

VALLEY ROP COURSE OUTLINE

COURSE TITLE:	Aviation Maintenance Technology	
VALLEY ROP #:	TR-5653-AvMaT	
CDE #	6207	
CBEDS TITLE:	Aircraft Mechanics, combination	
CBEDS #:	5653	
CTE SECTOR:	Transportation	
CTE PATHWAY:	Aviation and Aerospace Transportation Services	
JOB TITLES:	Aircraft Mechanics and Service Technicians	49-3011.00
	Automotive Master Mechanics	49-3023.01
	Automotive Specialty Technicians	49-3023.02
	Farm Equipment Mechanics	49-3041.00
	Industrial Machinery Mechanics	49-9041.00
	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	51-2011.00
	Engine and Other Machine Assemblers	51-2031.00

COURSE DESCRIPTION:

This course is designed to train students for entry-level jobs in the fast growing industry of Aviation Maintenance. Emphasis will be placed on diagnostics, repair, adjustment, and troubleshooting for the following systems: Cabin Atmosphere Control Systems, Hydraulic and Pneumatic Power Systems, Aircraft Fuel Systems, Fuel Metering Systems, Engine Fuel Systems, Aircraft Landing Gear Systems, Position and Warning Systems, Ice and Rain Control Systems, Fire Protection Systems, Engine Fire Protection Systems, Assembly and Rigging, Engine Instrument Systems.

This course adheres to the standards and requirements approved by Federal Aviation Administration, Federal Aviation Regulations.

COURSE APPROVED:	2009
REVISED DATE:	Nov 2009
HOURS:	360 hours
CREDITS:	20 per year
PREREQUISITES:	2.5 GPA or higher
GRADE LEVEL:	12

TEXTBOOKS: Airframe and Powerplant Technician Airframe Textbook,
Jeppesen, 2003
Airframe and Powerplant Technician Powerplant Textbook,
Jeppesen, 2004

RESOURCES:

Aircraft Inspection and Repair (AC-43.13-2A &2B) FAA, supplied by Jeppesen, 2008
Federal Aviation Regulations, Aviation Maintenance Technician, Jeppesen, 2008
Aviation Mechanic Handbook, Crane, 1992
Airframe and Powerplant Mechanic Powerplant Handbook (AC-65-12A), FAA, 1996
Dictionary of Aeronautical Terms, Crane, 1991
Computer-Based-Training hardware and software
Aircraft and aircraft mock-up components
Microfiche Library, ATP, 2006
CD library, various
Hard-copy Service Manuals, Maintenance Manuals, Parts Manuals; various

COURSE COMPETENCIES:

Upon successful completion of the course, students will:

- Meet the Federal Aviation Administration requirements for the majority of the “Systems” subjects as specified in the Approved Aviation Maintenance Technician School.
- Adhere to ethical and legal maintenance standards as prescribed in the Federal Aviation Administration, Federal Aviation Regulations.
- Given acceptable manufacturers documentation, complete assigned inspections, modifications, repairs, calculations, and/or troubleshooting procedures.
- Develop acceptable documentation for return to service certification of aircraft and/or related component parts.
- Work successfully in a team atmosphere, alternately assuming the roles of leader and of team player.
- Apply safety procedures in a shop environment and follow hazardous material handling procedures.

INSTRUCTIONAL METHODS:

1. Lecture
2. Study Guides
3. Hands-on Performance
4. Labs with Assignment Sheets

EVALUATION METHODS:

Assessment opportunities, which allow continuous evaluation of students’ progress, will be embedded throughout the course and should be a learning experience. All students will be expected to achieve mastery of all topics; often, demonstrations of mastery will occur in a public forum. The following strategies, which include both formal and informal assessment techniques will include, but are not limited to:

1. Pre and Post Written Tests
2. Written Unit Tests
3. Performance Tests
4. Job Search Portfolio

COURSE OUTLINE:

