**Reedley College**

**Proposed Course Modification**

|  |  |
| --- | --- |
| Course # / Title | AERO 1/Aviation Maintenance Technology |

## CHECK OFF SHEET

**PRELIMINARY STEPS.** Do before completing Course Modification Form.

**(EACH BOX SHOULD BE CHECKED AS COMPLETED BEFORE SUBMISSION.)**

🞎 1. Communicate with the Curriculum Chair regarding intent to modify an existing course outline (recommended, not required).

🞎 2. List term for implementation of modifications:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 🞎 | Fall | 2010 | 🞎 | Spring |  | 🞎 | Summer |  |

🞎 3. Check one:

Do not complete Fresno City College course alignment page if:

|  |  |
| --- | --- |
| x | No similar course or program at FCC. |
|  | Course currently in common with FCC course or accepted in lieu of and changes will not affect status. |
|  |

Complete Fresno City College course alignment page if:

|  |  |
| --- | --- |
|  | Course currently in common with FCC course or accepted in lieu of. Changes may affect status. Consult with counterparts at FCC and complete alignment page |
|  | Course not in common or accepted in lieu of but may be with proposed changes consult with FCC counterparts |

🞎 4. Changes sought in the following:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CSU General Education Code | Yes |  | No | x |
| Transfer Baccalaureate List | Yes |  | No | x |

If yes to either, schedule an appointment with the Articulation Officer

🞎 5. Changes sought in number of repeats for credit:

|  |  |
| --- | --- |
|  | Yes |
| x | No |

If yes, secure a **Course Repetition** form from the Curriculum Office.

**PROPOSED** **COURSE MODIFICATION FORM**

🞎 Appropriate sections of Course Outline of Record completed.

**FINAL** steps (Do after completing Course Outline of Record)

🞎 1. Signature Form. Secure signatures of the Department Chair and the Associate Dean before submitting the completed course proposal to the Curriculum Office.

🞎 2. Program Description. Course modification will change an existing program which is or will be described in the college catalogue.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes | x | No |

If yes, complete **Program Description Form** before submitting modification.

🞎 3. Final Check. All items above have been completed and checked off before modification is submitted.

**Reedley College**

**PROPOSED COURSE MODIFICATION**

All changes and modifications in the official course outline must come to the Curriculum Committee. Though minor changes may seem obvious, even these need to come to committee for information and to update the official curriculum. Changes in programs or in several department offerings should be submitted together if possible so that the whole picture is clear.

**OUTLINE. Please fill in current existing course number, title, and units for course to be modified.**

|  |  |  |  |
| --- | --- | --- | --- |
| Department | Industrial Technology | Course No. | **AERO 1** |
| Course Title | Aviation Maintenance Technology | Units | **17.5** |
|  | Effective Date | **08/01/2010** | |

**A.** **PROPOSED CHANGES.**

**(Indicate below all proposed changes to be made in the course outline.)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I. Cover Page | |  |  |  |
|  | 1. Course ID |  |  | 8. Classification (Degree applicable, Non-degree applicable, or |
|  | 2. Course Title |  | Pre-collegiate Basic skills) |
|  | 3. Units |  |  | 9. General Education Pattern, Graduation Requirement, and |
|  | 4. Lecture/Lab Hours |  | Major Category |
|  | 5. Grading Basis |  |  | 10. General Education Pattern/Baccalaureate (CSU) |
| x | 6. Entrance Skills: Basic Skills Prerequisites/Advisories |  | 11. Repeatability |
|  | 7. Subject Prerequisites/Corequisites/Advisories |  | x | 12. Catalog Description |

Other pages

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x | II. Course Outcomes |  | x | VI. Methods of Grading |
| x | III. Course Objectives |  |  | VII. Levels of Educational Materials |
| x | IV. Course Content Outline |  | **Additional Pages (optional depending on course)** | |
| x | V. Approved Readings |  |  | Request for Repeatability/Limitation on Enrollment |

