Definition

This program is designed to prepare students for careers in aircraft structures and composites fabrication and assembly. In addition, this program is designed to prepare students for the Aircraft Manufacturing Technology (AFMT) Bachelor's Degree of Science.

NOTE: These courses are not intended to prepare students to work as licensed aircraft maintenance mechanics. Students must complete the General Aircraft Maintenance, Aircraft Airframe and the Aircraft Powerplant Certificates to be eligible to sit for the FAA aircraft maintenance license exam.

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Program Description

The certificate and associate degree programs include course work to help prepare students for entry-level employment in the aerospace industry. Students who complete this program will have the necessary skills to be employed by aircraft manufacturers and subcontractors in a variety of positions.

Students must receive a minimum grade of "C" or better in all required core courses and the specific courses listed as program electives in order to qualify for the degree or certificate.

Career Options

Basic Aircraft Assembler	General Mechanic Technician
Composite Fabricator	Low Observable Technician
Electrical Technician	Multi-skilled Composite Tech

(Careers may require education beyond the two-year college level.)

Program Learning Outcomes

Aircraft Fabrication and Assembly Technician

1. Plan, design, and construct aircraft structures to industry standards using sheet metal and composites materials.
2. Analyze and evaluate critical aspects of the aerospace industry related to safe work practices, standards and tolerances, standard shop practices, proper use of tools, power equipment, and personal protective equipment.
3. Use, read, and interpret industry standard blueprints to construct aircraft components.
4. Assure that actions and decisions are based on ethical work practices and human factors directly related to proficiency level degradation in the work environment.

Certificate Program

Aircraft Fabrication and Assembly Technician

Required Courses (26 units):	**units**
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
AFAB 130, Aerospace Workplace Issues and Ethics	4
AFAB 210, Aircraft Production Systems	4
	Total 26

For a recommended plan of study, please refer to the Associate Degree plan minus the general education requirements.

Locally Approved Certificate

Blueprints and Structures

The Blueprints and Structures certificate program includes course work that will prepare students for entry-level employment in the aerospace industry with an emphasis in ethical workplace standards. Students who complete this certificate will have the necessary skills to be employed by aircraft manufacturers and subcontractors in a variety of positions. Principles and techniques of aircraft structural, blueprint, and assembly will be thoroughly conveyed in both a lecture and laboratory environment as well as the ethical dynamics of the workplace.

Required Courses (15 units):	**units**
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 130, Aerospace Workplace Issues and Ethics	4
	Total 15

Associate Degree

Aircraft Fabrication and Assembly Technician

The requirements for an associate degree in Aircraft Fabrication and Assembly Technician may be satisfied by completing 26 units of required courses, *21 units of general education requirements, and sufficient elective credits to total 60 units. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree have enhanced employability in the field of aerospace technology. They have enhanced promotional opportunities into supervisory and/or management positions as they gain experience and training within this career field. The associate degree will also provide students with a broad range of knowledge with which to evaluate and appreciate the physical environment, the culture, and the society in which they live and with the ability to think and communicate clearly and effectively.

Fufillment of the requirements, as listed in this Recommended Plan of Study, for the associate degree in Aircraft Fabrication and Assembly Technician (AFAB) will satisfy, in part, the minimum eligibility requirements for the Baccalaureate in Science in Airframe Manufacturing Technology (AFMT) degree.
For additional information, please review pgs. 86-88.

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

Recommended Plan of Study

First Semester (Fall)	**units**
AFAB 110, Introduction to Aircraft Structures, Blueprint and Manufacturing Documentation	3
AFAB 115, Aircraft Structures	8
AFAB 120, Composites Fabrication and Repair	7
Total	**18**
Second Semester (Spring)	
AFAB 130, Aerospace Ethics and Issues	4
CHEM 101, Introductory Chemistry (CSU GE B1)	5
POLS 101, American Political Institutions (CSU GE D)	3
HIST 107 ***or*** HIST 108 ***or*** HIST 110 ***or*** HIST 111 (CSU GE D)	3
ENGL 101, Academic Composition (CSU GE A2)	3
Total	**18**
Third Semester (Fall)	
AFAB 210, Aircraft Production Systems	4
COMM 101, Introduction to Public Speaking (CSU GE A1)	3
CSU GE Area C	3
CSU GE Area E	3
Total	**13**
Fourth Semester (Spring)	
ENGL 115, Introduction to Technical Communication (CSU GE A3)	3
MATH 135, Plane Trigonometry (CSU GE)	3
PSY 101, General Psychology (CSU GE D)	3
CSU GE Area C	3
Total	**12**
Degree Total	**60**

Prerequisite Completion

All prerequisite courses must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk **(*)** before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

