

Program Series:

# Green HVAC Design

## SAVE MONEY AND IMPROVE AIR QUALITY

Heating, cooling, and ventilation systems account for 40 to 60 percent of the total energy consumption in both commercial and residential buildings in the United States. These systems also control indoor air quality which directly affects the health and welfare of the building occupants.

The Green HVAC Design Program Series is designed with HVAC engineers, designers, architects, and technicians in mind. Every decision made in the design and implementation process of a HVAC system is an opportunity to generate energy savings and to create better indoor and outdoor environments.

### Who Should Attend:

- HVAC engineers
- HVAC designers
- Architects
- HVAC technical specialists
- Contractors

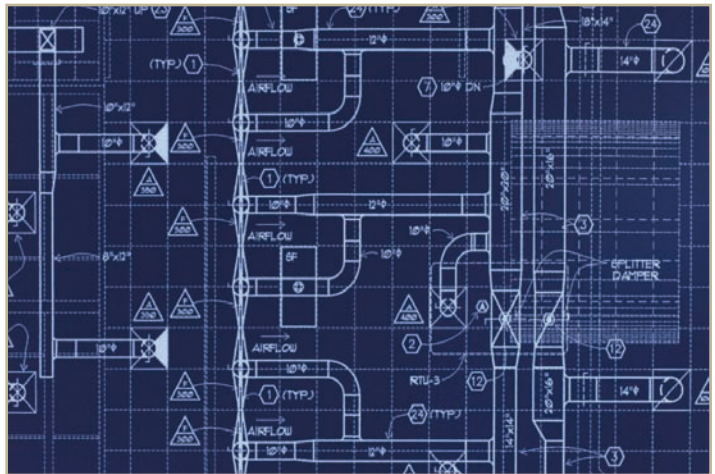
### Participants in the program will:

- Explore the issues in traditional HVAC design methodologies
- Gain knowledge about the new methodologies and technologies available
- Learn a systematic approach to HVAC design practices
- Identify opportunities for transforming HVAC design practices
- Generate creative, informed solutions to sustainability challenges

### Eligibility

This program is open to any interested individual.

Register today at [www.csufextension.org/green](http://www.csufextension.org/green) or 657.278.2611  
For more information, contact Kristyn Hursh: 657.278.7427, [khursh@fullerton.edu](mailto:khursh@fullerton.edu)



California State University, Fullerton  
University Extended Education  
[www.csufextension.org](http://www.csufextension.org)

## THE CLASSES

The Certificate in Green HVAC Design consists of five courses totaling 45 hours of lecture and discussion.

Continuing Education Units will be awarded according to the number of course hours indicated upon the completion of each course.

### **GREEN HVAC: FLIP THE SWITCH**

**(9 hours/.9 CEUs)**

Prerequisite: none. Based on the principle of, "The greenest energy is the energy not used," this class aims to transform the way HVAC professionals think about their role in sustainability. Reducing the energy consumption of HVAC units significantly impacts the overall performance of a building. In this class you will learn the fundamental principles of energy efficiency and become familiar with the regulatory framework. The class will practice basic financial analysis for sustainable design, review measurement methodologies and discuss equipment lifecycle management best practices.

### **ENERGY MASTER PLANNING PART I: AIR SYSTEM DESIGN**

**(12 hours/1.2 CEUs)**

Prerequisite: none. A well designed air system can dramatically improve the quality of indoor air while saving energy. From ventilation, air distribution and exhaust, to humidity control, this class will address the critical aspects of air systems with a focus on integrated energy master planning. You will have the opportunity to learn about the various technological innovations enabling greater energy savings. Through case studies and projects, you will acquire the knowledge needed to optimize air system performance.

### **ENERGY MASTER PLANNING PART II: HEATING AND COOLING**

**(12 hours/1.2 CEUs)**

Prerequisite: none. Thermal and cooling systems maintain consistent and comfortable environments for building occupants through proper regulation of the temperature. Many technological advances have made energy efficiency possible without compromising the comfort of the indoor environment. This class will examine how chill water systems, panel cooling, and even engine-driven chillers can meet energy efficiency standards. Similarly, you will learn about breakthroughs in geothermal heating pump systems and radiant heating to identify opportunities for energy savings.

### **ENERGY MASTER PLANNING PART III: OPERATIONS AND MAINTENANCE**

**(6 hours/.6 CEUs)**

Prerequisite: none. The potential for HVAC systems to maintain continual efficient performance as intended by the initial design depends on proper operation, planning and maintenance. Many buildings met sustainability standards when first completed, but over time begin missing target goals for efficiency due to improper operation and maintenance of the HVAC systems. In this class you

will learn strategies for equipment lifecycle management, to ensure performance at optimal capacity. In addition, the concept of preventative maintenance will be fully explored as the emerging standard for HVAC operation.

### **RETROFIT AND NON-COMMERCIAL BUILDING HVAC DESIGN**

**(6 hours/.6 CEUs)**

Prerequisite: none. Building retrofit and non-commercial buildings are also rich with the potential to achieve significant improvements in overall energy consumption. In this class, you will explore the inherent challenges in retrofitting a building with innovative HVAC design and technology. Discussions will also cover efficient HVAC design for typical residential housing as well as special facilities such as healthcare facilities.