Airframe Structures and Applications  
AMNT 270  
EV Blended  
Course Syllabus

Credit Hours: 3 Credits


Meetings: 1500-2000 (GMT+2); Saturday and Sunday 5,6 Nov, 3,4, 17, 18 Dec

Location: EV-Classroom/Blended, Aviano, Katterbach, Kuwait, Spangdahlem

Instructor: Tom O’Meara, PhD, Assistant Adjunct Professor

Office Hours: Before or After Class or by appointment only

Telephone: 661-209-9801 cell

E-mail: thomas.omeara@erau.edu

Course Description:
This course is an introduction to airframe structures, appropriate applications and repairs. The study of aircraft wood, dope, fabric, sheet metal, welding theory and methods of fabrication are included in this course.

Course Goals:
The course is designed to provide foundational knowledge into the various areas of aeronautical airframes structures and systems. Upon successful completion the student will have an operational knowledge of the principles, fundamentals, and technical procedures associated with airframe structures, appropriate application and repairs.
Learning Outcomes:

Upon course completion, students will be able to:

1. Analyze and describe the basic fixed wing and rotor-wing structures and aerodynamics, including operation and performance.

2. Compare and contrast the different types of sheet-metal, non-ferrous materials and structures in aircraft design and construction.

3. Demonstrate the techniques for sheet metal maintenance and repair, layout, forming, repairs, and structural fasteners.

4. Differentiate and choose the various tools and procedures required for aircraft sheet metal repair and welding.

5. Discriminate and describe the techniques for repairing; fabric used in aircraft coverings, wood structures, composites, and plastics.

6. Identify and describe aircraft/helicopter controls, flight assembly and rigging systems.

7. Interpret and arrange the steps involved in painting and finishing an aircraft structure.

8. Define and describe the aircraft hydraulic and pneumatic assemblies and power systems.

9. Explain the workings of aircraft landing gear systems, brakes, tires, and tubes.

10. Interpret and defend the importance of regulations and procedures relating to preflight-major-annuals servicing, 337 Alterations and Repairs, maintenance, and documentation.

Required Course Materials:


978-1560277125


Suggested Supplemental Materials:

Aviation Maintenance Technician Handbook - Airframe

http://www.faa.gov/regulations_policies/handbooks_manuals/aircraft/amt_airframe_handbook/

Grading:

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<th>Evaluation Items &amp; Weights</th>
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<tr>
<td>Discussions</td>
<td>30%</td>
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<tr>
<td>Pecha Kucha</td>
<td>20%</td>
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<tr>
<td>Internet Research</td>
<td>25%</td>
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<td>Case Analysis</td>
<td>25%</td>
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<td>Total</td>
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**UNDERGRADUATE**

Grade | Grade
90 - 100 | A (Superior)
80 - 89  | B (Above Average)
70 - 79  | C (Average)
60 - 69  | D (Below Average)
Below 60 | F (Failure)

Library:

The Jack R. Hunt Library, located on the Daytona Beach Campus, is the primary library for all Worldwide Campus students.

**Web:** http://library.erau.edu  
**Phone:** (800) 678-9428 (ext. 6947) or (386) 226-7656  
(Voicemail is available after hours)  
**Hours:** Monday - Friday, 8:00 a.m. - 5:00 p.m. EST  
**Email:** http://library@erau.edu

Discussion (30%)

There are seven class discussion throughout the course. Class discussions are an integral part of your learning in this course. You are both encouraged and expected to participate in online discussions. Regular and meaningful contributions are part of your final course grade. Please
fully answer and discuss the topics within each discussion activity. Your degree of interaction contributes to your Discussion grade.

For every graded discussion, it is expected that you will answer each question (one or more paragraphs in length) and reply to at least two of your peers' postings. Be sure to include an appropriate and correct in-text citation from the textbook and any other source you use to support your response. Your in-text citations and reference list must be in accordance with the current Publication Manual of the American Psychological Associate (APA).

Refer to the Discussion Rubric to identify the qualities of an effective post. You can view the Discussion Rubric in the weekly discussion activities.

