

**BREVARD COMMUNITY COLLEGE
AEROSPACE TECHNOLOGY PROGRAM**

COURSE : ETIC 1850 AEROSPACE SYSTEMS Credits 4
PRE-REQUISITES : Introduction to Aerospace
CLASSROOM/TIME: BCC Campus Bldg 14 Room 192/ Wednesday 6:00 – 9:45 pm
INSTRUCTOR:
CONTACT DATA:

TEXTS : ‘Understanding Space’ by Jerry Jon Sellers

References : 1998 Space Shuttle News Reference Manual
<http://spaceflight.nasa.gov/shuttle/reference/shutref/verboseindex.html>
Other selected readings and handouts will be used for the course.

COURSE DESCRIPTION :

This course covers an introduction to expendable and reusable Space Launch Vehicle (SLV) systems including hydraulic, pneumatic, electrical, propulsion, mechanical, HVAC (heating, ventilation and air conditioning), and ECLSS (Environmental Control and Life Support Systems). How systems interact with computer and data acquisition systems is also covered.

COURSE OBJECTIVES AND COMPETENCIES:

At the end of this class the student will be able to:

1. Identify spacecraft systems and subsystems and how they relate to the entire spacecraft.
2. Demonstrate understanding of the operation of spacecraft systems
3. Identify operational differences between expendable and reusable spacecraft.
4. Demonstrate knowledge of basic principles of hydraulics/pneumatics.
5. Demonstrate knowledge of basic principles of pyrotechnic devices.
6. Demonstrate knowledge of basic principles of rocket propulsion.
7. Demonstrate knowledge of basic principles of electro-mechanical systems.
8. Demonstrate basic knowledge of life support and ground support equipment.

INDIVIDUAL STUDENT PRESENTATION: Each individual student will choose an area of ground support equipment and provide a PowerPoint or overhead presentation on that subject.

GRADING PROCEDURE:

The course grade will be a combination of the following components:

Classroom Performance (Participation, Attentiveness, Professionalism, Teamwork)	10 pts
Individual Class Presentation	20 pts
Quizzes	20 pts
Mid-Term (25 pts
Final Exam (One 2-Hour Written Examination)	<u>25 pts</u>
	100 pts

Grades	90 to 100 pts	A
	80 to 89 pts	B
	70 to 79 pts	C
	60 to 69 pts	D
	Below 60	F

ADDITIONAL INFORMATION:

You are responsible for all notes and materials presented in class. If you miss a class, make sure that you have the class notes and any assignments or handouts.

Attendance will be closely monitored. Irregular attendance would make it impossible to keep up with the material.

Make-up exams and incompletes will not be given. Contact instructor in advance for assistance, if you absolutely must miss a test. Proctored exams will be given by the Aerospace office.

Post exam reviews are mandatory and in most cases will start at the beginning of the next class session. It is very important to review the examination material for any mistakes that you might have made. Please notify the instructor if you will not be able to attend the exam review.

Class information, class notes, grades and other material will be posted on Angel. You are responsible to check Angel regularly for class notes and announcements

GRADING, ATTENDANCE POLICY AND WITHDRAWAL POLICY WILL BE IN ACCORDANCE WITH THE STUDENT HANDBOOK AND COLLEGE CATALOG.

**Aerospace Systems
Class Schedule
Fall 2009**

(NOT A PART OF SYLLABUS - FOR STUDENT CONVENIENCE ONLY AND SUBJECT TO CHANGE)

Week	Date	Content
1	19-Aug	Introduction to Aerospace Systems I Course introduction, requirements and objectives.
2	26-Aug	Control Systems An introduction to control systems used on SLV's and Spacecraft
3	2-Sep	SLV Electrical Systems I Introduction to SLV power supplies. Discussion of fuel cells, batteries and other power sources used for SLVs.
4	9-Sep	SLV Electrical Systems II Continuation of SLV electrical supplies with emphasis on distribution systems (AC/DC electrical buses, loads and GSE.)
5	16-Sep	Rocket Propulsion Rocket propulsion fundamentals with emphasis on solid and liquid fueled rockets.
6	23-Sep	Hydraulic and Pneumatic Systems Introduction to hydraulic and pneumatic systems and their use on SLV's
7	30-Sep	Lab Projects
8	7-Oct	Written Exam
9	14-Oct	Structures and Electro-Mechanical Systems An introduction to structures, power drives units and other electro-mechanical devices.
10	21-Oct	Lab Projects
11	28-Oct	Pyrotechnic Devices A look at the use of pyrotechnic devices and proper care and handling
12	4-Nov	Lab Projects
13	18-Nov	Lab Projects
14	25-Nov	Thermal Control, Environmental Control and Life Support A discussion of thermal control requirements and the space shuttle air revitalization, pressure control, active thermal control, supply and waste Purge, Vent and Drain Systems Requirements and concerns for heating, ventilation and air conditioning for launch vehicles.
15	2-Dec	Ground Support Equipment (GSE) Presentations
16	9-Dec	Comprehensive Final Exam