

Syllabus
Alternative Fuels and Electric Vehicle Technologies
EST 1820 –21Z
Brevard Community College
Spring 2004

3 credit hours

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Introduction:

The need for clean air and secure energy has changed the automobile industry. A growing number of vehicles available today are using alternative fuels, fuels other than gasoline and diesel. Brevard Community College and Florida Solar Energy Center created a program with the National Science Foundation to develop curriculum on alternative fuel technology for college technology programs. This course is the first in a series leading to a degree in Alternative Fuel Technology.

Course Description:

An overview of alternative fuels technology related to automobiles and the infrastructure that supports them. Technologies addressed in the course will include compressed natural gas, liquid petroleum gas, methanol, ethanol, electric, fuel cell and hybrid electric. The description, application, and characteristics of alternative fuels will be covered. The course presents the history, legislation, regulations, safety, environmental impact, vehicle design, manufacturing, processing, and storage of the major alternative fuel technologies available today and those anticipated in the near future.

Prerequisites:

None.

The course is designed for technology student whether they are in automotive service or other technology programs, but non-technical students with some science back-round will find the course beneficial.

Text:

All texts and tools will be provided free of charge and will consist primarily of PDF documents and web site addresses provided on BCC Black Board by the instructor.

There is a bibliography for students to expand their learning. Students will also use the Internet to research relevant topics.

The primarily document that will be required reading as the course text is “A Guide to Alternative Fuel Transportation in Florida”, William Young, Florida Solar Energy Center, Cocoa, Florida, FSEC-CR-1341-02, June 2002. Copies can be obtained from the instructor or as a PDF document on web page at:
<http://www.fsec.ucf.edu/env/fscities/documents.htm>.

Study Guide:

Provided on-line.

Tutorial:

Provided on-line.

Grading:

The evaluation of students will be based on the following:

Grading Division:

- 10% for Online Discussion Topics
- 30% for Assignments
- 30% for Midterm Examination
- 30% for Final examination

Grading scale:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: 00-59

Course Goals and Objectives:

The basic goal of the Alternative Fuels and Electric Vehicle Technologies course is to introduce you to the various alternative fuel technologies used for transportation. At the conclusion of the course, you should be able to:

1. Identify and define various alternative fuels
2. Describe the benefits and disadvantages of the various fuels and vehicles
3. Identify components of AFV vehicles

4. Demonstrate and understanding of environmental impact and energy security
5. Locate and access related information resources

Course Organization and Schedule:

When: Spring Term for online class is February 5, 2004 to May 10, 2004

All required materials are online in Black Board on the BCC web page. There will be an online assignment every week.

There will be no classroom presentations.

Week 1: Unit 1.	History, definition, legislation, and policy.
Week 2: Unit 2.	Fuel resources, fuel comparisons and environmental impact.
Week 3: Unit 2.	Energy use, infrastructure, security, energy supply and demand.
Week 4: Unit 3.	Driver orientation, safety, availability, vehicle characteristics.
Week 5: Unit 4.	Ethanol characteristics.
Week 6: Unit 5.	Methanol characteristics.
Week 7: Unit 6.	Liquefied petroleum gas characteristics.
Week 8: Unit 7.	Compressed natural gas characteristics.
Week 9:	Review and Examination 1.
Week 10: Unit 8	Liquefied natural gas characteristics.
Week 11: Unit 9.	Bio-diesel characteristics.
Week 12: Unit 10	Electric vehicle technology characteristics.
Week 13: Unit 11.	Hydrogen fuel and fuel cell technologies.
Week 14: Unit 11.	Fuel cell and hybrid vehicle technologies.
Week 15: Unit 12.	Hybrid technologies and other sources of energy.
Week 16: Unit 13.	Transportation issues and review.
Week 17:	Final Exam.

Course Requirements:

All work submitted in this course must be prepared by the student expressly for this course.

Online Discussions:

You are required to participate in four online discussions. This means you will be reading questions and responses in an online “classroom”. You will then write and post your own contributions in the online forums.

Assignments:

There will be fourteen assignments to be completed online. Assignments are to be completed as directed and work submitted per the assignment schedule. You will have one week to complete each assignment. Each Unit has an assigned quiz or self-test that contains 10 to 20 questions. A quiz may be accessed more than once during the scheduled completion period. If an assignment is late, one point will be deducted from the assignment grade for each day it is late.

Examinations:

There are two exams in this course to be completed online. Each exam will consist of multiple choice, true/false, fill-in-the-blank and matching questions. Both of these exams will be proctored in a controlled location.

The midterm exam will cover all material up to week 8 and will contain 50 questions. The scheduled date for taking the midterm exam is Monday, March 8.

The final exam will cover all materials and will contain 100 questions. The scheduled date for taking the final exam is Monday, May 10.

Study Methods:

There are sixteen folders (one for each unit) for documents and assignments. Access the online assignment and document folders for required reading, exams, discussions and unit assignments. Each Unit has a reading assignment and a quiz or self-test that must be completed before advancing to the next Unit. Questions are assembled from the reading material and class presentations to meet the learning objectives for each Unit.

You are responsible for completing each of the assigned units. It is important to keep to the course schedule; if you fall behind, you may find it difficult or impossible to catch up.

There is a message board online for students to share ideas. Use the message board to communicate with other currently enrolled students. I will monitor the message board, but will leave this forum for students to share ideas with one another.

Withdrawal Policy:

The student should follow established procedures and dates as defined by Brevard Community College administration.

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