Aircraft Fabrication and Assembly Courses

AFAB 110 *INTRODUCTION TO AIRCRAFT STRUCTURES, BLUEPRINT AND MANUFACTURING DOCUMENTATION

3 units
3 hours weekly
This course is designed to provide students with the basic knowledge of aircraft structures, shop mathematics, basic hand measuring devices and familiarization with aircraft manufacturing documentation, such as blueprints and work instructions. Classroom lecture and hands-on practice in reading and interpreting actual blueprints and manufacturing documentation. (AVC)

AFAB 115 *AIRCRAFT STRUCTURES

8 units
10 hours weekly [7 lecture, 3 lab]
Prerequisite: *Completion or concurrent enrollment in AFAB 110.*
Designed to give students the necessary skills to perform journeyman aerospace structures assembly and repair. Classroom lecture and hands-on practice in step-drilling holes in aluminum alloys and composites, and the installation of rivets and special fasteners. In addition, students will demonstrate the proper preparation and application of aircraft sealants and the assembly of sheet metal and composite substrates as a final project of moderate complexity. (AVC)

AFAB 120 *COMPOSITES FABRICATION AND REPAIR

7 units
9 hours weekly [6 lecture, 3 lab]
Prerequisite: *Completion or concurrent enrollment in AFAB 110.*
This course is designed to familiarize students with the basic aircraft composite manufacturing techniques and knowledge. The content covered in this course deals with wet and prepreg layup, vacuum bagging techniques and processes, surface preparation for gap filling and surface tapes, and the manufacturing of composite components/parts. This course consists of both classroom lecture and hands-on practice. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)

AFAB 130 *AEROSPACE ETHICS AND ISSUES

4 units
4 hours weekly
Addresses the ethical responsibilities of aircraft maintenance technicians (AMTs). Course will articulate an ethical framework for aircraft technicians by critically reflecting on aerospace practices and examining the ethical challenges that confront the aerospace industry, and aerospace technicians and professionals working within these organizations. Includes: social and personal responsibilities in aerospace, truth-telling and disclosure, whistle-blowing, professionalism, safety, and human factors. A detailed analysis of many case studies in industry will be reviewed. (CSU, AVC)

AFAB 140 *PNEUDRAULICS

2 units
3 hours weekly [1.5 lecture, 1.5 lab]
Prerequisite: *Completion of AFAB 110 or AFAB 115.*
Entry Level course designed to familiarize students with the basic principles of pneudraulics, fluid lines and fittings and the proper assembly and installation. (AVC)

AFAB 150 SURFACE PREPARATION AND MATERIAL APPLICATIONS

7 units
9 hours weekly [6 lecture, 3 lab]
Prerequisite: *Completion of AFAB 110, AFAB 115, & AFAB 120.*
This course is designed to familiarize students with the basic aircraft surface preparation and material application techniques and knowledge. The content covered in this course deals with surface preparation of both metal structures and composite materials, various material applications, and masking techniques. This course consists of both classroom lecture and hands-on practice. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)

AFAB 210 *AIRCRAFT PRODUCTION SYSTEMS

4 units
4 hours weekly
Prerequisite: *Completion of AERO 230 or AFAB 115.*
The course is designed to give students with basic aircraft fabrication skills the necessary knowledge and practical experience to perform effectively and grow professionally in an aircraft production organization. The course will introduce the student to the many functional groups that manage, design, plan, schedule, supply, and oversee aircraft production operations. Students will gain experience with production and quality standards, process controls, and documentation requirements through participation in hands-on laboratory fabrication projects. (AVC)

AFAB 215 * ADVANCED AIRCRAFT SHEETMETAL & COMPOSITE STRUCTURE

8 units
10 hours weekly [7 lecture, 3 lab]
Prerequisite: *Completion of AFAB 115.*
This course is designed to familiarize students the advanced aerospace structural assembly, which includes instructor-led lecture and hands-on training in shop safety and workmanship fundamentals, the use of tools and equipment, MES functions, and structures fundamentals including 5S, blueprint reading, hole prep, drilling various materials, sealing, liquid shim applications, and inspections. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)

AFAB 220 * ADVANCED COMPOSITE FABRICATION, ASSEMBLY, AND REPAIR

7 units
9 hours weekly [6 lecture, 3 lab]
Prerequisite: *Completion of AFAB 120.*
This course is designed to familiarize students with advanced aircraft composite manufacturing techniques and knowledge, which includes instructor-led lecture and hands-on training in shop safety and workmanship fundamentals, the use of tools and equipment, 5S, MES functions, and composite system fundamentals including layup, debulking, ply direction, vacuum bagging, leak detection, curing, PIs, surface prep, pinking, darting, overlapping, buttsplicing, bonding, and inspections.. Students are required to interpret engineering prints, work instructions, manufacturing documentation and or drawings. (AVC)