CREDIT COURSE OUTLINE

I. COVER PAGE

(1) AERO 4	(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	
		Pass/No Pass only			Certificate in:		
(6)	Advisories: • Aviation Maintenance Technology 1, and eligibility for English 125, 126 and Mathematics 101.			(10)CSU		Baccalaureate:	X
(7)	Pre-requisites (requires C grade or better): • English 260, Mathematics 250			(11)Repeatable: (A course may be repeated three times)			0
	Corequisites: •			(12)C-ID:			
				Proposed Start Date:			Spring 2012

(12) Catalog Description:
Aero 4 meets the FAA Airframe subjects requirement which includes: Sheet metal and Non-metallic Structures, Airframe Inspection, Communication and Navigation Systems, Aircraft Electrical Systems, Aircraft Instrument Systems, Engine Electrical 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 each of the FAA "airframe" subject areas.
II. describe the functionality, operation and major components of an aircraft structure.
III. determine if an airframe structure is defective.
IV. perform regularly scheduled tasks in order to assure continued safe operation of an aircraft structure.
V. verify the proper operation of an aircraft flight control system.
VI. re-establish the integrity of an airframe structural system.
VII. remove and replace a specific airframe component.
VIII. identify and analyze a malfunction within an airframe structure.
IX. disassemble, inspect, and repair an airframe structural component.

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. Perform airframe conformity and airworthiness inspections (Level 3)
II. Install special rivets and fasteners (level 2)
III. Inspect and repair sheet metal structures (Level 3)
IV. Install conventional rivets (Level 3)
V. Hand-form, lay out, and bend sheet metal (Level 3)
VI. Inspect bonded structures (level 2)
VII. Inspect, test, and repair fiberglass, plastics, honeycomb, composite, and laminated primary and secondary structures (level 2)
VIII. Inspect, check, service, and repair windows, doors, and interiors (level 2)
IX. 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 (level 1)
X. Install instruments and perform a static pressure system leak test (Level 2)

XI. Inspect, check, and troubleshoot autopilot servos and approach control systems (level 1)
XII. 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. (level 1)
XIII. Inspect and repair antenna and electronic equipment installations (level 2)
XIV. Repair engine electrical system components (level 2)
XV. Install, check, and service engine electrical wiring, controls, switches, indicators, and protective devices (Level 3)
XVI. Repair aircraft electrical system components; crimp and splice wiring to manufacturers' specifications; and repair pins and sockets of aircraft connectors (level 2)
XVII. Install, check, and service airframe electrical wiring, controls, switches, indicators, and protective devise (Level 3)
XVIII. Inspect, check, troubleshoot, service, and repair alternating current and direct current electrical systems (Level 3)
XIX. Inspect, check, and troubleshoot constant speed and integrated speed drive generators (level 1)
XX. 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. Sheet-metal and Non-metallic Structures
B. Airframe Inspection
C. Communication and Navigation Systems
D. Aircraft Electrical Systems
E. Aircraft Instrument Systems
F. Engine Electrical Systems

Lab Content:

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

A. Sheet-metal and Non-metallic Structures

B. Airframe Inspection

C. Communication and Navigation Systems

D. Aircraft Electrical Systems

E. Aircraft Instrument Systems

F. Engine Electrical 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),* -FAA, -, 2008,
6. Recommended - Crane *Dictionary of Aeronautical Terms,* -, -, 2006,
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- After a rivet has been driven, the shop head will be at least what size diameter?
Lab reports- Perform an Advisory Directive (AD) search on the Piper Twin Commanche, and compile an AD compliance record.
Lab projects- Solder the magneto timing box together, and perform operational test.

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.
50% Written (3/4 objective test, ¼ short answer) 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	X	
Reference materials	X	
Instructor-prepared materials	X	
Audio-visual materials	X	

Indicate Method of evaluation:

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

Computation Level (Eligible for MATH 101 level or higher where applicable)	X	
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	X	
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	X	
Requires independent thought and study	X	
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	X	

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),* -FAA, -, 2008,
Recommended - Crane *Dictionary of Aeronautical Terms,* -, -, 2006,
Recommended - Crane *Aviation Mechanic Handbook,* -, -, 2006,

Comments:

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

Attached Files:
Advisory Justification Forms

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.	• Perform airframe conformity and airworthiness inspections (Level 3) • Inspect bonded structures (level 2) • Inspect, test, and repair fiberglass, plastics, honeycomb, composite, and laminated primary and secondary structures (level 2) • Inspect, check, service, and repair windows, doors, and interiors (level 2) • 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 (level 1)

	• 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. (level 1) • Inspect and repair antenna and electronic equipment installations (level 2) • Repair aircraft electrical system components; crimp and splice wiring to manufacturers' specifications; and repair pins and sockets of aircraft connectors (level 2) • Inspect, check, troubleshoot, service, and repair alternating current and direct current electrical systems (Level 3) • Inspect, check, and troubleshoot constant speed and integrated speed drive generators (level 1)

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.

__X__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	• Install conventional rivets (Level 3) • Hand-form, lay out, and bend sheet metal (Level 3) • 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 (level 1) • Install instruments and perform a static pressure system leak test (Level 2) • 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. (level 1) • Inspect and repair antenna and electronic equipment installations (level 2) • Repair engine electrical system components (level 2) • Inspect, check, troubleshoot, service, and repair alternating current and direct current electrical 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.

__X__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.
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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 4

Course Title(s): Aviation Maintenance Technology

Rationale for Limiting Enrollment:
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