

University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000

General Syllabus

ELEC 3433 Generating Clean Electrons

Credit Hours: 3

Lecture Hours: 2

Laboratory Hours: 2

Prerequisite: Junior standing or consent of department head.

Effective Catalog: 2018-2019

I. Course Information

A. Catalog Description

Introductory, hands-on interactive experience with the 3 leading sources of alternative energy generation technologies and begins to prepare them for job roles in these new technical fields.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. Describe the need for green technology.
2. Demonstrate an understanding of alternative energy generation.
3. Measure electricity and power.
4. Reference appropriate electrical codes.
5. Demonstrate off-grid wind turbine technology with hands-on design, application and performance.
6. Demonstrate off-grid photovoltaic (solar) technology with hands-on design, application and performance.
7. Demonstrate fuel cell technology with hands-on design, application and performance including the creation of hydrogen.
8. Practice safety in the lab.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking - Students will analyze and troubleshoot various problems associated with the design, installation, commissioning and operation of wind, solar and fuel cell systems.

Quantitative Reasoning - Students will apply mathematics to solve various application problems.

III. Major Course Topics

- A. What is Green?
- B. Alternative energy generation
- C. Wind turbines
- D. Photovoltaic panels
- E. Fuel cells