



CREDIT COURSE OUTLINE

I. COVER PAGE

(1) AERO 1	(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:	Aviation Maintenance Technology
Pass/No Pass only	Certificate in:	
(6) Advisories: • 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:	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 document must be filled out after all major repairs or alterations?
2. Lab reports- Use FAR 43 Appendix D and AC43-9C to design an generic Annual/100 hour report
3. Lab projects- Given the supplied 3-view drawing, redraw 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	<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)

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:

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.

- Read and interpret electrical circuit diagrams (Level 3).
- Use graphs and charts (Level 3)
- 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)
- Read, understand, and relate technical information (Level 3)
- Write descriptions of aircraft condition and work performed including aircraft discrepancies and corrective actions using typical aircraft maintenance records (Level 3)
- Complete required maintenance forms, records, and inspection reports (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

- Determine the relationship of voltage, current, and resistance in electrical circuits (Level 3)
- Calculate and measure electrical power (Level 2)
- Measure voltage, current, resistance, and continuity (Level 3)
- Read and interpret electrical circuit diagrams (Level 3).
- Calculate and measure capacitance and inductance (Level 2)
- Weigh aircraft (Level 2)
- Perform complete weight and balance checks and properly record data (Level 3)
- Perform precision measurements (Level 3)
- Perform algebraic operations involving addition, subtraction, multiplication and division of positive and negative numbers (Level 3)
- 35. Extract roots and raise numbers to a given power (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:

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:

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