**Pecha Kucha (20%)**

There are three pecha kucha assignments throughout the course. The assignments use a modified 10x20 Pecha Kucha approach, requiring a brief 10 slide presentation with 20 seconds of discussion per slide either in audio or caption format. Refer to the Pecha Kucha Evaluation Rubric (available via the drop-down menu) to make sure that you understand the requirements for your submission. See Activity 1.2 - Introduction: Pecha Kucha for all additional Pecha Kucha-related support.

**Internet Research (25%)**

There are five internet research assignments throughout the course. This information applies to all “Internet Research” assignments and will not be repeated. In five short written assignments, due in Modules 1, 3, 5, 7, and 9, you will conduct current event research. After conducting the research online using the provided resources and others you locate on your own, you will write a one - two page synopsis in a word-processing document.

Your submissions are expected to be grammatically sound, free of spelling errors, and formatted according to the current APA edition (acceptable file types: .doc, .docx, or .rtf). Provide at least one in-text citation and separate reference page to support your research for each assignment. Your assignment will be submitted to the plagiarism detection tool Turnitin. If you have any questions or concerns on citations or references, please refer to the current APA edition or ask your instructor. Refer to the rubric within the assignment page to ensure that you have met the intent and requirements of the assignment.

**Case Analysis (25%)**

The case analysis assignments consist of four research assignments and three peer review assignments where you provide a peer review of at least one classmates analysis. Each case analysis the assignment link has the assignment requirements.
Assignments, Discussion Board Participation (If required for Blended Delivery), and/or special administrative:

All assignments will be completed in a professional manner and on time, unless prior arrangements have been made with the professor. Canvas assignments (if required) are graded with class participation. This course includes weekly activities, each of which may have grade points associated with them. Unless prior arrangements have been made with the instructor, students are expected to participate each week, according to the course schedule. This is especially important with regards to discussion activities. Weekly discussions typically include both an initial posting and one or more substantive replies.

Note: Proper etiquette has to do with keeping it simple by using proper English and proper spelling – spell check works well in Blackboard.

Course Policies:

Embry-Riddle is committed to maintaining and upholding intellectual integrity. All students, faculty, and staff have obligations to prevent violations of academic integrity and take corrective action when they occur. The adjudication process will include the sanction imposed on students who commit the following academic violations, which may include a failing grade on the assignment, a failing grade for the course, suspension, or dismissal from the University:

1. **Plagiarism:** Presenting as one’s own the ideas, words, or products of another. Plagiarism includes use of any source to complete academic assignments without proper acknowledgement of the source. All papers submitted for grading in this course will be submitted to turnitin.com where the text of the paper is compared against information contained in the turnitin.com database. Papers submitted will be included in the turnitin database and become source documents for the purpose of detecting plagiarism.

2. **Cheating:** A broad term that includes the following:
   a. Giving or receiving help from unauthorized persons or materials during examinations.
   b. The unauthorized communication of examination questions prior to, during, or following administration of the examination.
   c. Collaboration on examinations or assignments expected to be individual work.
   d. Fraud and deceit, that include knowingly furnishing false or misleading information or failing to furnish appropriate information when requested, such as when applying for admission to the University.

3. **APA 6th edition** format is the ERAU Worldwide standard for all research projects.

Disability and Special Needs:

ERAU is committed to the success of all students. It is a University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to request accommodations due to a physical, mental, or learning disability, please contact the
Worldwide Campus Disability Support Service Office at (888) 292-5727 or via email wwdss@erau.edu or worldwide.disability.support.services@erau.edu.

