



CREDIT COURSE OUTLINE

I. COVER PAGE

(1) AERO 2	(2) Aviation Maintenance Technology	(3) 17.5
Number	Title	Units

(4) Lecture / Lab Hours:			(8) Classification:		
Course Hours					
	Weekly Lec hours:	15.00	Degree applicable:		X
	Weekly Lab hours:	15.00	Non-degree applicable:		
	Total Contact hours:	540.00	Basic skills:		
Lec will generate __ hour(s) outside work.			(9) RC Fulfills AS/AA degree requirement: (area)		
Lab will generate __ hour(s) outside work.			General education category:		
(5) Grading Basis:	Grading Scale Only	X	Major: Aviation Maintenance Technology		
	Pass/No Pass option		Certificate of: Airframe Aviation Maintenance Technology Powerplant		
	Pass/No Pass only		Certificate in:		
(6) Advisories:	<ul style="list-style-type: none"> Aero 1, and eligibility for English 125, 126 and Mathematics 101. 		(10) CSU Baccalaureate: X		
(7) Pre-requisites (requires C grade or better):	<ul style="list-style-type: none"> English 260, Mathematics 250 		(11) Repeatable: (A course may be repeated three times) 0		
Corequisites:	<ul style="list-style-type: none"> 		(12) C-ID:		
			Proposed Start Date:		Spring 2012

(12) Catalog Description:
 Aero 2 meets the FAA Airframe and Powerplant System subjects requirement which includes: 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. Successful completion of Aero 1, 2, 3 and 4 qualifies student to take the licensing exams required for Airframe and Powerplant certification.

II. COURSE OUTCOMES:

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

Upon completion of this course, students will be able to:

- I. demonstrate a basic knowledge of aircraft systems, including their purpose, functionality, operation and major components.
- II. examine aircraft systems in order to determine if the system or any of its components are defective.
- III. perform regularly scheduled tasks in order to assure continued operation of an aircraft system and its components.
- IV. verify the proper operation of an aircraft system.
- V. re-establish the integrity of a complete aircraft system.
- VI. remove and replace specific components within an aircraft system.
- VII. identify and analyze malfunctions within an aircraft system.
- VIII. completely disassemble, inspect, and repair an entire aircraft system.

III. COURSE OBJECTIVES:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

- I. Inspect, check, troubleshoot, service, and repair engine ice and rain control systems (Level 2)
- II. Inspect, check, troubleshoot, service, and repair airframe ice and rain control systems (Level 2)
- III. Repair heating, cooling, air-conditioning, pressurization, and oxygen systems components (Level 1)
- IV. Inspect, check, troubleshoot, service, and repair heating, cooling, air-conditioning, and pressurization systems. (Level 1)
- V. Inspect, check troubleshoot, service, and repair oxygen systems (Level 2)
- VI. Inspect check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems. (Level 3)
- VII. Rig rotary-wing aircraft (Level 1)
- VIII. Rig fixed-wing aircraft (Level 2)
- IX. Check alignment of structures (Level 2)

