Energy and Resources Group

Special Studies
Department Office: 310 Barrows Hall, (510) 642-1640

Chair: Harrison Fraker, MFA (Department of Architecture)
Group Website: Energy and Resources Group (http://erg.berkeley.edu)

Overview

The Energy and Resources Group (ERG) is an interdisciplinary academic unit of UC Berkeley, conducting programs of graduate teaching and research that treat issues of energy, resources, development, human and biological diversity, environmental justice, governance, global climate change, and new approaches to thinking about economics and consumption. Established in 1973, ERG offers two-year MA and MS degrees in Energy and Resources, as well as a PhD and an undergraduate minor.

Faculty

The faculty of ERG consists of eight professors of energy and resources plus some 100 affiliated faculty members whose main appointments span all five colleges and four of the schools of the Berkeley campus, as well as the University's Lawrence Berkeley and Lawrence Livermore National Laboratories. The chair is normally drawn on a rotating basis from the affiliated faculty.

Students

There are approximately 60 graduate students enrolled in ERG degree programs, about half of them doctoral candidates. The students come from a wide variety of backgrounds—engineering, natural sciences, social sciences, and humanities. The characteristics they have in common are an interest in interdisciplinary approaches to energy and resource issues and the intellectual credentials to succeed in a rigorous academic program. All receive training at ERG in the technological, environmental, economic, and sociopolitical dimensions of energy and resource issues while pursuing additional coursework and individual research tailored to their interest and backgrounds.

Graduates

ERG graduates are employed across the US and around the world in universities, governmental and international agencies, legislative staff positions, national laboratories, public and private utilities, other energy and resource companies, consulting firms, and public-interest organizations.

Undergraduate Courses

ERG offers an undergraduate minor in the field of energy and resources. The undergraduate courses in ERG deal with the essence of energy and resource issues on both a national and global level in their technical, environmental, sociopolitical and economic aspects. The courses provide both basic surveys of the field and introductory training in interdisciplinary research methods. There are no prerequisites for enrollments in the courses unless specifically noted otherwise in the descriptions.

For information on the requirements for the undergraduate minor, please see the program's website (http://erg.berkeley.edu/info/undergraduate_minor.shtml) .

Graduate Courses

The graduate courses in ERG provide advanced training in interdisciplinary analysis and research. Individual courses review current developments in the field or emphasize particular disciplinary perspectives: economics, resources, politics, public policy, or environmental sciences.

Graduate Programs

Admission

Applications for both the Masters and PhD programs are considered once a year for fall semester admission only. Continuing students may be recommended for admission to the PhD program upon completion of their master's work.

Master's Degree Requirements

The purpose of the ERG Master's program is to educate the next generation of interdisciplinary leaders. Specifically, students are taught the range of methods and subjects they should be able to understand, advance, and critique to address critical issues stemming from the interaction of humans and the environment. To that end, the requirements for the ERG Master's degree are both broad and deep, stressing analytic, methodological, theoretical, and practical approaches to problems in energy, resources, and the environment.

The course requirements provide for a substantive introduction to the disciplinary approaches that are employed in studying energy and resource issues. The requirements also ensure experience in interdisciplinary analysis applied to a key resource concern. The curriculum provides an opportunity—through a topical cluster and an independent project—to extend and deepen the areas of investigation and understanding to satisfy the intellectual interests of each student.

The curriculum is intended to serve those students for whom the Master's degree will be the final formal education in support of a professional career and also those students who intend to continue their education, for example by pursuing a PhD in Energy and Resources.

To obtain a Master's degree from ERG, each student must meet the following requirements:

- Complete a minimum of 40 post-baccalaureate units.
- Complete a minimum of 18 units of graduate-level study in energy and resources, some of which can be fulfilled by courses from other departments and schools.
- Complete the ERG Masters Degree Series:
  - ER 201: Interdisciplinary Analysis in Energy and Resources (3 units)
  - ER 299: Research Skills (2 units)
  - ER 292C: Masters Project Development (2 units)
  - ER 292D: Masters Project Presentation (2 units)
  - ER 295: ERG Colloquium (1 unit) Two semesters are required to ensure exposure to a broad array of topics and approaches.
- Six additional units of approved graduate-level courses.
- Complete one course from each of the areas A-E listed below. Teaching and research in the Energy and Resources Group draws

heavily on four academic traditions, as they are applied to the interactions of societies with resources and the natural environment: environmental science; resource and environmental economics; social science approaches to energy, resources and the environment; engineering approaches to energy, resources and the environment. Students must complete at least one course in each of the A-E topics.
  - A: Interdisciplinary Energy and Resource Analysis
  - B: Environmental Science
  - C: Resource and Environmental Economics
  - D: Social Science Approaches to Energy, Resources and the Environment
  - E: Engineering Approaches to Energy, Resources and the Environment
- Complete a Master's project; an undertaking of an independent investigation that culminates in an oral presentation before the ERG community and a written report approved by two faculty readers.
- Complete a cluster of three courses (minimum of 9 units) in a subject area defined by the student and approved by his/her adviser. This cluster is designed to ensure depth of study in a topic within the domain of Energy and Resources. At least one of these courses (3 units) must be a graduate-level course. Suitable areas include (but are not limited to) climate change, energy, water, environmental justice, and development. The cluster may include one of the courses used to satisfy the area A-E requirement, and cluster courses can fulfill the requirement of 18 units of graduate-level study in energy and resources.