**B. DESCRIPTION OF CHANGES AND MODIFICATIONS.**

|  |  |  |  |
| --- | --- | --- | --- |
| **ITEM NO.** | **CHANGED FROM** | **CHANGED TO** | **REASON** |
| 6 | Basic Skills Advisories: | Basic Skills Advisories:  Eligibility for English 125, English 126, and Math 101 | Students need these basic skills to succeed in the course |
| 12.. | Skills and knowledge appropriate to FAA Regulation Part 147 to include: 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, Human Factors. Computer subjects include terminology, storage devices, word processing, and computer based training applications. | Aero 1 meets the FAA General requirements including: 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, Human Factors. Computer subjects include terminology, storage devices, word processing, and computer based training applications. Completion of Aero 1, 2, 3 and 4 qualifies the student for Licenser eligibility to maintain all aircraft Airframe and Powerplants. | Provide clarification to readers |
| II. | A. Meet the Federal Aviation Administration requirements for the “General” subjects as specified in the Approved Aviation Maintenance Technician School.  B. Adhere to ethical and legal maintenance standards as prescribed in the Federal Aviation Administration, Federal Aviation Regulations.  C. Given acceptable manufacturers documentation, complete assigned inspections, modifications, repairs, calculations, and/or troubleshooting procedures.  D. Develop acceptable documentation for return to service certification of aircraft and/or related component parts.  E. Work successfully in a team atmosphere, alternately assuming the roles of leader and of team player.  F. Apply safety procedures in a shop environment and follow hazardous material handling procedures.  G. Become familiar with the general operating procedures of a personal computer and its standard peripheral devices. | 1. Meet the Federal Aviation Administration requirements for the “General” subjects as specified in the Approved Aviation Maintenance Technician School.   B. Recognize implication of ethical and legal maintenance standards as prescribed in the Federal Aviation Administration, Federal Aviation Regulations.  C. Complete assigned inspections, modifications, repairs, calculations, and/or troubleshooting procedures, while determining if provided documentation is valid.  D. Develop acceptable documentation for return to service certification of aircraft and/or related component parts.  E. Work successfully in a team atmosphere, alternately assuming the roles of leader and of team player.  F. Apply safety procedures in a shop environment and follow hazardous material handling procedures.  G. Become familiar with the general operating procedures of a personal computer and its standard peripheral devices. | Clarification of outcome “A” and “C” |
| III. | 1. (3) Determine the relationship of voltage, current, and resistance in electrical circuits  2. (2) Calculate and measure electrical power  3. (3) Measure voltage, current, resistance, and continuity  4. (3) Read and interpret electrical circuit diagrams  5. (3) Inspect and service batteries  6. (2) Calculate and measure capacitance and inductance  7. (2) Use drawings symbols and schematic diagrams  8. (3) Draw sketches of repairs and alterations  9. (3) Use blueprint information  10. (3) Use graphs and charts  11. (2) Weigh aircraft  12. (3) Perform complete weight and balance checks and properly record data  13. (3) Fabricate and install rigid and flexible fluid lines and fittings.  14. (3) Identify and select aircraft hardware and materials  15. (1) Identify and select appropriate nondestructive testing methods  16 (2) Perform penetrant, chemical etching, and magnetic particle inspections  17. (3) Perform precision measurements  18. (3) Inspect and check welds  19. (2) Start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards  20. (2) Identify and select fuel  21. (3) Identify and select cleaning materials  22. (3) Inspect, identify, remove, and treat aircraft corrosion and perform aircraft cleaning  23. (1) Service and repair wood structures  24. (1) Identify wood defects  25. (1) Inspect wood structures  26. (1) Inspect, test, and repair fabric  27. (1) Select and apply fabric and fiberglass covering materials  28 (1) Apply trim, letters, and touch-up paint  29. (2) Identify and select aircraft finishing materials  30. (2) Apply finishing materials  31. (2) Inspect finishes and identify defects  32. (3) Determine areas and volumes of various geometrical shapes  33. (3) Solve ratio, proportion and percentage problems  34. (3) Perform algebraic operations involving addition, subtraction, multiplication and division of positive and negative numbers  35. (3) Extract roots and raise numbers to a given power  36. (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  37. (3) Read, understand, and relate technical information  38. (3) Write descriptions of aircraft condition and work performed including aircraft discrepancies and corrective actions using  typical aircraft maintenance records  39. (3) Complete required maintenance forms, records, and inspection reports  40. (3) Exercise mechanic privileges with the limitations prescribed by Part 65 of the Federal Aviation Regulations.  