



RENEWABLE ENERGY

Comprehensive energy training

The *Renewable Energy Certificate Program* combines elements from architecture, civil engineering, landscape architecture, environmental and land use planning, construction management and renewable energy systems design to provide in-depth technical training in the treatment of sustainable energy systems design.

Gain practical knowledge and skills

Learn to develop successful strategies for incorporating renewable energy systems into site planning and design, building design and construction, and building management practices.

- Acquire a holistic understanding of the theory and science behind today's renewable energy systems
- Get hands-on experience in designing and siting renewable energy systems for commercial, residential and agricultural applications
- Stay up-to-date with the latest energy technologies, legislation and regulations

Designed for professionals like you


This program is designed for professionals who want to advance their knowledge and careers in the planning, design, engineering, renewable energy systems and construction disciplines, including: construction managers, first line supervisors, architects, architectural drafters, civil and mechanical engineers, project managers, urban and regional planners, developers, builders and landscape architects.

For more information

For more information about the *Renewable Energy Certificate Program*, please call (800) 752-0881, email extension@ucdavis.edu or visit our website.

extension.ucdavis.edu/renewablecert



 Printed on recycled paper.

Course descriptions and quarterly schedule are on the other side. 

UC DAVIS
EXTENSION
ENGINEERING AND
TECHNOLOGY



CONTINUING AND PROFESSIONAL EDUCATION

Renewable Energy Certificate Program

Sustainability and the Built Environment

Receive an overview of sustainability as it relates to the built environment—from the economic, environmental and social-equity development perspectives. Learn how researchers and analysts define sustainability, and study historical precursors of the current sustainability movement. Instructors highlight large-scale planned communities, infill sites and individual structures from the U.S. and other nations, as well as how these buildings are managed.

Energy Sources, End Uses and Impacts

End uses—the breakdown of how energy is used in its final stage—is a crucial component of a successful sustainable environment. Explore energy issues from the macro perspective of the built environment to the micro approach of how heat flows through a building. Using the “whole building” perspective, learn about some of the natural and mechanical means of heating, cooling and ventilation for improved indoor air quality and cost savings.

Green Building Design Studio

This final course in the program relies heavily on comparative case studies, examining the issues covered in previous courses, using actual examples of building projects completed. This course requires an interdisciplinary and capstone project in a studio environment.

Bioenergy Systems Design

Receive an introduction to bioenergy systems to produce biofuels and power generation. Gain an understanding of biomass technologies, engineering bioenergy feedstocks, biochemical conversion, anaerobic digestions, thermochemical and physicochemical conversion, biomass production systems and feedstock logistics. Work in teams to design a bioenergy system for a commercial or agricultural application.

Cogeneration and District Solutions

Gain an overview of micro cogeneration and district energy solutions for commercial and district applications. Learn about cogeneration system selection and sizing, preliminary feasibility study approaches, heat to power ratios, computer programs, economic and environmental issues, emerging technologies and regulations.

Geothermal Energy Systems Design

Learn the basics of geothermal energy systems design in both residential and commercial applications. Explore direct use applications and requirements, planning and design. Focus is on the theory, design and installation of ground source heat pump systems and how the innovative use of these systems have benefited homes, schools, hospitals and municipalities. Work in teams to design and site a geothermal energy system.

Small Wind Energy Systems

Learn the basics of small wind energy systems engineering for residential and commercial applications. Examine small wind systems types and components, economic issues, public concerns, installation, safety, operation and maintenance criteria. Study wind measurement, energy output estimates, wind system selection and siting criteria. Work collaboratively to select and site a small wind energy system for a residential or commercial application.

Solar Photovoltaic (PV) Energy Systems Design

Learn the basics of solar photovoltaic power systems for both residential and commercial systems, as well as solar system physics and technology, design and implementation. Examine energy conservation, the economics of solar power systems, passive solar heating systems, the California Solar Initiative and LEED Review. Work with other participants to design a solar energy system for residential and commercial purposes.

Solar Thermal Energy Systems Design

Learn the fundamentals of designing and installing these power systems for residential and commercial applications and work in teams to design a solar thermal energy system. Topics include: residential and large scale systems components, concentrating systems, air and cooling systems, design fundamentals, cost/yield analysis, installation and maintenance, and emerging trends and technology.

UC DAVIS EXTENSION ENGINEERING AND TECHNOLOGY

Courses can be taken individually or as part of the *Renewable Energy Certificate Program*.

QUARTERLY SCHEDULE OF COURSES

REQUIRED COURSES (6 units)	# Units	F	W	SP	SU
Sustainability and the Built Environment	2	■			
Energy Sources, End Uses and Impacts	2			■	
Green Building Design Studio	2				■
At least 9 units from the following:					
Bioenergy Systems Design	2		▲		
Cogeneration and District Solutions	1	▲			
Geothermal Energy Systems Design	2			■	
Small Wind Energy Systems	2		■		
Solar Photovoltaic (PV) Energy Systems Design	2		▲		▲
Solar Thermal Energy Systems Design	2	■			

ELECTIVE COURSES (3 courses)

Courses in the Land Use and Natural Resources, Energy Resource Management, Engineering or Construction Management programs may apply with prior approval.

■ Classroom format ▲ Online format F=Fall W=Winter SP=Spring SU=Summer

Schedules are subject to change. Check our website for the latest information: extension.ucdavis.edu/renewablecert or call (800) 752-0881.

