

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: AMT 1751
 COURSE TITLE: Aviation Maintenance Technology General I
 PREREQUISITE(S): None
 COREQUISITE(S): None
 CREDIT HOURS: 3
 CONTACT HOURS/WEEK: 8
 CONTACT HOUR BREAKDOWN:
 Lecture/Discussion: 4
 Laboratory: 4
 Other lecture/lab combination:
 FACULTY WORKLOAD POINTS: 4
 STANDARDIZED CLASS SIZE
 ALLOCATION: 25 (FAA Limited)

COURSE DESCRIPTION: This course is designed to introduce general hangar and shop safety, environmental concerns, mathematics, physics, basic aerodynamics, federal aviation regulations, publications and records.

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. GENERAL HANGAR AND SHOP SAFETY	15
A. Personal Safety	
Objectives:	
1. Define terms related to safety.	
2. Discuss general safety practices and precautions.	
3. Discuss causes of accidents.	
4. List steps to be followed in case of an accident.	
5. § Complete an accident report. (GEN-001)	
B. Fire Safety	
Objectives:	
1. Discuss classes of fires.	
2. Discuss fire extinguisher safety procedures.	
3. Match fire extinguishing agents to classes of fires.	
C. Shop and Hangar Safety	
Objectives:	
1. Identify safety color codes and their correct applications.	
2. Match accident prevention signs and tags with their colors and usage.	
3. § Complete a hazard check of the hangar and shop area. (GEN-002)	
4. Identify parts of a drill press, bench grinder, band saw, and disc grinder.	
5. Discuss rules for safe use of power tools and shop equipment.	
D. Chemical Safety	
Objectives:	
1. Discuss the use of hazardous materials.	
2. Discuss Material Safety Data Sheets and their purpose	
3. § Select and interpret a Material Safety Data Sheet (GEN-003)	
4. Discuss proper hazardous waste disposal and its importance	
E. Unit Test	
II. FEDERAL AVIATION REGULATIONS, PUBLICATIONS AND RECORDS	30
A. Definitions and Abbreviations	
Objectives:	
1. Select terms and definitions related to FAR Part I.	
2. Label the FAR titles to (their proper part) aircraft maintenance.	
3. Explain the difference between acceptable and approved data.	

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

Note: § Denotes required project

B. Certification: Airmen Other Than Flight Crew Members

Objectives:

1. List general eligibility requirements for certification of airmen other than flight crew members.
2. **§ Identify and exercise the privileges of a certificated mechanic with airframe and power-plant ratings. (Level 3) (App.B.1.33) (GEN-004)**
3. List the facts related to the duration, loss, destruction, suspension, and revocation of the following certificates:
 4. Repairman's certificate
 5. Airframe and/or Power-plant certificate
 6. Inspection Authorization certificate
7. List the privileges of certificated Repairmen.

C. General Operating and Flight Rules

Objectives:

1. Discuss FAR part 91.
2. **§ Demonstrate ability to read, comprehend and apply data in FAR part 91 applicable to Airworthiness Directives.(Level 3) (App.B.k.31) (GEN-005)**
3. Define and interpret regulations related to aircraft permanent and temporary records and forms used to document the records.

D. Maintenance, Preventive Maintenance, Rebuilding, and Alteration

Objectives:

1. **§ Demonstrate ability to read, comprehend and apply data in the FAR as related to maintenance, preventive maintenance, alterations, rebuilding and inspections.(Level 3) (App.B.k.31, 32) (GEN-006)**
2. Explain the relationship between an inspection checklist and appendix "D" of FAR Part 43.
3. **§ Develop a discrepancy list and perform logbook entries for maintenance, inspection, and Airworthiness Directive compliance. (Level 3) (App.B.i.28,29) (GEN-007)**
4. **§ Properly prepare an FAA Form 337. (Level 3) (App. B.i.28,29) (GEN-008)**

E. Maintenance Publications and Technical Data

Objectives:

1. **§ Select, read, interpret and explain the purpose and use of Advisory Circulars (AC) (Level 3) (App. B. k. 31,32) (GEN-009)**
2. **§ Select, read, interpret and explain the purpose and use of General Aviation Airworthiness Alerts. (Level 3) (App. B. k. 31,32) (GEN-010)**
3. **§ Select, read, interpret and explain the purpose and use of Airworthiness Directives (AD) (Level 3) (App. B. k. 31,32) (GEN-011)**
4. Discuss the purpose and use of Aircraft Type Certificates (TC)
5. **§ Select, read, interpret and explain the purpose and use of Type Certificate Data Sheets (TCDS) and Aircraft Specifications (Level 3) (App. B. k. 31,32) (GEN-012)**

