CREDIT COURSE OUTLINE

I. COVER PAGE

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

(4)	Lecture / Lab Hours:			
	Course Hours			
		Weekly Lec hours:		15.00
		Weekly Lab hours:		15.00
		Total Contact hours:		540.00
	Lec will generate __ hour(s) outside work.			
	Lab will generate __ hour(s) outside work.			
(5)	Grading Basis:	Grading Scale Only		X
		Pass/No Pass option		
		Pass/No Pass only		
(6)	Advisories: • Eligibility for English 125, 126 and Mathematics 201.			
(7)	Pre-requisites (requires C grade or better):			
	Corequisites: •			

(8)Classification:			
		Degree applicable:	X
		Non-degree applicable:	
		Basic skills:	
(9)RC	Fulfills AS/AA degree requirement: (area)		
		Computer Familiarity	
	General education category:		
		Major:	Aviation Maintenance Technology
		Certificate of:	Airframe Aviation Maintenance Technology Powerplant
		Certificate in:	
(10)CSU		Baccalaureate:	X
(11)Repeatable: (A course may be repeated three times)			0
(12)C-ID:			
Proposed Start Date:			Fall 2012

(12) Catalog Description:
Aero 1 meets the FAA General subjects requirement which includes: Basic Electricity, Aircraft Drawings, Weight and Balance, Fluid Lines and Fittings, Materials and Processes, Ground Operation and Servicing, Cleaning and Corrosion Control, Wood Structures, Aircraft Covering, Aircraft Finishes, Math, Maintenance Forms and Records, Basic Physics, Maintenance Publications, Mechanic Privileges and Limitations, Welding, and Human Factors. Computer subjects include terminology, storage devices, word processing, and computer based- training applications. Successful completion of Aero 1, 2, 3, and 4 qualifies students 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 “general” subject areas.
II. Inspect aircraft components, and determine if they are defective.
III. Perform regularly scheduled maintenance tasks required to assure continued operation of an aircraft component.
IV. Verify the proper operation of an aircraft component.
V. Demonstrate successful performance of a job task, as a competency objective.
VI. Remove and replace specific components.
VII. Identify and analyze component malfunctions.
VIII. Disassemble, inspect, and perform appropriate repair on an aircraft 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. Determine the relationship of voltage, current, and resistance in electrical circuits (Level 3)
II. Calculate and measure electrical power (Level 2)
III. Measure voltage, current, resistance, and continuity (Level 3)
IV. Read and interpret electrical circuit diagrams (Level 3).
V. Inspect and service batteries (Level 3)
VI. Calculate and measure capacitance and inductance (Level 2)
VII. Use drawing symbols and schematic diagrams (Level 2)
VIII. Draw sketches of repairs and alterations (Level 3)
IX. Use blueprint information (Level 3)
X. Use graphs and charts (Level 3)
XI. Weigh aircraft (Level 2)
XII. Perform complete weight and balance checks and properly record data (Level 3)
XIII. Fabricate and install rigid and flexible fluid lines and fittings. (Level 3)
XIV. Identify and select aircraft hardware and materials (Level 3)
XV. Identify and select appropriate nondestructive testing methods
XVI. Perform penetrant, chemical etching, and magnetic particle inspections (Level 2)
XVII. Perform precision measurements (Level 3)
XVIII. Inspect and check welds (Level 3)
XIX. Start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards (Level 2)
XX. Identify and select aircraft fuels (Level 2)
XXI. Identify and select appropriate cleaning materials (Level 3)
XXII. Inspect, identify, remove, treat aircraft corrosion and perform aircraft cleaning (Level 3)
XXIII. Service and repair wood structures (Level 1)
XXIV. Identify wood defects (Level 1)
XXV. Inspect wood structures (Level 1)
XXVI. Inspect, test, and repair fabric (Level 1)
XXVII. Select and apply fabric and fiberglass covering materials (Level 1)
XXVIII. Apply trim, letters, and touch-up paint (Level 1)
XXIX. Identify and select aircraft finishing materials (Level 2)
XXX. Apply finishing materials (Level 2)
XXXI. Inspect finishes and identify defects (Level 2)
XXXII. Determine areas and volumes of various geometrical shapes (Level 3)
XXXIII. Solve ratio, proportion and percentage problems (Level 3)
XXXIV. Perform algebraic operations involving addition, subtraction, multiplication and division of positive and negative numbers (Level 3)
XXXV. 35. Extract roots and raise numbers to a given power (Level 3)
XXXVI. Demonstrate ability to read, comprehend and apply information contained in FAA and manufacturers aircraft maintenance specifications, data sheets, manuals and publications, related Federal Aviation Regulations, airworthiness directives, and advisory material (Level 3)
XXXVII. Read, understand, and relate technical information (Level 3)
XXXVIII. Write descriptions of aircraft condition and work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records (Level 3)
XXXIX. Complete required maintenance forms, records, and inspection reports (Level 3)
XL. Exercise mechanic privileges with the limitations prescribed by Part 65 of the Federal Aviation Regulations. (Level 3)
XLI. Use and understand the principles of simple machines; sound, fluid, dynamics, basic aerodynamics, aircraft structures and theory of flight (Level 2)
XLII. Weld magnesium and titanium (Level 1)
XLIII. Solder stainless steel (Level 1)
XLIV. Solder, braze, gas-weld, and arc-weld steel (Level 2)
XLV. Weld aluminum and stainless steel (Level 1)
XLVI. Fabricate tubular structures (Level 1)
XLVII. Understand the role human factors plays in aviation maintenance safety (Level 1)
XLVIII. Operate a windows-based computer for CBT training (Level 2)
XLIX. Activate a personal computer and load/save Lab Volt data files and ATP (Aircraft Technical Publishers) type certificate data files.
L. Access and use TDATA software to research and record aircraft airworthiness directives for aircraft.
LI. Access the internet at FAA.GOV and other sources to research aircraft airworthiness directives and to look up other pertinent aircraft information.
LII. Use email messaging to request information from aircraft and aircraft parts vendors for product information.
LIII. *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. Basic Electricity

