

FLORIDA STATE COLLEGE AT JACKSONVILLE
COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: AMT 1764

COURSE TITLE: Aviation Maintenance Technology Airframe IV

PREREQUISITE(S): None

COREQUISITE(S): None

STUDENT ADVISING NOTES: Completion of General I through IV

CREDIT HOURS: 6

CONTACT HOURS/WEEK: 16

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:	8
Laboratory:	8
Other <u>lecture/lab combination</u> :	

FACULTY WORKLOAD POINTS: 8

STANDARDIZED CLASS SIZE ALLOCATION: 25 (FAA Limited)

COURSE DESCRIPTION: This course is designed to introduce skills and the necessary knowledge and understanding of aircraft airframe fuel, ice and rain control and fire detection, protection and extinguishing systems; instrument, position and warning, pitot static, and communications and navigation systems; and aircraft inspections.

SUGGESTED TEXT(S):	<u>TITLE</u>	<u>NUMBER</u>
	Jeppesen A&P Technician Airframe Textbook	ISBN # 0-88487-205-1
	Jeppesen A&P Technician Airframe Workbook	ISBN # 0-88487-295-5
	Jeppesen A&P Technician Airframe Test Guide	ISBN # 0-88487-297-1
	FAA AC 43.13-1B/2A Acceptable Methods, Techniques & Practices	ISBN #0-89100-306-1
	FAR Handbook for Aviation Maintenance Technicians	ISBN #0-88487-314-5
	Aviation Mechanic Handbook, by Dale Crane	#ASA-M-HB1

IMPLEMENTATION DATE: Summer Term, 2006 (20063)

REVIEW OR MODIFICATION DATE: Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS

CONTACT HOURS
PER TOPIC**Note: § Denotes required project**I. FUEL, ICE AND RAIN CONTROL AND FIRE DETECTION, PROTECTION,
AND EXTINGUISHING SYSTEMS

55

A. Fuel Systems

Objectives:

1. Define terms related to aircraft fuel systems.
2. Compare the operations and requirements of gravity feed and pressure feed fuel systems.
3. Discuss construction and design of aircraft fuel tanks and required markings for fuel filler openings.
4. Describe the operation of fuel system components.
5. Discuss fuel indicating systems and components.
6. Describe fuel jettison systems and requirements. (Level 1) (App. C.II, f.41)
7. Explain fuel management using fuel transfer and fuel cross-feed. (Level 1) (App. C.II, f. 42)
8. Discuss aircraft fueling and defueling procedures. (Level 1) (App. C.II, f. 42)
9. Discuss troubleshooting, inspection, and repair of aircraft fuel systems.
10. Describe pressure fueling systems.
11. Discuss inspection, checking, and repairing pressure fueling systems. (Level 1) (App. C.II, f. 43)
12. **§ Inspect and check fuel tank. (Level 2) (App. C.II, f. 44) (AF2-025)**
13. **§ Inspect and repair a fluid quantity indicating system. (Level 2) (App. C.II, f. 45) (AF2-026)**
14. **§ Troubleshoot, service and repair fluid pressure and temperature warning systems. (Level 2) (App. C.II, f. 46) (AF2-027)**
15. **§ Inspect, check, service, troubleshoot and repair an aircraft fuel system. (Level 3) (App. C.II, f. 44,47) (AF2-028)**

B. Ice and Rain Control Systems

Objectives:

1. Discuss safety precautions
2. Define terms related to ice and rain control systems.
3. Distinguish between types and effects of ice formation.
4. Explain the construction, operation, and maintenance of de-icing systems.
5. Explain the construction, operation, and maintenance of anti-icing systems.
6. Discuss removal of snow and ice prior to flight.
7. Discuss the construction, operation, and maintenance of rain removal systems.
8. **§ Perform an operational check of pneumatic de-ice boots. (Level 2) (App. C.II, i. 53) (AF2-029)**
9. **§ Inspect and service a de-ice and rain control system. (Level 2) (App. C. II, i. 53) (AF2-030)**
10. **§ Troubleshoot and repair a de-ice and rain control system. (Level 2) (C.II, i. 53) (AF2-031)**

C. Fire Detection, Protection, and Extinguishing Systems.

Objectives:

1. Discuss safety precautions
2. Define terms related to fire protection, detection, and extinguishing systems.
3. Identify fire detection systems and components.

