JEFFERSON COLLEGE

COURSE SYLLABUS

ETI130

FUNDAMENTALS OF ALTERNATIVE ENERGY

3 Credit Hours

Prepared By:
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ETI130 Fundamentals of Alternative Energy

I. CATALOGUE DESCRIPTION

A. Prerequisite: ETC101 Fundamentals of Electricity or ETC104 AC Circuits or HRA101 Electricity for HVAC and reading proficiency

B. Credit hour award: 3

C. Description: Fundamentals of Alternative Energy provides an introductory hands-on approach to the key fundamentals of alternative energy. Topics include: wind turbines, photovoltaic panels, and fuel cells.

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

| Identify and describe the major components of a wind turbine system. | Written exams, quizzes, observation of lab performance |
| Identify and describe the major components of a photovoltaic electrical generation system. | Written exams, quizzes, observation of lab performance |
| Evaluate and test components within a wind turbine system. | Written exams, quizzes, observation of lab performance |
| Evaluate and test components within a photovoltaic electrical generation system. | Written exams, quizzes, observation of lab performance |
| Identify and describe the major components of a fuel cell. | Written exams, quizzes, observation of lab performance |
| Evaluate and test components within a fuel cell. | Written exams, quizzes, observation of lab performance |

III. OUTLINE OF TOPICS

A. What is Alternative Energy?
   1. Why is it necessary?
   2. Benefits vs. costs
   3. Introduction to class lab equipment
B. Wind Turbines
1. Components of a wind turbine electrical generation system
2. Basic operations
3. Testing protocol and processes
4. Power generation and storage fundamentals
5. Wind power strategies

C. Photovoltaic Panels
1. Components of a photovoltaic electrical generation system
2. Basic operations
3. Testing protocol and processes
4. Power generation and storage fundamentals
5. Solar power strategies

D. Fuel Cells
1. Components of a fuel cell
2. Basic operations
3. Testing protocol and processes
4. Power generation and storage fundamentals
5. Fuel cell strategies

IV. METHOD(S) OF INSTRUCTION
A. Lecture
B. Assigned Textbook Reading
C. Lab Activities

V. REQUIRED TEXTBOOK(S)
Brooks, Generating Clean Electrons, (current edition), Educational Technologies Group

VI. REQUIRED MATERIALS
A. Paper
B. Folders
C. Pens
D. Pencils

VII. SUPPLEMENTAL REFERENCES
Class Handouts
VIII. METHODS OF EVALUATION

A. Attendance: 20%

B. Lab Exercises: 30%

C. Homework: 10%

D. Exams: 40%

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-797-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website http://www.jeffco.edu).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.