

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.

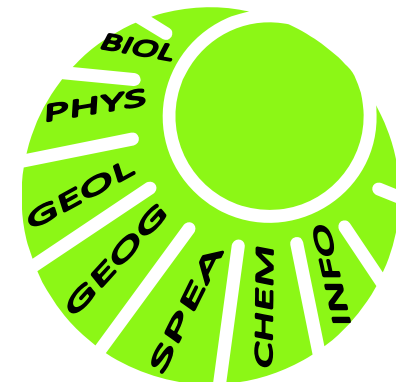
Sustainable Energy Science Advisory Board

- Rebecca Barthelmie (GEOG) – Wind energy, carbon footprinting, sustainability
- Sara Pryor (GEOG) - Climate change, air pollution, wind energy
- Gary Pavlis (GEOL) - Geophysics, Seismology, Tectonics
- Maria Mastalerz (GEOL) - Fossil fuels
- Paul Sokol (PHYS) – Hydrogen storage and fuels cells, carbon sequestration
- Phil Stevens (SPEA) – Air pollution
- Heather Reynolds (BIO) – Cellulosic biofuels, sustainable cities
- Caroline Jarrold (CHEM) - Properties of photocatalyst clusters
- Mehmet Dalkilic (CS) – Design, implementation, and data-mining of large databases



INDIANA UNIVERSITY

New Ph.D. Minor: Sustainable Energy Science



Program Director:

Professor Rebecca J. Barthelmie

rbarthel@indiana.edu

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. The course requirements are as follows:

- *G542 Sustainable Energy Systems*
- *One course focused on a specific energy type e.g. biofuels or wind energy or economic geology*
- *One course highlighting the implications of energy use, such as G575 Climate Change*
- *One research project course*

Additionally, the Sustainable Energy Program will submit one question for the student's qualifying examination.

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.



Eligible Course List

The course selection for the electives will be made collaboratively between the Sustainable Energy Science director, the student and the Graduate Advisor. Of hours counted toward the minor at least 6 must be from outside the student's major field. Eligible courses include:

- C565 NUCLEAR CHEMISTRY
- G586 GEOCHEMICAL MODELING
- G690 FUNDAMENTALS OF HYDROCARBON SYSTEMS
- G516 ECONOMIC GEOLOGY
- G514 GEOPHYSICAL SIGNAL PROCESSING
- G571 PRINCIPLES OF PETROLEUM GEOLOGY
- G587 ORGANIC GEOCHEMISTRY
- G572 BASIN ANALYSIS AND HYDROCARBONS
- G575 CLIMATE CHANGE
- G542 SUSTAINABLE ENERGY SYSTEMS
- G544 CLIMATE CHANGE IMPACTS
- G555 WIND POWER METEOROLOGY
- G534 AIR POLLUTION METEOROLOGY
- P510 ENVIRONMENTAL PHYSICS
- E515 AIR POLLUTION AND CONTROL
- I590 TOPICS IN INFORMATICS