The following limits and restrictions apply on credit toward the 40-unit requirement: A maximum of 4 units of credit of 299 units(individual research) can be counted. 298 units (group study) cannot be counted. All courses that are used to satisfy degree requirements must be taken for a letter grade if that option is available. A minimum GPA of 3.0 ("B") in all courses completed must be achieved.

PhD Degree Requirements

The course requirement for admission to the PhD program is that the totality of the student's coursework after the Bachelor's degree, including courses taken at other universities and inside and outside of ERG at Berkeley, must meet the substantive and unit requirements for the ERG MA or MS degree. Thus a student entering the PhD program from the ERG Master's program will already have met the course requirement for the PhD. Students entering with other Master's degrees usually need additional coursework at ERG to meet the requirements.

There is no formal language requirement for the PhD degree. However, those students conducting research in a non-English speaking country must demonstrate competency in the language of the country.

After the doctoral student and his or her advisers have agreed on a subject for the dissertation, the student must defend in a three-hour oral examination the suitability of the topic and his/her preparation for attacking it. This exam, called the Qualifying Examination, is conducted by a committee of four faculty members chosen by the student, in consultation with his/her faculty adviser and subject to the approval of the Graduate Dean.

This examination should be taken at least one year before the expected completion of the dissertation. The final requirement for the PhD is completion of the dissertation to the satisfaction of a committee consisting of three faculty advisers/readers chosen by the student, subject to approval by the Graduate Dean. The PhD degree in Energy and Resources is typically completed three to five years beyond the Master's degree.

Further Information

Contact the Energy and Resources Group, 310 Barrows Hall #3050, University of California, Berkeley; Berkeley, CA 94720-3050; (510) 642-1640; or visit the website (http://erg.berkeley.edu) . (http://erg.berkeley.edu)

ENE,RES 24 Freshman Seminar 1 Unit
Department: Energy and Resources Group
Course level: Undergraduate
Terms course may be offered: Fall and spring
Grading: The grading option will be decided by the instructor when the class is offered.
Hours and format: 1 hour of Seminar per week for 15 weeks.
The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered in all campus departments, and topics may vary from department to department and semester to semester.
Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

ENE,RES 98 Directed Group Study for Lower Division Students 1 - 4 Units
Department: Energy and Resources Group
Course level: Undergraduate
Terms course may be offered: Fall and spring
Grading: Offered for pass/not pass grade only.
Hours and format: Hours to be arranged.
Lectures and small group discussions focusing on topics of interest that vary from semester to semester.
Course may be repeated with consent of department.Course may be repeated with consent of department. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

ENE,RES 99 Supervised Independent Studies for Freshmen and Sophomores 1 - 4 Units
Department: Energy and Resources Group
Course level: Undergraduate
Terms course may be offered: Fall and spring
Grading: Offered for pass/not pass grade only.
Hours and format: Independent study.
Prerequisites: Consent of faculty adviser directing research; lower division standing (3.3 GPA or better).
Supervised research on specific topics related to energy and resources. Course may be repeated for credit. Course may be repeated for credit when topic changes. Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

ENE,RES C100/PUB POL C184 Energy and Society 4 Units
Department: Energy and Resources; Energy and Resources Group; Public Policy
Course level: Undergraduate
Terms course may be offered: Fall and spring
Grading: Letter grade.
Hours and format: 3 hours of lecture and 1 hour of discussion per week, plus 8 hours of outside readings, research, papers, and work.
Energy sources, uses, and impacts: an introduction to the technology, politics, economics, and environmental effects of energy in contemporary society. Energy and well-being; energy in international perspective, origins, and character of energy crisis.
Instructor: Kammen

ENE,RES 101 Ecology and Society 3 Units
Department: Energy and Resources Group
Course level: Undergraduate
Term course may be offered: Fall
Grading: Letter grade.
Hours and format: 3 hours of Lecture per week for 15 weeks.
Prerequisites: One college level course, or high school Advanced Placement, in either physics or biology; introductory calculus.
This course introduces students to the many ways in which our lives are intertwined with the ecosystems around us. Topics will include ecological limits to growth, climate change and other threats to biodiversity, the value