

FLORIDA STATE COLLEGE AT JACKSONVILLE
COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: AMT 1754

COURSE TITLE: Aviation Maintenance Technology General IV

PREREQUISITE(S): None

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 8

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:	4
Laboratory:	4
Other <u>lecture/lab combination:</u>	

FACULTY WORKLOAD POINTS: 4

STANDARDIZED CLASS SIZE ALLOCATION: 25 (FAA Limited)

COURSE DESCRIPTION: This course is designed to introduce structural materials and processes, non-destructive inspection, aircraft cleaning and corrosion control, weight and balance, and aircraft ground operations and servicing.

SUGGESTED TEXT(S):	<u>TITLE</u>	<u>NUMBER</u>
Jeppesen A&P	Technician General Textbook	ISBN #0-88487-203-3
Jeppesen A&P	Technician General Workbook	ISBN #0-88487-212-2
Jeppesen A&P	Technician General Test Guide	ISBN #0-89100-449-1
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 <u>PER TOPIC</u>
Note: § Denotes required project	
I. Structural Materials and Processes and Nondestructive Inspection	30
A. Nonmetallic Structural Materials	
Objectives:	
1. Define terms related to aircraft structural materials.	
2. Discuss materials used in aircraft construction and their properties.	
3. Discuss various types of wood and how they are used in aircraft construction.	
4. Discuss aircraft plastic and composite materials.	
B. Metallic Structural Materials	
Objectives:	
1. Discuss properties of ferrous and non-ferrous metals.	
2. Discuss, carbon steels, alloy steels, and the S.A.E. classification system used for steel alloys.	
3. Discuss aluminum alloys and their classification numbering system	
4. § Select aluminum alloys by their alloy and temper designation number. (Level 3) (App. B. e.17) (GEN-085)	
5. Discuss magnesium, titanium, nickel, and copper, and their alloys.	
C. Treatment Processes	
Objectives:	
1. Discuss treatment processes for steel.	
2. Discuss heat treatment of metals. (Level 1) (App. B. e.16)	
3. Discuss commonly used systems for measuring the hardness of steel.	
4. § Perform basic heat-treatment and test for proper temper. (Level 2) (App. B. e.16) (GEN-086)	
D. Nondestructive Inspections	
Objectives:	
1. Define terms related to non-destructive testing.	
2. Explain inspection methods, including advantages and disadvantages. (Level 1) (App. B. e.14)	
3. Discuss dye-penetrant, magnetic particle, eddy current, ultrasonic and radiographic inspection. (Level 1) (App. B. e.14)	
4. § Perform liquid dye-penetrant, magnetic-particle, eddy current and ultra-sonic inspection (Level 2) (App. B. e.15) (GEN-087)	
5. Discuss visual inspection of welds.	
6. § Inspect and check welds. (Level 3) (App. B. e.18) (GEN-088)	
E. Unit Test	

COURSE TOPICS (continued)	CONTACT HOURS <u>PER TOPIC</u>
Note: § Denotes required project	

II. AIRCRAFT CLEANING AND CORROSION CONTROL	30
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A. Corrosion

Objectives:

1. Define terms related to cleaning and corrosion control.
2. Discuss electro-chemical origins of corrosion.
3. Identify common types of corrosion found in aircraft structures.
4. Discuss origins/causes of corrosion.
5. Discuss the most common corrosive agents.

B. Cleaning

Objectives:

1. Discuss cleaning engine parts, metal, fabric, acrylics, and rubber.
2. Discuss cleaning agents and their appropriate usage.
3. **§ Identify and select proper cleaning materials and perform aircraft cleaning. (Level 3) (App. B. g. 22,23) (GEN-089)**
4. Determine the proper sequence for paint removal on aircraft structures.

C. Corrosion Control

Objectives:

1. Discuss safety practices used during aircraft cleaning and corrosion control processes.
2. Identify common nondestructive methods used to detect corrosion.
3. Discuss the most corrosive-prone areas on aircraft and reasons for this corrosion.
4. Discuss treatment processes
5. Determine proper corrosion-preventive techniques to be used in various corrosion-prone areas.
6. **§ Inspect for and identify forms of corrosion. (Level 3) (App. B. g. 23) (GEN-090)**
7. **§ Select proper chemical and mechanical materials and perform corrosion removal and treatment. (Level 3) (App. B. g. 23) (GEN-091)**

D. Unit Test

III. WEIGHT AND BALANCE	30
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A. Preparation of Aircraft for Weight and Balance

Objectives:

1. Discuss safety precautions to follow when weighing an aircraft.
2. Define terms associated with aircraft weight and balance.
3. Explain principles of weight and balance operations.
4. Discuss special limitations related to aircraft jacking and weight and balance.
5. State the condition of aircraft certified under FAR Part 23, during the weighing operation relative to ballast, fuel and operation.

CONTACT HOURS
PER TOPIC

COURSE TOPICS (continued)

Note: § Denotes required project

6. Discuss documents and references necessary to perform weight and balance calculations.
7. **§ Perform a conformity inspection using an equipment list.(Level 3)(App.B.c.12; k.31,32) (GEN-092)**
8. Discuss the effect weight and center of gravity position has on an aircraft's stall speed and stability.

