



COURSE OUTLINE

ASR126

Prepared: Devin York Approved:

Course Code: Title	ASR126: ADVANCED COMPOSITES
Program Number: Name	4067: AIRCRAFT STRUCT TECH
Department:	AIRCRAFT STRUCTURAL REPAIR
Semester/Term:	18W
Course Description:	This course is comprised of 128 hours of theory/practical work related to the manufacturing and repair of aircraft composite parts. Advanced composite materials, manufacturing techniques and repair methods will be used by the student to build and repair aircraft structural components. All practical work will take place in the composite lab.
Total Credits:	8
Hours/Week:	8
Total Hours:	128
Prerequisites:	ASR115
Vocational Learning Outcomes (VLO's):	<p>4067 - AIRCRAFT STRUCT TECH</p> <p>#1. Safely use the tools, equipment and identify materials needed to carry out various sheet metal repairs.</p> <p>#2. Demonstrate a working knowledge of the principles of aircraft design by applying theory and shop practice.</p> <p>#3. Identify and order airframe parts with the use of Maintenance and Parts Manuals to complete necessary repairs.</p> <p>#4. Read and follow blueprint, shop drawings and manufacturer`s manuals necessary in all manufacturing and overhaul facilities.</p> <p>#5. Organize work safely, economically and efficiently.</p> <p>#6. Carry out any repair according to specifications, stated job procedures and the requirements of the Department of Transport Regulations.</p> <p>#8. Demonstrate a sense of responsibility and appreciation of the high cost of the equipment and materials used to train the practical portion of this program.</p> <p>#10. Recognize basic hand tools and demonstrate their use for specific maintenance on floats, fuselage structures and control systems.</p> <p>#16. Demonstrate honesty and integrity to match the requirements of the aircraft industry.</p>
Essential Employability	#3. Execute mathematical operations accurately.

Skills (EES):

- #4. Apply a systematic approach to solve problems.
- #5. Use a variety of thinking skills to anticipate and solve problems.
- #6. Locate, select, organize, and document information using appropriate technology and information systems.
- #7. Analyze, evaluate, and apply relevant information from a variety of sources.
- #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
- #10. Manage the use of time and other resources to complete projects.
- #11. Take responsibility for ones own actions, decisions, and consequences.

Course Evaluation: Passing Grade: 70%, B

Other Course Evaluation & Assessment Requirements:

- Rewrite exams may be granted by the course instructor at the end of the semester. The rewrite exam may be a theory exam if the student fails only that portion of the course or a practical project if the student fails that portion of the course.
- If the student fails both portions of the course he will have to rewrite a theory exam to cover the theory portion of the course and complete a practical project to complete the practical portion of the course.
- The final theory exam is evaluated separately from the practical project. Each portion of the evaluation must attain a passing mark of 70%. The final grade will equate to a "B" grade.

Grade
 Definition Grade Point Equivalent
 A+ 90 - 100% 4.00
 A 80 - 89%
 B 70 - 79% 3.00
 C 60 - 69% 2.00
 D 50 - 59% 1.00
 F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
 S Satisfactory achievement in field /clinical placement or non-graded subject area.
 U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
 X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
 NR Grade not reported to Registrar's office.
 W Student has withdrawn from the course without academic penalty.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
PRACTICAL PROJECTS 1 - 9	50%
Test 29A	25%
Test 29B	25%

Books and Required Resources: COMPOSITE BASICS by MARSHALL
 ISBN: 9780977489664

Course Outcomes and Learning Objectives:

Course Outcome 1.

Understand the advanced composite theory that supports aircraft structural manufacturing and repair work.

Learning Objectives 1.

1. safety, handling and environment issues specific to composites
2. fiber reinforcement materials, terminology, fabric types and weaves
3. matrix materials, types of matrix and adhesive resins
4. core materials, types of honeycomb, foam, wood and syntactic cores, potting compound
5. pre-preg materials (B-stage cure)
6. using a warp clock for manufacturing and repair lay-up
7. damage assessment and evaluation methods
8. specific manufacturing and repair methods
9. duplicate plaster and plastic mould construction methods
10. typical composite processes, vacuum bagging, curing, machining, lay-up and orientation

Course Outcome 2.

Manufacture and repair composite parts using the modern, advanced methods that are specific to aircraft maintenance work.

Learning Objectives 2.

1. the necessary health and safety precautions
2. safe handling and disposal of composite materials, resins and solvents
3. manufacturing and repair of laminates
4. manufacturing of sandwich panels using manufacturer`s specific lay-up details
5. repair of sandwich panels using manufacturer`s specific repair methods
6. core replacement repairs with honeycomb and foam core sandwich panels
7. damage evaluation using the given manufacturer`s repair limits
8. typical composite processes, removal of paint , removal of damage, water removal and cleaning the repair area, lay-up and ply orientation, core orientation, vacuum bagging and hot bonding, edge trimming and final inspection
9. fabricate a duplicate plaster mold from an original manufacturing tool (mold)
10. installation of Click Bond fasteners

Date:

Monday, December 18, 2017

Please refer to the course outline addendum on the Learning Management System for further information.