

I. COURSE DESCRIPTION:

This course is comprised of 18 hours of theory/practical work designed to introduce the student to the manufacturing and repair of advanced composites for modern aircraft.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Identify the types of composite materials being used in aircraft structures.

Potential Elements of the Performance:

- Define modern composites
- Give examples of composite materials
- Describe the composite materials being used in aircraft structures
- Explain the advantages and disadvantages of composites for aircraft use

2. Identify and describe laminated structural materials.

Potential Elements of the Performance:

- Describe glass fiber and other fiber reinforcement products
- Explain polyester and epoxy resin systems
- Understand how thixotropic agents are used

3. Explain the types of laminated construction.

Potential Elements of the Performance:

- Lay up, moulds and parting agents
- Laminated stack-ups
- Sandwich panel construction

4. Describe general manufacturing and repair techniques.

Potential Elements of the Performance:

- Assessment of damage
- Criteria of a good manufactured part or a good repair
- Equipment required
- Safety equipment and precautions

5. Describe the general repair procedures.

Potential Elements of the Performance:

- Surface scratches
- Step cut repair
- Dents in sandwich structure
- Potted repairs
- Skin penetrated and core damage

6. Manufacture two glass fiber laminates.

Potential Elements of the Performance:

- Tools (moulds) to be provided
- Assign cloth style number and orientation for each ply
- Room temperature cure epoxy wet resin used

III. TOPICS:

1. Introduction to Composites
2. Laminated Structural Materials
3. General Manufacturing and Repair Techniques
4. General Repair Procedures

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Aircraft Bonded Structure (EA-NMR)
Teacher Handouts

V. EVALUATION PROCESS/GRADING SYSTEM:

One test worth 100% of the final grade.
Test #29

Note: Students in the Aircraft Structural Repair Program require a minimum of seventy (70) percent in a course to obtain a passing grade. This equates to a “B” grade.

The following semester grades will be assigned to students in postsecondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 – 89%	4.00
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.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

COURSE NOTE: All assignments must be completed. Failure to complete assignments will result in removal of 10% from the test associated with the assignment.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.