- X. Assemble aircraft components including flight control surfaces (Level 3)
- XI. Balance and rig movable surfaces (Level 3)
- XII. Jack aircraft (Level 3)
- XIII. Inspect, check, service, and repair landing gear, retraction systems, shock struts, brakes, wheels, tires, and steering systems (Level 3)
- XIV. Inspect, check, and service speed and take-off warning systems, electric brake controls, and anti-skid systems (Level 1)
- XV. Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems (Level 3)
- XVI. Inspect, check, service, troubleshoot, and repair engine temperature, pressure, and RPM indicating systems (Level 3)
- XVII. Troubleshoot, service, and repair fluid rate of flow indicating systems (Level 2)
- XVIII. Inspect, check, and service smoke and carbon monoxide detection systems (Level 1)
- XIX. Repair hydraulic and pneumatic power system components (Level 2)
- XX. Identify and select hydraulic fluids (Level 3)
- XXI. Inspect check, service, troubleshoot, and repair hydraulic and pneumatic power systems (Level 3)
- XXII. Troubleshoot and adjust engine fuel metering systems and electronic fuel controls (Level 1)
- XXIII. Overhaul carburetors (Level 3)
- XXIV. Repair engine fuel metering system components (Level 2)
- XXV. Inspect, check, service, troubleshoot, and repair reciprocating and turbine engine fuel systems (Level 3)
- XXVI. Check and service fuel dump systems (Level 1)
- XXVII. Perform fuel management, transfer, and de-fueling (Level 1)
- XXVIII. Inspect, check, and repair pressure fueling systems (Level 1)
- XXIX. Repair aircraft fuel systems components (Level 2)
- XXX. Inspect and repair fluid quantity indicating systems (Level 2)
- XXXI. Troubleshoot, service, and repair fluid pressure and temperature warning systems (Level 2)
- XXXII. Inspect, check, service, troubleshoot, and repair aircraft fuel systems (Level 3)
- XXXIII. *Skill Levels (Federal Aviation Administration Format):
 - Knowledge/Skill Level 1 C requires comprehension of general principle, but no manipulative skill application.
 - Knowledge/Skill Level 2 C requires comprehension of general principles, limited practical application and development of limited manipulative skills to perform basic operations.
 - Knowledge/Skill Level 3 C requires comprehension of general principles, performance of practical application and development of manipulative skills to minimum airworthiness standards.

IV. COURSE OUTLINE:

Lecture Content:

- A. Cabin Atmosphere Control Systems
- B. Hydraulic and Pneumatic Power Systems
- C. Aircraft Fuel Systems
- D. Fuel Metering Systems
- E. Engine Fuel Systems
- F. Aircraft Landing Gear Systems
- G. Position and Warning Systems
- H. Ice and Rain Control Systems
- I. Fire Protection Systems
- J. Engine Fire Protection Systems
- K. Assembly and Rigging
- L. Engine Instrument Systems

Lab Content:

Lab will give students the opportunity to apply concepts to practical applications

- A. Cabin Atmosphere Control systems
- B. Hydraulic and Pneumatic Power Systems
- C. Aircraft Fuel Systems
- D. Fuel Metering Systems
- E. Engine Fuel Systems
- F. Aircraft Landing Gear Systems
- G. Position and Warning Systems
- H. Ice and Rain Control Systems
- I. Fire Protection Systems
- J. Engine Fire Protection Systems
- K. Assembly and Rigging

L. Engine Instrument Systems

Note: The Aero program courses are regulated by the Federal Aviation Administration to include approximately 50% lecture and 50% lab in all of the subjects.

V. APPROPRIATE READINGS

Reading assignments may include but are not limited to the following:

I. Sample Text Title:

1. Recommended - Jeppesen *Federal Aviation Regulations, Aviation Maintenance Technician*, -, -, 2012,
2. Recommended - Jeppesen *A&P Technician General Textbook*, -, -, 2011,
3. Recommended - Jeppesen *A&P Technician Airframe Textbook*, -, -, 2011,
4. Recommended - Jeppesen *A&P Technician Powerplant Textbook*, -, -, 2009,
5. Recommended - Jeppesen *Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair (AC-43.13-1B & 2B)*, Jeppesen, -, 2008,
6. Recommended - Crane *Dictionary of Aeronautical Terms*, -, -, 2008,
7. Recommended - Crane *Aviation Mechanic Handbook*, -, -, 2006,

II. Other Readings

1. Recommended - *Computer-Based-Training hardware and software Aircraft and aircraft mock-up components CD library, various Hard-copy Service Manuals, Maintenance Manuals, Parts Manuals; various*

- Global or international materials or concepts are appropriately included in this course
 Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

