Sustainable Energy Science

College of Arts and Sciences
Bloomington

Graduate Minor Director
Rebecca Barthelmie* (Atmospheric Science)

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Departmental URL
http://www.iub.edu/~geog/research/atmospheric.shtml

Graduate Faculty
(An asterisk [*] denotes membership in the University Graduate School faculty with the endorsement to direct doctoral dissertations.)

Professors
Rebecca Barthelmie* (Atmospheric Science), Sara Pryor* (Atmospheric Science), Phil Stevens* (School of Public and Environmental Affairs), Caroline Jarrold* (Chemistry), Maria Mastalerz* (Indiana Geological Survey), Gary Pavlis (Geology), Paul Sokol* (Physics)

Associate Professors
Heather Reynolds* (Biology), Mehmet Dalkilic* (School of Informatics and Computing)

Assistant Professors

Ph.D. Minor in Sustainable Energy Science

The supply of affordable energy is a pre-requisite for economic development around the world. The US faces considerable challenges in meeting current and future energy demands while also addressing pressing environmental and national security concerns. Hence there is a need for research into various aspects of energy supply and demand. The Sustainable Energy Science Program encourages interdisciplinary study of the physical science that under-pins energy use and supply. The Ph.D. minor program embraces a multidisciplinary approach drawing expertise from a number of Departments and Schools with an emphasis on the understanding of the scientific basis of sustainability and the implications of energy use.

Admission and Program of Study
In collaboration with the Sustainable Energy Science director and the student’s graduate advisor, students are required to submit a Program of Study to the Sustainable Energy Advisory Committee for final approval. The Program of Study will provide the rationale for the student’s proposed curriculum and will list the courses, with alternative selections in the event such courses are not offered on a timely basis that will serve as the student’s minor program. With the Sustainable Energy Science Advisory Committee’s approval of the Program of Study, the student will become officially enrolled in the Sustainable Energy Science Program.
Ph.D. Minor Requirements
Requirements encourage graduate students to develop a program of scientific inquiry that complements their doctoral program and takes advantage of the wide range of faculty from a number of departments with training and research in the fields of wind energy, solar energy, biofuels, geothermal energy, fossil fuels, carbon sequestration, air pollution and climate change. Each program will be developed in consultation between the student and the graduate advisor and the Sustainable Energy Science director. Students must complete a total of 12 credit hours (of hours counted toward the minor at least 6 must be from outside the student's major field). Additionally, the Sustainable Energy Program will submit one question for the student's qualifying examination.

Required Courses
Courses which meet the criteria of the Ph.D. Minor in Sustainable Energy Science come from several disciplines and professional schools. The course selection for the electives will be made collaboratively between the Sustainable Energy Science director, the student and the Graduate Advisor.

The course requirements are: GS42 Sustainable Energy Systems PLUS one course focused on a specific energy type e.g. biofuels or wind energy or economic geology PLUS one course highlighting the implications of energy use, such as GS75 Climate Change PLUS one research project course.

Eligible courses include:
- CS65 NUCLEAR CHEMISTRY (3 Cr.)
- GS86 GEOCHEMICAL MODELING (3 Cr.)
- GS14 GEOPHYSICAL SIGNAL PROCESSING (3 Cr.)
- GS71 PRINCIPLES OF PETROLEUM GEOLOGY (3 Cr.)
- GS87 ORGANIC GEOCHEMISTRY (3 Cr.)
- GS72 BASIN ANALYSIS AND HYDROCARBONS (3 Cr.)
- GS75 CLIMATE CHANGE (3 Cr.)
- GS42 SUSTAINABLE ENERGY SYSTEMS (3 Cr.)
- GS555 WIND POWER METEOROLOGY (3 Cr.)
- GS34 AIR POLLUTION METEOROLOGY (3 Cr.)
- PS10 ENVIRONMENTAL PHYSICS (3 Cr.)
- ES15 AIR POLLUTION AND CONTROL (3 Cr.)
- IS90 TOPICS IN INFORMATICS