CONTACT HOURS
PER TOPIC

COURSE TOPICS (continued)

Note: § Denotes required project

4. Discuss smoke detection systems and components. (Level 1) (App. C,II,J,54)
5. Describe carbon monoxide detection systems and components. (Level 1) (App. C,II,J,54)
6. List fire extinguishing agents, systems, and components.
7. **§ Inspect, troubleshoot and repair a fire detection system. (Level 3) (App. C.II, j. 55) (AF2-032)**
8. **§ Check and service a fire extinguishing system. (Level 3) (App. C.II, J. 55) (AF2-033)**

D. Unit Test

II. INSTRUMENT, PITOT STATIC, POSITION AND WARNING,
AND COMMUNICATIONS AND NAVIGATION SYSTEMS

60

A. Instruments, and Position and Warning Systems.

Objectives:

1. Define terms related to instrument systems.
2. List the A&P mechanic's limitations and FAR guidelines for instrument marking, repair, and maintenance. (Level 1) (App. C.II, d. 36)
3. Describe instrument panel construction, layout, and mounting.
4. Discuss the operation and construction of the bourdon tube mechanisms. (Level 1) (App. D.II, d. 36)
5. Discuss the operation and construction of the bellows-type mechanisms. (Level 1) (App. C.II, d. 36)
6. Explain the operation of temperature and thermal couple systems. (Level 1) (App. C.II, d. 36)
7. Explain the operation of a wheatstone bridge. (Level 1) (App. C.II, d. 36)
8. Discuss the operation of ratiometer. (Level 1) (App. C.II, d. 36)
9. Describe the operation of remote position indicating systems. (Level 1) (App. C.II, d. 36)
10. Discuss the operation and maintenance of the pitot-static system. (Level 1)(App. C.II, d. 36)
11. Describe the operation of air speed indicators. (Level 1) (App. C.II, d. 36)
12. Explain the operation of altimeters. (Level 1) (App. C.II, d. 36)
13. Discuss the operation of vertical speed indicators. (Level 1) (App. C.II, d. 36)
14. **§ Install instruments and perform a leak check on the pitot-static system. (Level 2) (App. C.II, d. 36,37) (AF2-034)**
15. Discuss heading instruments. (Level 1) (App. C.II, d. 36)
16. Discuss gyroscopic instruments. (Level 1) (App. C.II, d.36)
17. **§ Inspect and check speed and configuration warning systems. (Level 2) (App. C.II, h. 51) (AF2-035)**

B. Communication and Navigation Systems

Objectives:

1. Define terms related to communication and navigation systems.
2. Identify aircraft communication and navigation system frequencies. (Level 1) (App. C.II, e. 39)
3. Discuss the propagation of radio waves and how information is transmitted.
4. Identify antenna types and the principles of their operation.
5. Discuss aircraft internal and external communication systems. (Level 1) (App. C.II, e. 39)
6. Discuss FCC regulations concerning the operation of a two-way radio. (Level 1) (App. C.II, e. 39)

COURSE TOPICS (continued)

Note: § Denotes required project

7. Describe the procedures for an operational check of communication equipment. (Level 1) (App. C.II, e. 39)
8. Explain the operating principles, inspection, servicing, and operational checks of navigational systems including: VHF, static discharge, VOR, ILS, Loran, transponders, flight computers, and GPWS. (Level 1) (App. C.II, e. 39)
9. List navigation systems and equipment.
10. Discuss removal, handling, installation, and approval for return to service of navigation and communication equipment.
11. Discuss inspecting, checking, and troubleshooting autopilot servos and approach coupling systems. (Level 1) (App. C.II, e.38)
12. **§ Inspect a radio installation and perform an operational check. (Level 2) (App. C.II, e. 39,40) (AF2-036)**
13. Describe an emergency locator transmitter test. (Level 1) (App. C.II, e. 39)
14. **§ Determine proper antenna location on an aircraft. (Level 2) (App. C.II, e. 40) (AF2-037)**
15. **§ Inspect and repair antenna installations. (Level 2) (App. C.II, e.40) (AF2-038)**