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

Note: § Denotes required project

6. § Select, read, interpret and explain the purpose and use of FAA and manufacturers' aircraft maintenance specifications. (Level 3) (App. B. k. 31,32) (GEN-013)
7. Discuss the use and purpose of Aircraft Listings
8. Discuss the use and purpose of Supplemental Type Certificates (STC)
9. Discuss the use and purpose of Parts Manufacturers' Approvals (PMA)
10. Discuss the use and purpose of Technical Standard Orders (TSO)
11. Discuss the use and purpose of Technical Data Service Difficulty Reporting Program
12. Discuss ATA specification 100.
13. Explain manual systems for small and large engines
14. Discuss HBAW 98-18 Checklist for instructions for continued airworthiness for major alternations approved under the field approval process

F. Unit Test

III. MATHEMATICS

40

A. Fractions

Objectives:

1. Define terms related to the principles of mathematics.
2. Add, subtract, multiply, and divide whole numbers.
3. Add, subtract, multiply, and divide common fractions.
4. § Add, subtract, multiply, and divide decimal numbers and fractions.(Level 3) (App. B. h. 27) (GEN-014)
5. Add and subtract mixed numbers.
6. § Convert numbers between common fractions and decimals using a calculator. (Level 3)(App. B. h. 26) (GEN-015)
7. § Convert decimal numbers to percentages. (Level 3) (App. B. h. 26)(GEN-016)

B. Signed Numbers, Roots, and Powers

Objectives:

1. § Add, subtract, multiply, and divide negative numbers. (Level 3) (App. B. h.27) (GEN-017)
2. Discuss the use of positive and negative exponents
3. § Extract roots and raise numbers to a given power. (Level 3) (App. B. h.24) (GEN-018)
4. § Multiply and divide by scientific notations. (Level 3) (App. B. h.24)(GEN-019)

C. Applied Algebra

Objectives:

1. § Determine ratios. (Level 3) (App. B. h.26) (GEN-020)
2. § Solve problems involving proportions. (Level 3) (App. B. h.26) (GEN-021)
3. § Perform algebraic operations involving addition, subtraction, multiplication, and division. (Level 3) (App. B. h.27) (GEN-022)

D. Applied Geometry and Trigonometry

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

Note: § Denotes required project

Objectives:

1. Discuss purposes for use of geometry and trigonometry in aviation
2. Discuss the relationship between sine, cosine and tangent
3. § Determine area and volume of various geometrical shapes. (Level 3)(App. B. h.25) (GEN-023)
4. § Solve trigonometric problems showing the relationship between sine, co-sine and tangent. (Level 3) (App. B. h. 26) (GEN-024)

E. Measurement systems

Objectives:

1. Discuss the English and metric systems of measurement
2. § Use conversion tables to convert units between English and metric systems. (Level 3) (App. B.d.10, h. 27) (GEN-025)

F. Unit Test

IV. PHYSICS AND BASIC AERODYNAMICS

30

A. Basic Physics Fundamentals

Objectives:

1. Define terms related to the principles of physics.
2. Discuss the physical states of matter.
3. Discuss potential and kinetic energy.
4. § Define terms related to the origin of sound (Level 2) (App. B.j. 30)(GEN-026)

B. Simple Machines

Objectives:

1. Discuss work and power.
2. § Solve problems related to simple machines. (Level 2) (App. B.j. 30) (GEN-027)
3. Discuss stress and strain.

C. Laws of Motion

Objectives:

1. Discuss Newton's Laws of Motion.
2. Discuss vectors.

D. Heat Dynamics

Objectives:

1. Discuss the relationship between heat and energy.
2. Explain methods of heat transference.
3. Explain the relationship between the uses of the four commonly used temperature scales.
4. § Convert temperatures between common temperature scales.(Level 2)(App. B. j. 30) (GEN-028)

E. Fluid Dynamics

COURSE TOPICS (continued)

CONTACT HOURS
PER TOPIC

Note: § Denotes required project

Objectives:

1. Discuss the three types of pressure.
2. Discuss general gas laws.
3. **§ Calculate pressure and volume of gasses. (Level 2) (App. B. j.30) (GEN-029)**
4. **§ Solve problems in fluid mechanics. (Level 2) (App. B. j.30) (GEN-030)**

F. Basic Aerodynamics

Objectives:

1. Define terms related to basic aerodynamics.
2. Discuss characteristics of the atmosphere and measurement processes used in monitoring atmospheric conditions.
3. Determine density altitude using a density-altitude chart.
4. Discuss the four forces of flight.
5. Discuss characteristics of drag and how it affects aircraft performance.
6. Discuss the five types of stresses induced on aircraft
7. **§ Identify types of aircraft structures. (Level 2) (App. B. j. 30) (GEN-031)**
8. Identify basic sections of aircraft.
9. Discuss laws of physics pertaining to aerodynamics.
10. Discuss airfoil designs.
11. Describe normal airflow around an airfoil and how a stall is produced.
12. Discuss flaps and auxiliary lift devices.
13. Describe how the center of pressure moves as the angle of attack of an asymmetrical airfoil changes and the effect the center of pressure's movement has on an aircraft in flight.
14. Discuss supersonic and hypersonic aerodynamics and Mach number.
15. Discuss airfoil sections, critical Mach numbers for supersonic airfoils, and engine inlets for high-speed flight.
16. **§ Define airfoil characteristics and fundamentals of lift production.(Level 2)(App.B.j.30) (GEN - 032)**
17. Discuss the three axes of motion of an airplane.
18. Discuss primary and secondary flight control surfaces.
19. Discuss the functions of aircraft controls and their operation.
20. Discuss operational and design characteristics of control systems used in heavy aircraft.
21. Discuss types and conditions of aircraft stability, and how it is affected by the various axes.
22. Explain how load factor is produced while an aircraft is in a coordinated level turn.

