

CURRICULUM FRAMEWORK
Florida Department of Education

Program Title: **AEROSPACE ENGINEERING**
Occupational Area: Industrial Education

PSV

CIP Number
Grade level College Credit
Length B.S.A.E. Degree – 120 hours

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment as aerospace engineers that design, service, test, operate and repair systems associated with both aircraft and space vehicles and related laboratories and ground support equipment. Instruction is designed to qualify students for examinations for certification/licensing as an aerospace engineer.

Since 120 credit hours, including hands on experience, are required in this curriculum, two summer terms will probably be required to complete the program within four years.

II. LABORATORY ACTIVITIES: Shop or laboratory activities are an integral and important part of this program. The Aerospace Industry representatives in a formal DACUM should determine the laboratory equipment and skill levels required. Course activities will provide hands-on instruction in the use of tools, equipment, materials and current practices and processes found in the industry. Significant capital investments in facilities and equipment may be required in this program. All tools and equipment should be maintained in good working order and in a condition for safe operation.

TOOLS AND EQUIPMENT

1. Specialized electronic tools
2. Hand tools
3. Electrical test equipment
4. Precision measuring equipment
5. Pressure gauges
6. Mass spectrometer
7. Pneumatic tools
9. Power tools
10. Computer and appropriate software

III. SPECIAL NOTES:

1. To be transferable statewide between institutions, this program/course must have been reviewed, and a “transfer value” assigned the curriculum content by the appropriate Statewide Course Numbering System discipline committee. This does not preclude institutions from developing specific program or course articulation agreements with each other.
2. Cooperative work experience – On-the-Job-Training (OJT) is appropriate for this program. Whenever cooperative training – OJT is offered, the following are required for each

student: a training plan, signed by the student, teacher, and employer, which includes instructional objectives and a list of on-the-job and in-school learning experiences; a workstation that reflects equipment, skills and tasks that are relevant to the occupation which the student has chosen as a career goal. The student will usually receive compensation for work performed.

When a student with a disability is enrolled in a class for which modifications to the curriculum framework have been made, the particular outcomes and student performance standards that the student must master to earn credit must be specified in the student's Individual Educational Plan (IEP). Modifications must be approved by the certifying authority. Additional credits may be earned when outcomes and standards are mastered in accordance with the requirements indicated in subsequent IEPs. The job title for which the student is being trained must be designated in the IEP.

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

SCANS Competencies: To accomplish the Secretary's Commission on Achieving Necessary Skills (SCANS) competencies, instructional strategies for this cluster must include methods that require students to identify, organize, and use resources appropriately; to work with each other cooperatively and productively; to acquire and use information; to understand social, organizational, and technological systems; and to work with a variety of tools and equipment. Instructional strategies must also incorporate methods of improving students' personal qualities and higher-order thinking skills.

3. The Aerospace Industry has very strict employment rules on drug use, citizenship status and criminal record that are additional work requirements students must meet for internships and employment. Students should be aware of these industry requirements prior to registration in the program.

IV. INTENDED OUTCOMES: After successfully completing the course, the student will be able to:

1. Demonstrate knowledge of mathematics and science.
2. Demonstrate knowledge of English, social science, foreign language, and humanities.
3. Design and conduct experiments.
4. Analyze and interpret experimental data.
5. Demonstrate knowledge of aerodynamics.
6. Demonstrate knowledge of aircraft and spacecraft performance.
7. Demonstrate knowledge of stability and control.
8. Demonstrate knowledge of aerospace materials.
9. Demonstrate knowledge of aircraft and spacecraft structures.
10. Demonstrate knowledge of propulsion.

11. Demonstrate knowledge of orbital mechanics.
12. Demonstrate knowledge of spacecraft dynamics.
13. Demonstrate knowledge of control systems.
14. Demonstrate knowledge of circuits, electronics, and instrumentation.
15. Identify, formulate, and solve engineering problems.
16. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
17. Design an aircraft or spacecraft system, component, or mission to meet desired needs.
18. Understand the impact of engineering decisions on society and the environment.
19. Understand professional and ethical responsibilities and workforce/workplace readiness skills.
20. Recognize the need to continue professional development throughout one's career.
21. Successfully complete an internship.

This section will require further development by academic institutions and industry partners.

STUDENT PERFORMANCE STANDARDS

- 01.0 SUCCESSFULLY COMPLETE INTERNSHIP
 - 15.01 Demonstrate a good work attitude
 - 15.02 Demonstrate proper work ethics
 - 15.03 Demonstrate communication skills
 - 15.04 Show job knowledge and basic procedures.

SUGGESTED INSTRUCTOR QUALIFICATIONS

AEROSPACE ENGINEERING

Specialty Instructor Qualifications: Instructors teaching subjects that have certifications in the subject areas should be so certified and have recent actual experience in the subject area. Instructors teaching related courses in the Aerospace Technician curriculum should have both academic training and recent actual experience.

Academic Instructor Qualifications: A Doctorate Degree in the subject area is preferred. A Master Degree with eighteen hours of course work in the subject area is a minimum.

SCHEDULES FOR CLASSROOM AND ON-THE-JOB TRAINING
AEROSPACE ENGINEERING

COMPLETE	TRAINING	OUTCOMES
	SEMESTER ONE	
	SEMESTER TWO	
	SUMMER A	
	SUMMER B	
	SEMESTER THREE	
	SEMESTER FOUR	
	DEGREE	

CERTIFIED AEROSPACE ENGINEER CANDIDATE

NOTE: Two summer terms probably will be required to complete 120 credit hours within four calendar years.

DISTANCE LEARNING SAMPLE PRODUCTS

AEROSPACE ENGINEERING

Web Sites	Framework Objectives
<p>www.amtech.com www.au.af.mil/au/ccaf http://nctn.hq.nasa.gov></p>	
Institutions with Related Distance Learning	
<p>*Programs in related engineering or space operations</p> <p>Embry Riddle University of North Dakota Florida Institute of Technology University of Central Florida www.ent.engr.ucf.edu University of Miami University of Florida Webster University</p>	