

# Energy Perform & Resource Mgmt (EPRM)

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## Courses

### **EPRM 120 Introduction to Residential Energy (3 Hours)**

Upon successful completion of this course, the student should be able to evaluate energy usage of the past and the future, describe the energy picture of today's world, identify the priorities for energy efficiency, and describe the purpose of a residential energy audit. Competencies will include knowing energy and the laws of thermodynamics; heat transfer through building envelope; sources of internal heat gain and heat loss calculations; energy transformation and heat flow; efficiency of HVAC systems, water heating systems, and appliances; and basic electrical wiring, lighting, and components of a residence. 3 hrs. lecture/wk.

### **EPRM 123 Active Passive Residential Systems\* (4 Hours)**

**Prerequisites:** EPRM 120 or department approval

This is a course to explain how active and passive systems work together in a residence, and to discuss the energy efficiency of each system. Upon successful completion of this course, the student will be able to identify the components of the building shell and their relationship to air-conditioning systems, heating systems, hot water heating, lighting, appliances, occupants, and the electrical or gas systems that supply energy. Topics will include heat laws, refrigeration cycle, electrical theory, various types of furnaces, air conditioners, hot water heaters, lighting, windows and doors, and various types of controls. The student will be required to provide ANSI Z87 safety glasses and may be expected to provide other basic hand tools and/or equipment.

### **EPRM 127 Residential Energy Data Collection and Input\* (3 Hours)**

**Prerequisites:** EPRM 123

Upon successful completion of this course, the student will be able to identify techniques and procedures used in the residential construction industry to determine the construction details of the residence, the size and type of HVAC equipment, and other appliances as it relates to a residential energy audit. The student will be required to complete field data collection forms and record detailed information of the components of a residence. This data will be entered into various computer modeling programs. The output from the software will help determine what recommendations should be made to the homeowner to improve the energy efficiency of their residence. 2 hrs. lecture, 2 hrs instructional lab.

### **EPRM 130 Residential Energy Auditing Application\* (3 Hours)**

**Prerequisites or corequisites:** EPRM 127

This course outlines a complete energy audit procedure that will ensure consistent data collection for a residence. Topics include diagnostic procedures to evaluate the building shell, doors and windows, air leakage, and other residential energy inefficiencies. The course includes recommendations the auditor can make to increase the energy efficiency and functionality of a client's home based on the audit. Analysis of residential heating and cooling systems and appliances, as well as performing a combustion appliance zone test is included in the course. A major focus of the course is the use of appropriate test equipment, such as a blower door, duct blaster, and other hand-held evaluation and measuring devices necessary to conduct effective energy audits. Information from the audit will be entered into modeling software to determine energy efficiency measures for the residence being audited. Students will be required to provide ANSI Z87 safety glasses and may be expected to provide other basic hand tools and/or equipment. 1 hr. lecture, 3 hrs instructional lab/wk.

### **EPRM 142 Solar Thermal Systems (3 Hours)**

Solar Thermal Systems presents the key components of thermal conversion systems to absorb and use heat from sunlight. Solar module types and properties, balance of system components, energy management, and economics for a variety of solar thermal system applications are studied. The course includes details of design, installation, operation, and evaluation of solar thermal systems. The course prepares students for the NABCEP (North American Board of Certified Energy Practitioners) Entry Level Solar Thermal exam. 4 hours of integrated lecture lab/wk.