Planetary Sciences
PhD, South Dakota School of Mines and Technology

Douglas A. Wiens (<https://eps.wustl.edu/people/douglas-wiens/>)
Robert S. Brookings Distinguished Professor
PhD, Northwestern University

Professors

Jeffrey G. Catalano (<https://eps.wustl.edu/people/jeffrey-g-catalano/>)
PhD, Stanford University

M. Bruce Fegley (<https://eps.wustl.edu/people/bruce-fegley-jr/>)
PhD, Massachusetts Institute of Technology

David A. Fike (<https://eps.wustl.edu/people/david-fike/>)
Director of Environmental Studies
PhD, Massachusetts Institute of Technology

William B. McKinnon (<https://eps.wustl.edu/people/william-b-mckinnon/>)
PhD, California Institute of Technology

Philip A. Skemer (<https://eps.wustl.edu/people/philip-skemer/>)
PhD, Yale University

Jennifer Smith (<https://eps.wustl.edu/people/jennifer-r-smith/>)
Vice Provost for Educational Initiatives
PhD, University of Pennsylvania

William Hayden Smith (<https://eps.wustl.edu/people/william-h-smith/>)
PhD, Princeton University

Viatcheslav S. Solomatov (<https://eps.wustl.edu/people/slava-solomatov/>)
PhD, Moscow Institute of Physics and Technology
and the Schmidt Institute of Physics of the Earth

Michael E. Wysession (<https://eps.wustl.edu/people/michael-e-wysession/>)
PhD, Northwestern University

Associate Professors

Alexander S. Bradley (<https://eps.wustl.edu/people/alexander-s-bradley/>)

PhD, Massachusetts Institute of Technology

Paul Byrne (<https://eps.wustl.edu/people/paul-byrne/>)

PhD, Trinity College Dublin

Michael Krawczynski (<https://eps.wustl.edu/people/michael-j-krawczynski/>)

PhD, Massachusetts Institute of Technology

Kun Wang (<https://eps.wustl.edu/people/kun-wang/>)

PhD, Washington University

Assistant Professors

Bronwen L. Konecky (<https://eps.wustl.edu/people/bronwen-konecky/>)

PhD, Brown University

Claire Masteller (<https://eps.wustl.edu/people/claire-masteller/>)

PhD, University of California, Santa Cruz

Roger Michaelides (<https://eps.wustl.edu/people/roger-michaelides/>)

PhD, Stanford University

Rita Parai (<https://eps.wustl.edu/people/rita-parai/>)

PhD, Harvard University

Professors Emeriti

Raymond E. Arvidson (<https://eps.wustl.edu/people/raymond-e-arvidson/>)

PhD, Brown University

Robert E. Criss (<https://eps.wustl.edu/people/robert-e-criss/>)

PhD, California Institute of Technology

Ghislaine Crozaz (<https://eps.wustl.edu/people/ghislaine-crozaz/>)

PhD, Université Libre de Bruxelles

Robert F. Dymek (<https://eps.wustl.edu/people/robert-f-dymek/>)

PhD, California Institute of Technology

Jill D. Pasteris (<https://eps.wustl.edu/people/jill-d-pasteris/>)

PhD, Yale University

Frank A. Podosek (<https://eps.wustl.edu/people/frank-podosek/>)

PhD, University of California, Berkeley

Degree Requirements

PhD in Earth, Environmental, and Planetary Sciences

The degree requirements for a PhD in Earth, Environmental, and Planetary Sciences are intended to ensure that all students develop independence and originality of thought and that they acquire knowledge of sufficient breadth and depth to be scientific leaders in the field. Students are required to complete eight courses, five of which must be taken in the Department of Earth, Environmental, and Planetary Sciences. Students entering with an AM degree in a closely related field may waive two of these course requirements if approved by the faculty.

Students begin research early in the program, completing a small project during their second semester. At this time, each student selects a faculty member to serve as their major advisor as well as two additional faculty members to provide further guidance; these three faculty members comprise the student's Research Advisory Committee. During their second year, students continue their research as they work toward the oral examination that occurs at the end of their second year, which requires the preparation of a research paper, an oral presentation of research results, and a question-and-answer session with the student's Research Advisory Committee. Students are also required to obtain experience in teaching during their studies. The PhD program culminates in the writing of a dissertation and its defense in an oral presentation.

AM in Earth, Environmental, and Planetary Sciences

Students who intend to earn only a master's degree are not admitted. However, graduate students usually earn one on the way to doctorate. Students working toward a master's degree must maintain a B average in their course work. There are two tracks for the master's degree:

- **Track I.** Completion of a minimum of 36 units including a thesis (up to 6 credits)
- **Track II.** Completion of a minimum of 36 units plus an examination