**Course Schedule:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Learning Outcome(s)</th>
<th>Assignments</th>
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</table>
| Meeting 1  | Course Overview                            | 1, 2, 3             | Readings Crane – Chapters 1, 2 (pgs 65-137)  
FAA AMT Handbook Chapter  
Chapter 1 pgs1-1 thru 1-4  
Chapter 2 pgs 2-1 thru 2-40  
**F2F/OL:** 1.6 - Discussion: Fixed Wing vs. Rotorcraft Aerodynamics  
Activity 1.3 C/A Introduction  
**OL:** 1.7 - Internet Research: The Physics of Flight  
**F2F/OL:** 2.3 - Case Analysis 1: Aircraft Metal Construction/Repair  
**F2F/OL:** 2.4 - Pecha Kucha 1: Repairing Damaged Structures |
| 5 Nov     | Basic Aerodynamics                          |                     |  
Metallic Aircraft Structures  
F2F/OL: 3.3 - Discussion: Welding Equipment  
**OL:** 3.4 - Internet Research: Welding Theory  
**F2F/OL:** 3.5 - Case Analysis 1: Peer Review  
**F2F/OL:** 4.3 - Case Analysis 2: Non-Metallic Structures |
| Meeting 2  | Welding                                     | 1,3,4, 5            | Readings Crane – Chapter 2 pgs 138-167, Chapter 3 pgs 175-211, 234-264  
FAA AMT Handbook Chapter  
5 pgs 5-1 thru 5-37, Chapter 3 pgs 3-1 thru 3-24  
**F2F/OL:** 3.3 - Discussion: Welding Equipment  
**OL:** 3.4 - Internet Research: Welding Theory  
**F2F/OL:** 3.5 - Case Analysis 1: Peer Review  
**F2F/OL:** 4.3 - Case Analysis 2: Non-Metallic Structures |
| 6 Nov     | Non-Metallic Aircraft Structures            |                     |  
Welding  
Non-Metallic Aircraft Structures  
F2F/OL: 3.3 - Discussion: Welding Equipment  
**OL:** 3.4 - Internet Research: Welding Theory  
**F2F/OL:** 3.5 - Case Analysis 1: Peer Review  
**F2F/OL:** 4.3 - Case Analysis 2: Non-Metallic Structures |
| Meeting 3 3 Dec | Aircraft Painting and Finishing Assembly and Rigging | OL: 4.4 - Discussion: Technology and Structural Repair | 1,7,6 | Readings Crane – Chapter 3 pgs 212-233, Chapter4 pgs 269-318  
FAA AMT Handbook Chapter 8 pgs 8-1 thru 8-22, Chapter 2 pgs 2-42 thru 2-70 | OL: 5.3 Module 1-4 Quiz  
F2F/OL: 5.4 - Pecha Kucha 2: Painting and Finishing an Aircraft Structure  
OL: 5.5 - Internet Research: Finishing a Fabric Covered Aircraft  
F2F/OL: 5.6 - Case Analysis 2: Peer Review  
F2F/OL: 6.3 - Case Analysis 3: Contrasting Fixed Wing/Rotocraft Rigging  
OL: 6.4 - Discussion: Advances in Flight Controls |
| Meeting 4 4 Dec | Hydraulic and Pneumatic Power Systems | OL: 7.3 - Internet Research: Hydraulic System Maintenance  
F2F/OL: 7.4 - Discussion: Hydraulic and Pneumatic Systems  
F2F/OL: 7.5 - Case Analysis 3: Peer Review | 1,2,8 | Readings Crane – Chapter 5 pgs 323 – 418  
FAA AMT Handbook Chapter 12 pgs 12-1 thru 12-54 |
| Meeting 5 17 Dec | Aircraft Landing Gear | | 1,2,9 | Readings Crane – Chapter 5 pgs 323 – 418  
FAA AMT Handbook Chapter 12 pgs 12-1 thru 12-54 | F2F/OL: 8.3 - Case Analysis |
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<thead>
<tr>
<th>Meeting 6 18 Dec</th>
<th>Aircraft Inspection</th>
<th>1,2,10</th>
<th>Readings</th>
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<tr>
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<td>• Standard Airworthiness (Links to an external site.)</td>
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<td>• Guide to Aircraft Inspection (Links to an external site.)</td>
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<td>Module 9 Presentation</td>
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<td>OL: 9.3 Quiz Module 6-9</td>
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<td>OL: 9.4 - Internet Research: Aircraft Inspection and Repair</td>
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<td>9.5 - Discussion: Aircraft Inspection Regulations</td>
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<td>F2F/OL: 9.6 - Pecha Kucha 3: Personal Learning Goal Reflection</td>
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Submitted by: __________ Tom O’Meara, PhD

Approved by: _______________ O Godsey

Revised: 6/20/2013