G. Unit Test

V. GENERAL I REMEDIATION, REVIEW, AND TESTING

5

PROGRAM TITLE: Aviation Maintenance Management

COURSE TITLE: Aviation Maintenance Technology General I

CIP NUMBER: 1649.010401

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

- 08.0 DEMONSTRATE MATHEMATICAL SKILLS--The student will be able to:
- 08.01 Extract roots and raise numbers to a given power. [FAA FAR Part 147, Level 3]
 - 08.02 Determine areas and volumes of various geometrical shapes by solving problems for volume, weight, area, circumference, and perimeter measurements for rectangles, squares, and cylinders.[FAA FAR Part 147, Level 3]
 - 08.03 Solve ratio, proportion, and percentage problems. [FAA FAR Part 147, Level 3]
 - 08.04 Perform algebraic operations involving addition, subtraction, multiplication, and division of positive and negative numbers. [FAA FAR Part 147, Level 3]
 - 08.05 Measure tolerances on horizontal and vertical surfaces using millimeters, centimeters, feet, and inches.
 - 08.06 Identify costs, prices, and taxes for the purchase and sale of materials that may be required when performing the duties of an Aviation Maintenance Technician.
- 09.0 MAINTAIN FORMS AND RECORDS--The student will be able to:
- 09.01 Write descriptions of work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records. [FAA FAR Part 147, Level 3]
 - 09.02 Complete required maintenance forms, records, and inspection reports. [FAA FAR Part 147, Level 3]
- 10.0 APPLY BASIC PHYSICS TO AIRCRAFT SYSTEMS--The student will be able to:
- 10.01 Use and understand the principles of simple machines; sound, fluid, and heat dynamics; basic aerodynamics; aircraft structures; and theory of flight. [FAA FAR Part 147, Level 2]
- 11.0 DEMONSTRATE APPROPRIATE UNDERSTANDING OF BASIC SCIENCE--The student will be able to:
- 11.01 Understand molecular action as a result of temperature extremes, chemical reaction, and moisture content.
 - 11.02 Draw conclusions or make inferences from data.
 - 11.03 Identify health-related problems that may result from exposure to work-related chemicals and hazardous materials and know the proper precautions required for handling such materials.
 - 11.04 Understand pressure measurement in terms of PSI, inches of mercury, and KPA.
- 12.0 DEMONSTRATE THE USE OF MAINTENANCE PUBLICATIONS--The student will be able to:
- 12.01 Demonstrate ability to read, comprehend, and apply information contained in FAA and manufacturers' aircraft maintenance specifications, data sheets, manuals, publications, and related Federal Aviation Regulations, Airworthiness Directives, and Advisory material. [FAA FAR Part 147, Level 3]
 - 12.02 Read technical data. [FAA FAR Part 147, Level 3]

LIST PERFORMANCE STANDARD ADDRESSED: (continued)

NUMBER(S): TITLES(S):

- 13.0 INTERPRET MECHANIC PRIVILEGES AND LIMITATIONS--The student will be able to:
 - 13.01 Exercise mechanic privileges within the limitations prescribed by Part 65 of this chapter.[FAA FAR Part 147, Level 3]

- 14.0 IDENTIFY FEDERAL AVIATION ADMINISTRATION LICENSING REQUIREMENTS--The student will be able to:
 - 14.01 Identify the information in Federal Aviation Regulations (FAR) Part 65 pertaining to eligibility for Aviation Maintenance Technician (AMT) certification and ratings.
 - 14.02 Identify the FAA requirements that must be satisfied in order to display the FAA Airframe and Powerplant license.



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 1751</u>	SEMESTER CREDIT HOURS: <u>3</u>
COURSE TITLE: <u>Aviation Maintenance Technology General 1</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 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

	LEARNING OUTCOMES	METHOD OF ASSESSMENT
•	Apply general shop safety principles in daily work	Written tests, reports and/or use of equipment to demonstrate student competency in field.
•	Demonstrate ability to read, comprehend, and apply data in FAA documents and regulations	Written test created from FAA test bank of questions
•	Perform mathematical operations through elementary Algebra, Geometry and trigonometry	Written test created from FAA test bank of questions
•	Understand basic laws of motion, thermodynamics and fluid dynamics	Written test created from FAA test bank of questions
•		
•		
•		
•		
•		

Section 6
 Name of Person Completing This Form: Richard Rozanski