41. (2) Use and understand the principles of simple machines; sound, fluid, dynamics, basic aerodynamics, aircraft structures  and theory of flight  42. (1) Weld magnesium and titanium  43. (1) Solder stainless steel  44. (2) Solder, braze, gas-weld, and arc-weld steel  45. (1) Weld aluminum and stainless steel  46. (1) Fabricate tubular structures  47. (1) Understand the role human factors plays in aviation maintenance safety  48. (2) Operate a windows-based computer for CBT training  49. Activate a personal computer and load/save Lab Volt data files and ATP (Aircraft Technical Publishers) type certificate data files.  50. Access and use TDATA software to research and record aircraft airworthiness directives for aircraft.  51. Access the internet at FAA.GOV and other sources to research aircraft airworthiness directives and to look up other pertinent aircraft information.  52. Use email messaging to request information from aircraft and aircraft parts vendors for product information. | 1. Determine the relationship of voltage, current, and resistance in electrical circuits (Level 3)  2. Calculate and measure electrical power (Level 2)  3. Measure voltage, current, resistance, and continuity (Level 3)  4. Read and interpret electrical circuit diagrams (Level 3)  5. Inspect and service batteries (Level 3)  6. Calculate and measure capacitance and inductance (Level 2)  7. Use drawings symbols and schematic diagrams (Level 2)  8. Draw sketches of repairs and alterations (Level 3)  9. Use blueprint information (Level 3)  10. Use graphs and charts (Level 3)  11. Weigh aircraft (Level 2)  12. Perform complete weight and balance checks and properly record data (Level 3)  13. Fabricate and install rigid and flexible fluid lines and fittings. (Level 3)  14. Identify and select aircraft hardware and materials (Level 3)  15. Identify and select appropriate nondestructive testing methods  16 Perform penetrant, chemical etching, and magnetic particle inspections (Level 2)  17. Perform precision measurements (Level 3)  18. Inspect and check welds (Level 3)  19. Start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards (Level 2)  20. Identify and select fuel (Level 2)  21. Identify and select cleaning materials (Level 3)  22. Inspect, identify, remove, and treat aircraft corrosion and perform aircraft cleaning (Level 3)  23. Service and repair wood structures (Level 1)  24. Identify wood defects (Level 1)  25. Inspect wood structures (Level 1)  26. Inspect, test, and repair fabric (Level 1)  27. Select and apply fabric and fiberglass covering materials (Level 1)  28 Apply trim, letters, and touch-up paint (Level 1)  29. Identify and select aircraft finishing materials (Level 2)  30. Apply finishing materials (Level 2)  31. Inspect finishes and identify defects (Level 2)  32. Determine areas and volumes of various geometrical shapes (Level 3)  33. Solve ratio, proportion and percentage problems (Level 3)  34. 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)  36. 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)  37. Read, understand, and relate technical information (Level 3)  38. Write descriptions of aircraft condition and work performed including aircraft discrepancies and corrective actions using  typical aircraft maintenance records (Level 3)  39. Complete required maintenance forms, records, and inspection reports (Level 3)  40. Exercise mechanic privileges with the limitations prescribed by Part 65 of the Federal Aviation Regulations. (Level 3)  41. Use and understand the principles of simple machines; sound, fluid, dynamics, basic aerodynamics, aircraft structures  and theory of flight (Level 2)  42. Weld magnesium and titanium (Level 1)  43. Solder stainless steel (Level 1)  44. Solder, braze, gas-weld, and arc-weld steel (Level 2)  45. Weld aluminum and stainless steel (Level 1)  46. Fabricate tubular structures (Level 1)  47. Understand the role human factors plays in aviation maintenance safety (Level 1)  48. Operate a windows-based computer for CBT training (Level 2)  49. Activate a personal computer and load/save Lab Volt data files and ATP (Aircraft Technical Publishers) type certificate data files.  50. Access and use TDATA software to research and record aircraft airworthiness directives for aircraft.  51. Access the internet at FAA.GOV and other sources to research aircraft airworthiness directives and to look up other pertinent aircraft information.  52. Use email messaging to request information from aircraft and aircraft parts vendors for product information. | Clarification of FAA levels in objectives |
| IV. | 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 | **Lecture;**  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 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 | Addition of Lab content outline |