C. Unit Test

III. AIRCRAFT INSPECTOR

70

A. Inspection Procedures

Objectives:

1. Define terms related to aircraft inspection.
2. Discuss applicable FAR's pertaining to aircraft inspection.
3. Identify aircraft maintenance publications, maintenance records, and inspection records pertaining to aircraft inspection.
4. Explain the purpose of aircraft inspections.
5. Discuss inspections required by the FAA.
6. Discuss conformity inspections.
7. Describe the scope of a 100-hour or annual inspection performed in accordance with FAR Part 43.
8. Explain practices and procedures used in the pre-inspection preparation of a 100-hour or annual inspection.
9. Discuss practices and procedures used in performing a 100-hour or annual inspection.
10. **§ Perform an aircraft conformity inspection. (Level 3) (App. C.I, d.13, g. 28) (AF2-039)**
11. **§ Perform airframe 100-hour and airworthiness directive compliance inspection. (Level 3) (App. C.I, g. 28) (AF2-040)**

B. Unit Test

IV. ENTREPRENEURSHIP OPPORTUNITIES FOR AIRFRAME MAINTENANCE
TECHNICIAN

25

- A. Small Business In Our Society
 1. Opportunities

CONTACT HOURS
PER TOPIC

COURSE TOPICS (continued)

Note: § Denotes required project

2. Entrepreneurs
3. Rate of failure
4. Reason for failures

B. Forms Of and Personal Requirements Of Business Organizations

1. Sole Proprietorship
2. Partnership
3. Corporation
 - a. Regular
 - b. Subchapter-S
4. Advantages and disadvantages of each

C. Franchises

1. Definition
2. Types
3. Trends

D. Startup Vs. Buying A Business

1. Advantages of startup
2. Advantages of buying existing business

E. Developing a Business Plan

1. Need for planning
2. Steps
3. The plan itself

V. AIRFRAME IV REMEDIATION, REVIEW, AND TESTING

30

PROGRAM TITLE: Aviation Maintenance Management

COURSE TITLE: Aviation Maintenance Technology Airframe IV

CIP NUMBER: 1649.010401

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

- 24.0 PERFORM AIRFRAME INSPECTION--The student will be able to:
 24.01 Perform aircraft conformity and airworthiness inspections. [FAA FAR Part 147, Level 3]
- 28.0 MAINTAIN AIRCRAFT INSTRUMENT SYSTEMS--The student will be able to:
 28.01 Inspect, check, service, troubleshoot, and repair electronic flight-instrument systems and both mechanical and electrical heading, speed, altitude, temperature, pressure, and position-indicating systems to include the use of built-in test equipment. [FAA FAR Part 147, Level 1]
 28.02 Install instruments and perform a static pressure-system leak test. [FAA FAR Part 147, Level 2]
- 29.0 MAINTAIN COMMUNICATION AND NAVIGATION SYSTEMS--The student will be able to:
 29.01 Inspect, check, and troubleshoot autopilot, servos, and approach coupling systems. [FAA FAR Part 147, Level 1]
 29.02 Inspect, check, and service aircraft electronic communication and navigation systems, including VHF passenger address interphones and static-discharge devices, aircraft VOR, ILS, LORAN, radar beacon transponders, flight-management computers, and GPWS. [FAA FAR Part 147, Level 1]
 29.03 Inspect and repair antenna and electronic equipment installations. [FAA FAR Part 147, Level 2]
 29.04 Identify and utilize special electronic tools and equipment. [FAA FAR Part 147, Level 2]
- 30.0 INSPECT AND REPAIR AIRCRAFT FUEL SYSTEMS--The student will be able to:
 30.01 Check and service fuel-dump systems. [FAA FAR Part 147, Level 1]
 30.02 Perform fuel-management transfer, re-fueling, and de-fueling. [FAA FAR Part 147, Level 1]
 30.03 Inspect, check, and repair pressure fuel systems.[FAA FAR Part 147, Level 1]
 30.04 Repair aircraft fuel-system components. [FAA FAR Part 147, Level 2]
 30.05 Inspect and repair fluid quantity-indicating systems. [FAA FAR Part 147, Level 2]
 30.06 Troubleshoot, service, and repair fluid pressure and temperature warning systems. [FAA FAR Part 147, Level 2]
 30.07 Inspect, check, service, troubleshoot, and repair aircraft fuel systems. [FAA FAR Part 147, Level 3]
- 32.0 INSPECT AND REPAIR POSITION AND WARNING SYSTEMS--The student will be able to:
 32.01 Inspect, check, and service speed and configuration warning systems, electrical brake controls, and antiskid systems.[FAA FAR Part 147, Level 2]
 32.02 Inspect, check, troubleshoot, and service landing gear position- indicating and warning systems. [FAA FAR Part 147, Level 3]

