

I. **COURSE DESCRIPTION:**

Students will research, using textbooks, structural repair manuals and teacher handouts And perform major structural repairs. Topics such as aircraft fabric covering shot peening, aircraft corrosion control, aircraft wooden structures, and float repairs will be examined. This course utilizes specialized tools and large sheet metal fabricating machinery.

II. **LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1. ***Describe and demonstrate using S.R.M.'s , how to complete major structural repairs. Other topics such as inspection panel fasteners, safe tying techniques, hull and float repairs and jigs will also be discussed.***

Potential Elements of the Performance:

- perform various panel repairs and discuss the procedures you should follow to complete this repair.
- repair aircraft stringer repairs, as per S.R.M.
- complete the various bulkhead repairs assigned
- perform the various spar repairs
- complete, using S.R.M., a leading edge and trailing edge repair on a wing or control surface
- decide the number of parts required to complete a repair by reading blueprints or aircraft structural repair manuals
- identify using repair schematics, the procedures used to repair various float damage
- identify the various items used in the construction of a float
- install various turn lock fasteners and identify the various parts of turn lock fasteners installations
- identify the coding system used to identify fastener diameter and length on Cam Lok and Dzeus fasteners
- identify various fasteners found on aircraft inspection panels
- install and remove various fasteners found on aircraft inspection panels
- identify and complete tubular structural repairs as per AC 43-13-1A
- complete damage assessment and damage assessment reports
- identify the classes of repairs for hull and float aircraft

2. Identify basic fabric types, repair procedures and safety requirements associated with fabric covered aircraft fuselages at control surfaces.

Potential Elements of the Performance:

- identify the types of fabrics used to repair aircraft fabric covered structures
- discuss various terms used throughout the repair process
- state the purpose and procedures for various repairs
- describe various wing fabric repairs
- list the causes of fabric deterioration
- identify areas where fabric damage will most likely occur
- discuss dope application and problems associated with this method of repair
- discuss various stitching involved with fabric repairs
- identify the various safety equipment associated with these repairs

3. Identify aircraft corrosion types, corrosion formation and removal procedures.

Potential Elements of the Performance:

- identify various types of corrosion which damages aircraft structures
- remove and treat corrosion in aircraft structures as per assignments
- describe how to use equipment and chemicals associated with removing and treating corrosion
- state the causes of corrosion
- identify areas prone for corrosion start up

4. Describe various cable types, their construction, methods of swaging fittings and nico-press operations

Potential Elements of the Performance:

- identify most common types of cables used for aircraft systems
- Swage terminal ends onto cable using correct swaging dies and hand tools.
- nico-press aircraft cable, using thimble and copper sleeve, and hand tools
- identify the various equipment used to fabricate aircraft cable
- test cable after installation of terminal ends. Inspect for broken strands and slippage

5. *Basic wooden aircraft repairs and processes will be discussed.*

Potential Elements of the Performance:

- identify the aircraft woods required for structural and component repairs
- discuss terminology associated with wood
- describe the requirements for selecting aircraft wood for the purpose of repairs
- discuss the advantages of using plywood Vs solid wood in aircraft repairs
- identify types of glues used for repairs and discuss gluing methods
- discuss moisture content in aircraft woods
- describe the surface conditions of gluing wooden structures and the importance of strong gluing joints
- identify gluing pressures required during wooden structure repairs and the importance of using Caul blocks and jigs
- discuss laminated wood construction and methods of bending wood in jigs
- describe basic spar splices, scarf joint repairs, and L/E and T/E repairs
- identify jig manufacturing of rib jigs
- discuss plywood repairs, including surface patches and splayed patch
- identify the acceptable methods of finishing repaired wood surfaces

6. *Shot Peening techniques and processes will be studied and discussed.*

Potential Elements of the Performance:

- purpose of shot peening
- parts that are shot peened
- shot peening techniques
- shot peening equipment
- advantages and disadvantages of shot peening aircraft parts

III. TOPICS:

1. General Repairs
2. Aircraft Fabric Coverings
3. Aircraft Corrosion Control & Shot Peening
4. Aircraft Cable Construction
5. Aircraft Wooden Structures
6. Aircraft Tubular Structures, Turn Lock Fasteners & Safe Tying Procedures
7. Hull and Float Repairs

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

A/C 65-15A Textbook { ONLINE }
 AC43.13-1B { ONLINE }
 FAA-H-8083-30 / 31 Textbooks
 Teacher handouts
 D2L

V. EVALUATION PROCESS/GRADING SYSTEM:

Test # 18	10%	
Test # 19	10%	
Test #20	5%	
Test #23	5%	
Test #26	5%	
Test #27	5%	

	40%	of final mark
Practical Projects #22 - #70		
	60%	of final mark

Notes:

- 1/ 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.**
- 2/ Course attendance is mandatory. If a student is absent, he/she must have a valid reason – documentation is required. Students having missed more than 5 percent of the program through absences, shall not qualify for experience credit from Transport Canada, and will not be granted make-up or re-write options for theory tests and shop projects.**
- 3/ If a student misses a test, he/she must have a valid reason – documentation is required. In addition, the instructor must be notified prior to the test, or the student will receive a mark of zero, with no make-up option.**
- 4/ All assignments must be completed. Failure to complete assignments will result in removal of 10% from the test associated with the assignment.**
- 5/ Re-writes for tests, and Repeats for shop projects will not be granted.**

Valid reasons for being absent:

- **Illness – supported by doctor’s note**
- **Family death or serious illness – supported by applicable documents**

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.

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

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
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.	

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

VI. SPECIAL NOTES:Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

NOTE: Prerequisite for 128 is ASR 124.

NOTE: Successful completion in ASR 128 with a grade { B }
– 70% in both practical and theory is a requirement { INDIVIDUALLY }.

**CELL PHONES MUST NOT BE USED
IN THE SHOP OR CLASSROOM**

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located in D2L and on the portal form part of this course outline.