| V. | A. Airframe and Powerplant Technician General Text Book, Jeppesen, 2004  B. Airframe and Powerplant Technician Airframe Textbook, Jeppesen, 2003  C. Airframe and Powerplant Technician Powerplant Textbook, Jeppesen, 2004  D. Aircraft Gas Turbine Powerplants, Jeppesen, 1977  E. Aircraft Inspection and Repair (AC-43.13-1B &2A, FAA, supplied by Jeppesen, 1998  F. Federal Aviation Regulations, Aviation Maintenance Technician, Jeppesen, 2003  G. Aviation Mechanic Handbook, Crane, 1992  H. Airframe and Powerplant Mechanic Powerplant Handbook (AC-65-12A), FAA, 1996  I. Dictionary of Aeronautical Terms, Crane, 1991  J. Computer-Based-Training hardware and software  K. Aircraft and aircraft mock-up components  L. Microfiche Library, ATP, 2006  M. CD library, various  N. Hard-copy Service Manuals, Maintenance Manuals, Parts Manuals; various | A. Federal Aviation Regulations, Aviation Maintenance Technician, Jeppesen, 2010  B. Airframe and Powerplant Technician General Text Book, Jeppesen, 2009  C. Airframe and Powerplant Technician Airframe Textbook, Jeppesen, 2009  D. Airframe and Powerplant Technician Powerplant Textbook, Jeppesen, 2009  E. Aircraft Inspection and Repair (AC-43.13-1B &2B, FAA, supplied by Jeppesen, 2008  F. Dictionary of Aeronautical Terms, Crane, 2008  G. Aviation Mechanic Handbook, Crane, 2006  H. Aircraft Gas Turbine Powerplants, Jeppesen, 2002  I. Computer-Based-Training hardware and software  J. Aircraft and aircraft mock-up components  K. Microfiche Library, ATP, 2008  L. CD library, various  M. Hard-copy Service Manuals, Maintenance Manuals, Parts Manuals; various | Update of text publication dates |
| VI. | ***A. Writing***  1. Technical reports.  2. Complete aircraft discrepancy reports and maintenance forms and records.  3. Write discrepancy reports and maintenance records  ***B. Problem Solving***  Exam 2—Basic Electricity  *Instructions: Please answer the questions below on the answer sheet provided. Turn in the question sheet and the answer sheet at the end of the exam.*  1. The total resistance of nine 180 ohm resistors in parallel is what.  2. What is the total wattage of five 10 watt lights connected in parallel to a 24 volt source.  3. One ampere is how many milliamperes.  4. .002 KV is equal to how many volts.  5. Potentiometers have how many electrical connections.  6. Rheostats have how many electrical connections.  7. The correct way to connect a test voltmeter in a circuit is in ***series or parallel*** with the unit? (Select the correct response).  8. A 14 ohm resistor is to be installed in a series circuit carrying .05 ampere. How much power will the resistor be required to dissipate?  9. What is the operating resistance of a 30 watt light bulb designed for a 28 volt system?  10. What would an ohm meter read if it was used to check a light bulb with a broken filament?  11. Write a formula that describes the relationship between total voltage drop and individual voltages in a **series** circuit.  12. Write a formula that describes the relationship between total current flow and individual current flows in a **series** circuit.  13. Write a formula that describes the relationship between total resistance and individual resistors in a **series** circuit.  14. Write a formula that describes the relationship between total voltage drop and individual voltages in a **parallel** circuit.  15. Write a formula that describes the relationship between total current flow and individual current flows in a **parallel** circuit.  16. A circuit has 28 volts applied to a load consisting of a 10 ohm resistor in series with a 20 ohm resistor. What is the voltage drop across the 10 ohm resistor?  17. If three resistors of 3 ohms, 5 ohms, and 22 ohms are connected in series in a 28 volt circuit, how much current will flow through the 3 ohm resistor?  ***C. Skill demonstrations***  … Job Sheet #1  Basic Electricity, Gen A5(a,b), Level 3  Aircraft Electrical Systems, ASY Q48(b,c,d,e,f), Level 2  Approximate Working Time: 2½ hours  10 Points Possible  Description: Electrical Equipment Identification, Operation, and Electrical Measurement  Tools: Standard hand tools (use correct size “Phillips” screwdrivers),  VOM  Aircraft: **Beechcraft K35 Bonanza**  Procedure: 1. To become familiar with the electrical components and equipment layout; and to operate the following pieces of equipment:  A. Landing light  B. Stall warning actuator  C. Navigation light  D. Flap actuator motor  E. Pitot assembly with pitot heat  2. Gain access to the landing light, pitot heat, and one navigation light.  3. Measure and record the source (bus) voltage and the voltage at each load item. Using the “voltage drop” method, calculate and record the resistance of the wiring from the bus to the load. Reinstall any removed equipment in an airworthy fashion.  4. Measure and record the resistance of the pitot heater element.  5. Calculate and record the power used by the pitot heater.  Goals: 1. To properly and safely operate and troubleshoot electrical equipment components.  2. To properly use a VOM.  3. To become more familiar with aircraft electrical equipment location. | ***A.Writing***  ***Required assignments may include but are not limited to the following:***  Discrepancy reports  Laboratory reports  Log Book entries  **Sample student prompt;**  Complete aircraft discrepancy reports and maintenance forms and records.  ***B. Problem Solving***  ***Required assignments may include, but are not limited to the following:***  Quizzes  Lab reports  Lab projects  **Sample student prompt;**  Trouble shoot failure in electrical system  List procedures to repair to operating condition  ***C. Skill demonstrations***  ***Required assignments may include, but are not limited to the following:***  Lab project  Research project  Exam  **Sample Student Prompt;**  Weight aircraft and compute new empty weight and center of gravity | Simplification of methods to measure student achievement |