Units	Topics	CTE Foundation Standards	CTE Pathway Standards	Hours
I. Cabin Atmosphere Control Systems	a. Flight Physiology	1.2 (1.I)	4.6	8
	b. Oxygen Systems	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.4, A5.3, A5.4	16
	c. Pressurization Systems	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	16
II. Hydraulic and Pneumatic Power Systems	a. Hydraulic Systems	1.1(11.0), 5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A4.2, A5.3, A5.4	40
	b. Pneumatic Systems	1.1(11.), 5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A4.2, A5.3, A5.4	8
III. Aircraft Fuel Systems	a. Aviation Fuels and Fuel System Req.'s			5
	b. Fuel System Operation	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	20
	c. Fuel System Repair, Testing, and Servicing	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2 A3.3, A5.3, A5.4	20
IV. Fuel Metering Systems	a. Reciprocating Engine Fuel Metering	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	30
	b. Turbine Engine Fuel Metering	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	6
V. Engine Fuel Systems	a. Engine Fuel Systems	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	28
VI. Aircraft Landing Gear Systems	a. Landing Gear Systems and Maintenance	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A4.2, A5.3, A5.4	40
	b. Brake systems	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A4.2, A5.3, A5.4	12
	c. Tires		A1.1, A2.1, A2.3, A1.1, A2.1, A2.3, A3.2, A3.3, A5.3, A5.4	4
VII. Position and Warning Systems	a. Position and Warning	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	12
IX. Fire Protection Systems	a. Fire Detection	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	6

	b. Fire Extinguishing Systems	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	7
X. Engine Fire Protection Systems	a. Engine Fire Detection	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	7
	b. Engine Fire Extinguishing Systems	5.1-5.4, 6.3-6.4, 8.1-8.3, 10.4, 10.5, 11.0	A1.1, A2.1, A2.3, A2.4, A3.2, A3.3, A5.3, A5.4	7
XI. Engine Instrument Systems	a. Engine Instrument Systems	5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A5.3, A5.4	26
XII. Engine Electric	a. DC generators and alternators	1.2(5b), 5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A5.3, A5.4	16
	b. Motors	1.2[5b], 5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A5.3, A5.4	8
	c. Electrical System components	1.2(5b), 5.3, 5.4, 10.4, 10.5	A1.1, A2.1, A2.3, A2.4, A5.3, A5.4	8
XIII. Career Preparation Standards	*Based on SCANS – see outline below	3.1-3.6		10

Total Hours: 360

CAREER PREPARATION STANDARDS:

- A. **PERSONAL SKILLS** - Students will understand how personal skill development affects their employability. This skill includes positive attitudes, self-confidence, honesty, responsibility, initiative, self-discipline, personal hygiene, time management, and the capacity for lifelong learning.
1. Demonstrate an understanding of classroom policies and procedures.
 2. Discuss importance of the following personal skills in the business environment:
 - a. positive attitude
 - b. self-confidence
 - c. honesty
 - d. perseverance
 - e. self-management/work ethic
 - f. pride in product/work
 - g. dependability
 3. Identify acceptable work attire.
 4. Establish goals for self-improvement and further education/training.
 5. Prioritize tasks and meet deadlines.
 6. Understand the importance of initiative and leadership.
 7. Understand the importance of lifelong learning in a world of constantly changing technology.
- B. **INTERPERSONAL SKILLS** - Students will understand key concepts on group dynamics, conflict resolution, and negotiation. This skill includes the ability to work cooperatively, accept supervision, assume leadership roles, and show respect for others. This standard includes an understanding of sexual harassment laws and an appreciation of cultural diversity in the workplace.
1. Identify and discuss behaviors of an effective team.
 2. Explain the central importance of mutual respect in the workplace relations.
 3. Discuss and demonstrate strategies for conflict resolution and negotiation, and explain their importance within the business environment.
 4. Understand laws that apply to sexual harassment in the workplace, and identify tactics for handling harassment situations.
 5. Work cooperatively, share responsibilities, accept supervision and assume leadership roles.
 6. Demonstrate cooperative working relationships and proper etiquette across gender and cultural groups.
- C. **THINKING AND PROBLEM-SOLVING SKILLS** - Students will exhibit critical and creative thinking skills, logical reasoning, and problem-solving. These skills include applying basic skills in order to calculate, estimate, measure; identify, locate, and organize information/data; interpret and follow directions from manuals, labels, and other sources; analyze and evaluate information and solutions.
1. Recognize the importance of good academic skills and implement a plan for self-improvement as needed.
 2. Read, write, and give directions.
 3. Exhibit critical and creative thinking skills and logical reasoning skills, and employ these skills for problem solving.
 - a. Work as a team member in solving problems.
 - b. Diagnose the problem, its urgency, and its causes.
 - c. Identify alternatives and their consequences.
 - d. Explore possible solutions.
 - e. Compare/contrast the advantages and disadvantages of alternatives.
 - f. Determine appropriate action(s).