B. Weighing Aircraft

Objectives:

1. **§ Determine the empty weight center of gravity relative to the main wheels of an aircraft. (Level 3) (App. B. c. 12) (GEN-093)**
2. **§ Perform empty weight calculation using fuel removal method. (Level 3) (App.B.c.12) (GEN-094)**
3. **§ Calculate the center of gravity in extreme forward and aft loading conditions. (Level 3) (App. B. c. 12) (GEN-095)**
4. **§ Calculate weight and balance after removing and replacing equipment.(Level 3) (App.B.c.12) (GEN-096)**
5. Discuss the requirements for installation of placards or ballast due to CG placement.
6. **§ Calculate aircraft useful load. (Level 3) (App. B. c.12) (GEN-097)**
7. **§ Weigh an aircraft and compute and record aircraft weight and balance.(Level 3)(App.B.c.11,12) (GEN-098)**

C. Unit Test

IV. AIRCRAFT GROUND HANDLING AND SERVICING

25

A. Servicing and Securing an Aircraft

Objectives:

1. Define terms related to aircraft ground handling and servicing to their correct definitions.
2. **§ Identify and list typical hazards associated with ground handling and servicing of aircraft. (Level 2) (App. B. f. 20) (GEN-101)**
3. Explain aircraft tie-down procedures.
4. **§ Perform aircraft move and secure the aircraft. (Level 2) (App. B. f. 20) (GEN-102)**
5. Discuss aircraft jacking and hoisting.
6. Explain the usage of ground support equipment.
7. Discuss aircraft servicing.
9. Discuss aircraft fuels, fueling and de-fueling procedures and safety requirements.
8. Describe common aircraft fuel contaminants and prevention of fuel contamination.
10. **§ Identify and select aircraft fuels. (Level 2) (App. B. f. 21) (GEN-103)**

B. Ground Operate and Move Aircraft

Objectives:

1. Discuss safety during aircraft ground handling and servicing.
2. Describe engine run-up procedures.
3. Discuss taxiing an aircraft.
4. Identify standard FAA hand signals used for ground handling fixed-wing and rotary-wing aircraft.

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

Note: § Denotes required project

5. Discuss aircraft ground handling.
6. **§ Perform as a signal person for a taxiing aircraft. (Level 2) (App. B. f. 20)(GEN-104)**
7. **§ Perform engine run-up and taxi aircraft. (Level 2) (App. B. f. 20) (GEN-105)**

C. Unit Test

V. GENERAL IV REMEDIATION, REVIEW, AND TESTING

5

GENERAL BLOCK IV FINAL EXAM

PROGRAM TITLE: Aviation Maintenance Management

COURSE TITLE: Aviation Maintenance Technology General IV

CIP NUMBER: 1649.010401

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

- 03.0 DEMONSTRATE AIRCRAFT WEIGHT AND BALANCE SKILLS--The student will be able to:
 - 03.01 Weigh aircraft.[FAA FAR Part 147, Level 2]
 - 03.02 Perform complete weight-and-balance check and record data. [FAA FAR Part 147, Level 3]
 - 03.03 Utilize proper personal safety procedures.

- 05.0 PERFORM AIRCRAFT MATERIALS AND PROCESSES SKILLS--The student will be able to:
 - 05.01 Identify and select appropriate nondestructive testing methods. [FAA FAR Part 147, Level 1]
 - 05.02 Perform dye penetrant, eddy current, ultrasonic, and magnetic particle inspections. [FAA FAR Part 147, Level 2]
 - 05.03 Perform basic heat-testing processes. [FAA FAR Part 147, Level 1]
 - 05.05 Inspect and check welds. [FAA FAR Part 147, Level 3]

- 06.0 PERFORM GROUND OPERATIONS AND SERVICING DUTIES--The student will be able to:
 - 06.01 Start, ground operate, move, service, and secure aircraft and identify typical ground-operations hazards. [FAA FAR Part 147, Level 2]
 - 06.02 Identify and select fuels. [FAA FAR Part 147, Level 2]
 - 06.03 Comply with prescribed shop and personal safety procedures.

- 07.0 PERFORM CLEANING AND CORROSION-CONTROL OPERATIONS--The student will be able to:
 - 07.01 Identify and select cleaning materials. [FAA FAR Part 147, Level 3].
 - 07.02 Inspect, identify, remove, and treat aircraft corrosion and perform aircraft cleaning. [FAA FAR Part 147, Level 3]
 - 07.03 Identify and utilize appropriate equipment for cleaning and corrosion control.
 - 07.04 Observe appropriate personal safety procedures for corrosive chemicals.



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 1754</u>	SEMESTER CREDIT HOURS: <u>3</u>
COURSE TITLE: <u>Aviation Maintenance Technology General 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 checked="" type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry
<input 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
• Perform liquid penetrant, magnetic particle, eddy-current and ultrasonic inspections	Practical test based on FAA Practical Test Standards
• Inspect and identify forms of corrosion	Written test created from FAA Test Bank of Questions
• Calculate weight and balance of aircraft	Practical test based on FAA Practical Test Standards
• Ground operate and move aircraft	Practical test based on FAA Practical Test Standards
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Section 6
 Name of Person Completing This Form: Richard Rozanski