

ABSTRACT

Energy at UC Davis

Energy Efficiency	Renewable Energy	Transportation	Education
<ul style="list-style-type: none"> Energy Efficiency Center (EEC) California Lighting Technology Center (CLTC) Western Cooling Efficiency Center (WCEC) Center for Water Energy Efficiency (CWEE) 	<ul style="list-style-type: none"> California Renewable Energy Center (CREC) <ul style="list-style-type: none"> Biomass Geothermal Solar Wind Hydro Integrated Renewable Energy Systems Bioenergy Research Center (BERC) <ul style="list-style-type: none"> Joint Bioenergy Institute (JBEI) (participating) Photosynthesis and Redox Systems Energy Center (PARSEC) Chevron-UC Joint Research Agreement 	<ul style="list-style-type: none"> Institute of Transportation Studies (ITS) Partnership Sustainable Transportation Energy Pathways (STEPS) Plug-in Hybrid and Electric Vehicle Center (PHEV) Urban Land Use and Transportation Center (ULTRANS) 	<ul style="list-style-type: none"> NSF IGERT and other graduate and undergraduate training Energy Minors S&T, Policy, Efficiency, Sustainability International Programs Program for International Energy Technology (PIET) <ul style="list-style-type: none"> D-Lab Multi-national research and training programs Energy Graduate Group (EGG) (proposed) Energy Science and Technology Energy Management and Policy

Science · Technology · Environment · Policy · Regulation · Entrepreneurship · Global Partnerships in Sustainable Energy Research and Education

UC Davis has a long history of research and education in energy with extensive programs in energy efficiency, renewable energy, transportation, and related areas of sustainability. Campus centers include the Energy Institute, the Energy Efficiency Center, the Institute of Transportation Studies, The Program in International Energy Technologies, the Green Technology Entrepreneurship Academy, the Policy Institute for Energy, Environment and the Economy, and other centers in renewable energy, lighting, environmental control, advanced vehicles, and basic energy sciences. Educational programs in energy have been implemented at both the undergraduate and graduate levels. Campus programs are aimed at increasing the number of well trained professionals and enhancing public education needed for the transition to a more sustainable environment, economy, and society.

CAMPUS SUSTAINABILITY

UC Davis, as part of the University of California system, has committed to enhance overall sustainability. The campus is a partner in the West Village development, an on-campus zero net energy community. West Village is intended to serve as a learning laboratory for energy efficiency and renewable energy. It is joined by new LEED Platinum certified winery, brewery, and food-processing labs modeling sustainable design and resource management.



ENGINEERING MINORS in ENERGY

Beginning in 2011, undergraduate minors in engineering are offered in:

- Energy Science and Technology,
- Energy Policy,
- Energy Efficiency, and
- Sustainable Design.

The minors are designed to accommodate students of diverse backgrounds with educational interests in areas that include engineering, science, policy, economics, planning, and management. Students in the Energy Science and Technology minor, for example, complete 20 units including required coursework in engineering thermodynamics and sustainable power generation and elective units in bioprocessing, reaction engineering, catalysis, combustion and environment, climate change, geographic information systems (GIS), transportation system design, natural resource economics, and related subjects.

<http://energy.ucdavis.edu/education/>

UNIVERSITY EXTENSION CONTINUING EDUCATION

UC Davis Extension offers continuing education and certificate programs in:

- Energy Resource Management
- Green Building and Sustainable Design
- Renewable Energy
- Solar Energy Systems and Design
- Sustainability and the Built Environment

The Certificate Program in Energy Resource Management is completely online. The curriculum aligns with the Association of Energy Engineers requirements for CEM and BEP certifications. The Renewable Energy program includes courses in cogeneration and district solutions, small wind energy systems, and PV system design.

<http://extension.ucdavis.edu/index.asp>



NSF CREATE IGERT

The campus is home to the NSF supported Collaborative Research and Education in Agricultural Technologies and Education (CREATE) IGERT on plant biotechnology.

The program focuses in:

- Biofuels and Biorefineries,
- Plant-Made Products, and
- Environmental Sustainability.



UC Davis partners with Tuskegee University, Teagasc Oak Park Research Centre (Ireland), and the National University of Ireland on the CREATE program.

NSF CREATE-REU

The research experience for undergraduates (CREATE-REU) provides undergraduate research training in areas related to the CREATE-IGERT.

<http://create-igert.ucdavis.edu/>

NSF-GK12 RESOURCE Program



The Renewable Energy Systems Opportunity for Unified Research Collaboration and Education (RESOURCE) program pairs UC Davis engineering graduate students working on renewable energy technologies with Sacramento-area 5th and 6th grade teachers to develop new science curricula.

Products include lessons and activities on general energy concepts (what is energy, renewable vs. non-renewable energy, climate and environmental impacts) and on each fellow's specific research.

Fellows serve as role models for students from diverse cultural backgrounds and hope to spark interest in Science, Technology, Engineering, and Mathematics (STEM) studies.

<http://gk-12-resource.ucdavis.edu>



D-Lab

The UC Davis Program for International Energy Technologies offers five lab modules as an integrated feature of the design lab (D-Lab) curriculum. These lab modules include hands-on, practical experience in a laboratory setting. D-Lab I is an overview course focused on energy issues in developing economies that emphasizes critical thinking. Curriculum includes hands-on energy



labs, a business development clinic, and international case studies. Multi-disciplinary teams work with local

partners to perform feasibility studies for proposed energy solutions. D-Lab II is a hands-on studio-style design course in which student teams work with local partners and mentors to design, prototype, and test scalable solutions for their client communities. A summer practicum either on campus or abroad amplifies work from D-Lab courses.

<http://piet1.ucdavis.edu/education/>

ENERGY GRADUATE GROUP

The campus has proposed an Energy Graduate Group to offer MS and PhD degrees in two energy tracks:

- Energy Science and Technology, and
- Energy Management and Policy.

The program is currently in review by UC. Complementing this effort are new faculty hired under the campus Energy for the Future Initiative.

SUMMARY

Student demand is increasing for relevant and more comprehensive instruction and training in energy. UC Davis has developed a diversity of programs and added new faculty in an effort to help address national and international needs and opportunities across the educational spectrum.

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