- g. Implement action(s).
 - h. Evaluate results of action(s) taken.
- D. **COMMUNICATION SKILLS** - Students will understand principles of effective communication. This standard includes effective oral and written communication, listening skills, following and giving directions, requesting and giving information, asking questions.
1. Use communication concepts in application of skills, techniques, and operations.
 - a. Prepare written material.
 - b. Analyze written material.
 2. Understand and implement written instructions, from technical manuals, written communications, and reference books.
 3. Present a positive image through verbal and nonverbal communication, and understand the power of body language in communication.
 4. Demonstrate active listening through oral and written feedback.
 5. Give and receive feedback.
 6. Demonstrate assertive communications (both oral and written).
 7. Demonstrate proper etiquette in workplace communications, including an awareness of requisites for international communications (languages, customs, time zones, currency and exchange rates).
 8. Demonstrate writing/editing skills as follows:
 - a. Write, proofread, and edit work.
 - b. Use correct grammar, punctuation, capitalization, vocabulary, and spelling.
 - c. Select and use appropriate forms of technology for communication.
 9. Exhibit a proficiency in the use of reference books.
 10. Research, compose, and orally present information for a variety of business situations utilizing appropriate technology.
- E. **OCCUPATIONAL SAFETY** - Students will understand occupational safety issues, including the avoidance of physical hazards in the work environment. This includes the safe operation of equipment, proper handling of hazardous materials, appropriate attire and safety accessories, avoidance of physical injuries, interpretation of warning and hazard signs and terminology, and following and understanding safety-related directions.
1. Discuss and implement good safety practices, including the following (if applicable to course):
 - a. personal
 - b. lab
 - c. fire
 - d. electrical
 - e. equipment
 - f. tools
 - g. interpretation of Material Safety Data Sheets (MSDSs)
 - h. Environmental Protection Agency (EPA)
 - i. Occupational Safety and Health Administration (OSHA)
 - j. American Red Cross Standards (ARC)
 - k. Networking Safety Standards
 2. Apply sound ergonomic principles in organizing one's work space.
- F. **EMPLOYMENT LITERACY** - Students will understand career paths and strategies for obtaining employment within their chosen field. This includes traditional job preparation skills, such as resumes, application forms, cover letters, sources of employment information, and interviewing skills, but also includes an overview of the industry and an understanding of labor market trends.
1. Explore career opportunities and projected trends; investigate required education, training and experience; and develop an individual education plan.

2. Identify steps for setting goals and writing personal goals and objectives.
3. Examine aptitudes related to career options; relate personal characteristics and interests to educational and occupational opportunities.
4. Develop a career portfolio, including the following documents:
 - a. job application
 - b. resume(s)
 - c. appropriate cover and follow-up correspondence
5. Identify and demonstrate effective interviewing techniques.
- G. **TECHNOLOGY LITERACY** - Students will understand and adapt to changing technology by identifying, learning, and applying new skills to improve job performance. Students should understand the role of technology in their chosen field and should be able to use all appropriate technology. Students should also feel confident in their ability to learn new technology by generalizing from what they know, adapting skills to new situations, and identifying and using sources of information and of further learning.
 1. Demonstrate the ability to use personal computers for loading and retrieving data, information gathering, measurements, and writing.
 2. Identify the characteristics and explain the importance of adapting to changes, being flexible, and evaluating goals when working in the industry.
 3. Understand the importance of lifelong learning in adapting to changing technology.
- H. **IMPORTANCE OF ETHICS** – Students will understand proper ethics in the workplace.
 1. Discuss social and ethical responsibilities in the industry.
 2. Demonstrate ethical choices in workplace situations.