B. Aircraft Drawings

C. Weight and Balance

D. Fluid, Lines, and Fittings

E. Materials and Processes

F. Ground Operation and Servicing

G. Cleaning and Corrosion Control

H. Wood Structures

I. Aircraft Covering

J. Aircraft Finishes

K. Math

L. Maintenance forms and Records

M. Basic Physics

N. Maintenance Publications

O. Mechanic Privileges and Limitations

P. Welding

Q. Computer Essentials

R. Human Factors

Lab Content:

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

A. Basic Electricity

B. Aircraft Drawings

C. Weight and Balance

D. Fluid, Lines, and Fittings

E. Materials and Processes

F. Ground Operation and Servicing

G. Cleaning and Corrosion Control

H. Wood Structures

I. Aircraft Covering

J. Aircraft Finishes

K. Math

L. Maintenance forms and Records

M. Basic Physics

N. Maintenance Publications

O. Mechanic Privileges and Limitations

P. Welding

Q. Computer Essentials

R. Human Factors

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,* -, -, 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:

1. Discrepancy reports
2. Laboratory reports
3. 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:

1. Quizzes- What documents must be filled out after all major repairs or alterations to an aircraft, powerplant, or appliance?
2. Lab reports- Use FAR 43 Appendix D and AC43-9C to design a generic "Annual/100 hour" inspection report
3. Lab projects- Given the supplied three view drawing, render it as an isometric perspective drawing, include dimensions.

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

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

1. Lab project
2. Research project
3. Exam

D. Objective examinations including:			
X	a) multiple choice	X	d) completion
X	b) true/false	X	e) other (specify): short answer essay

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	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,* -, -, 2008,
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:
Typical math caluclation
Typical math calculation 2
Typical math calculation 3
Typical reading example
FAA rules for maint. reports

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
No requisites

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 1
Course Title(s): Aviation Maintenance Technology
Rationale for Limiting Enrollment: 0