LIST PERFORMANCE STANDARD ADDRESSED: (continued)

NUMBER(S):

TITLES(S):

- 33.0 MAINTAIN ICE AND RAIN CONTROL SYSTEMS--The student will be able to:
- 33.01 Inspect, check, troubleshoot, service, and repair airframe ice and rain control systems. [FAA FAR Part 147, Level 2]
- 34.0 INSPECT AND REPAIR AIRCRAFT FIRE-PROTECTION SYSTEMS--The student will be able to:
- 34.01 Inspect, check, and service smoke and carbon monoxide detection systems. [FAA FAR Part 147, Level 1]
 - 34.02 Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems. [FAA FAR Part 147, Level 3]
- 37.0 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP RELATED OPPORTUNITIES IN AVIATION AIRFRAME MAINTENANCE OCCUPATIONS--The student will be able to:
- 37.01 Define entrepreneurship.
 - 37.02 Describe the importance of entrepreneurship to aviation airframe maintenance occupations.
 - 37.03 List the advantages and disadvantages of aviation airframe maintenance business ownership.
 - 37.04 Identify the risks involved in ownership of an aviation airframe maintenance business.
 - 37.05 Identify the necessary personal characteristics of a successful aviation airframe maintenance business owner.
 - 37.06 Identify the business skills needed to operate an aviation airframe maintenance business efficiently and effectively.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1 COURSE PREFIX AND NUMBER: <u>AMT 1764</u>	SEMESTER CREDIT HOURS: <u>6</u>
COURSE TITLE: <u>Aircraft Maintenance Technology Airframe 4</u>	

Section 2
 TYPE OF COURSE: (Click on the box to check all that apply)

<input type="checkbox"/> AA Elective	<input checked="" type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input type="checkbox"/> AS Professional Elective	<input checked="" type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____		
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

Section 3 (If applicable)
 INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

<input type="checkbox"/> Communication	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

Section 4
 INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input type="checkbox"/> Speaking	<input type="checkbox"/> Critical Analysis	<input type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

Section 5 LEARNING OUTCOMES	METHOD OF ASSESSMENT
• Inspect and repair fluid quantity indicating systems	Practical test based on FAA Practical Test Standards
• Inspect and repair fire detection systems	Practical test based on FAA Practical Test Standards
• Inspect and repair deice systems	Practical test based on FAA Practical Test Standards
• Perform a pitot-static system leak check	Practical test based on FAA Practical Test Standards
• Perform an operational check of a radio system	Practical test based on FAA Practical Test Standards
• Perform a 100-hour inspection	Practical test based on FAA Practical Test Standards
• Demonstrate and understanding of entrepreneurship as it relates to the AMT profession	Written test
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Section 6
 Name of Person Completing This Form: Richard Rozanski