A. Writing			
Check either 1 or 2 below			
X	1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.		
	2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.		
	a) essay exam(s)		d) written homework
	b) term or other paper(s)		e) reading reports
X	c) laboratory report(s)		f) other (specify)

Required assignments may include but are not limited to the following:

- Discrepancy reports
- Laboratory reports
- Log Book entries

B. Problem Solving			
Computational or non-computational problem-solving demonstrations, including:			
X	a) exam(s)	X	d) laboratory reports
X	b) quizzes		e) field work
X	c) homework problems		f) other (specify):

Required assignments may include but are not limited to the following:

- Quizzes- List the five major components of an aircraft cabin pressurization system.
- Lab reports- Write a one page document outlining the operation and inspection of an aircraft stall warning system.
- Lab projects- Disassemble, inspect, and reassemble a hydraulic actuating cylinder.

C. Skill demonstrations, including:			
X	a) class performance(s)	X	c) performance exams(s)
	b) field work	X	d) other (specify)

Required assignments may include but are not limited to the following:

- Lab project
- Research project
- Exam

D. Objective examinations including:			
X	a) multiple choice	X	d) completion
X	b) true/false	X	e) other (specify):
X	c) matching items		

COURSE GRADE DETERMINATION:

Description/explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.

40% Objective Examination 10% Written Classroom Assignments 50% Lab Applications

VII. EDUCATIONAL MATERIALS

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):

	College-Level Criteria Met	
	YES	NO
Textbook	<u> X </u>	<u> </u>
Reference materials	<u> X </u>	<u> </u>
Instructor-prepared materials	<u> X </u>	<u> </u>
Audio-visual materials	<u> X </u>	<u> </u>

Indicate Method of evaluation:

Used readability formulae (grade level 10 or higher)	<u> </u>
Text is used in a college-level course	<u> X </u>
Used grading provided by publisher	<u> </u>
Other: (please explain; relate to Skills Levels)	<u> </u>

Computation Level (Eligible for MATH 101 level or higher where applicable)

	YES	NO
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	<u> X </u>	<u> </u>
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	<u> X </u>	<u> </u>
Requires independent thought and study	<u> X </u>	<u> </u>
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	<u> X </u>	<u> </u>

List of Reading/Educational Materials

- Recommended - Jeppesen *Federal Aviation Regulations, Aviation Maintenance Technician*, -, -, 2012,
- Recommended - Jeppesen *A&P Technician General Textbook*, -, -, 2011,
- Recommended - Jeppesen *A&P Technician Airframe Textbook*, -, -, 2011,
- Recommended - Jeppesen *A&P Technician Powerplant Textbook*, -, -, 2009,
- Recommended - Jeppesen *Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair (AC-43.13-1B & 2B)*, Jeppesen, -, 2008,
- Recommended - Crane *Dictionary of Aeronautical Terms*, -, -, 2008,
- Recommended - Crane *Aviation Mechanic Handbook*, -, -, 2006,

Comments:

<u> </u>	This course requires special or additional library materials (list attached).
<u> X </u>	This course requires special facilities: Aero Lab

Attached Files:

BASIC SKILLS ADVISORIES PAGE The skills listed are those needed for eligibility for English 125, 126, and Math 201. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least three major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.

 Check the appropriate spaces.

 Eligibility for Math 201 is advisory for the target course.

- Eligibility for English 126 is advisory for the target course.
- Eligibility for English 125 is advisory for the target course.

If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.

REQUISITES

Prerequisite -- ENGL 260 BASIC READING

D. Prereading Strategies (for schema activation). 2. Analyzing visual data (diagrams, graphs). 3. Skimming topics and subtopics for predicting subject matter and content. D. Active Reading Strategies for extracting meaning. 1. Monitoring and adjusting reading speed according to purpose and difficulty. 2 Sustaining concentration through personal questions, annotation. 3. Reading for major points and support. 4. Self-monitoring comprehension.

- Inspect, check, troubleshoot, service, and repair engine ice and rain control systems (Level 2)
- Inspect, check, troubleshoot, service, and repair airframe ice and rain control systems (Level 2)
- Inspect, check, troubleshoot, service, and repair heating, cooling, air-conditioning, and pressurization systems. (Level 1)
- Inspect, check, troubleshoot, service, and repair oxygen systems (Level 2)
- Inspect, check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems. (Level 3)
- Inspect, check, troubleshoot, service, and repair landing gear position indicating and warning systems (Level 3)
- Inspect, check, service, troubleshoot, and repair engine temperature, pressure, and RPM indicating systems (Level 3)
- Inspect, check, service, troubleshoot, and repair reciprocating and turbine engine fuel systems (Level 3)
- Inspect, check, service, troubleshoot, and repair aircraft fuel systems (Level 3)

ESTABLISHING PREREQUISITES OR COREQUISITES

Every prerequisite or corequisite requires content review plus justification of at least one of the seven kinds below. Prerequisite courses in communication and math outside of their disciplines require justification through statistical evidence. Kinds of justification that may establish a prerequisite are listed below.

Check one of the following that apply. Documentation may be attached.

Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.

Justification: Indicate how this is so.

The health or safety of the students in this course requires the prerequisite.

Justification: Indicate how this is so.

The prerequisite course is part of a sequence of courses within or across a discipline.

The prerequisite is required in order for the course to be accepted for transfer to the UC or CSU systems.

Justification: Indicate how this is so.

The prerequisite/corequisite is required by law or government regulations.

Explain or cite regulation numbers:

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

Justification:

Prerequisite -- MATH 250 COLLEGE ARITHMETIC

2. Addition of Whole Numbers 3. Subtraction of Whole Numbers 4. Multiplication of Whole Numbers 5. Division of Whole Numbers 6. Exponents and Order of Operations 7. Rounding and Estimation 8. Applied problems involving Whole Numbers 9. Applied problems involving Fractions 7. Applied Problems Involving Decimals

- Inspect check, service, troubleshoot, and repair aircraft fire detection and extinguishing systems. (Level 3)
- Rig rotary-wing aircraft (Level 1)
- Rig fixed-wing aircraft (Level 2)
- Check alignment of structures (Level 2)
- Assemble aircraft components including flight control surfaces (Level 3)
- Balance and rig movable surfaces (Level 3)
- Troubleshoot, service, and repair fluid rate of flow indicating systems (Level 2)
- Inspect, check, service, troubleshoot, and repair reciprocating and turbine engine fuel systems (Level 3)
- Perform fuel management, transfer, and de-fueling (Level 1)
- Inspect and repair fluid quantity indicating systems (Level 2)

ESTABLISHING PREREQUISITES OR COREQUISITES

Every prerequisite or corequisite requires content review plus justification of at least one of the seven kinds below. Prerequisite courses in communication and math outside of their disciplines require justification through statistical evidence. Kinds of justification that may establish a prerequisite are listed below.

Check one of the following that apply. Documentation may be attached.

Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.

Justification: Indicate how this is so.

The health or safety of the students in this course requires the prerequisite.

Justification: Indicate how this is so.

The prerequisite course is part of a sequence of courses within or across a discipline.

The prerequisite is required in order for the course to be accepted for transfer to the UC or CSU systems.

Justification: Indicate how this is so.

The prerequisite/corequisite is required by law or government regulations.

Explain or cite regulation numbers:

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

Justification:

JUSTIFICATION OF LIMITATION ON ENROLLMENT

Enrollment in courses or blocks of courses may be limited based on performance, honors, or other performance based criteria. Be mindful of the disproportionate impact the limitation will have on specific groups of students. It is important to determine if the limitation will disproportionately keep under-represented students from enrolling in the course or block of courses.

Describe the reasons for limiting the enrollment.

Course Designator: AERO 2
Course Title(s): Aviation Maintenance Technology
Rationale for Limiting Enrollment: 0