***(Additional sheets may be attached if necessary.)***

**C.** **EXPLANATIONS.** If course modification results in changes in the program which will require use of the program description form, please give rationale.

**Please attach the complete outline before modifications to this form. If only the first page of the outline is being modified, also attach the new first page. If other pages of the outline are being modified, please attach the complete new outline.**

**Reedley College**

**SIGNATURE FORM**

*Submission/Recommendation/Action*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Course Department and Number:* | | Industrial Technology/AERO 1 | | |
| *Course Title:* | Aviation Maintenance Technology | | | |
|  |  |  | *Effective Date:* | 08/01/2010 |

|  |  |  |  |
| --- | --- | --- | --- |
| **1. Submitted By:** | Keith Zielke | **Date:** | 01/20/2010 |

|  |  |  |  |
| --- | --- | --- | --- |
| **2. Reviewed by Department:** |  | **Date:** |  |
|  | **Department Chair’s Signature** |  |  |

**Attach department recommendation. (optional)**

|  |  |  |  |
| --- | --- | --- | --- |
| **3. Received/Reviewed by Dean of Instruction:** |  | **Date:** |  |
|  | **Dean’s Signature** |  |  |

|  |  |
| --- | --- |
| **4. Approved by Curriculum Committee on:** |  |
|  | **Date** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Curriculum Committee Chair** |  | **Date** |

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Vice President of Instruction** |  | **Date** |

|  |  |  |  |
| --- | --- | --- | --- |
| **5. Reviewed by Articulation Officer:** |  |  |  |
|  |  |  | **Date:** |

|  |  |
| --- | --- |
| **CSU GE Code submitted for articulation:** |  |

**REDIT COURSE OUTLINE**

##### I. COVER PAGE

| (1)  Course ID: AERO 1 |  | (2)  Course Title: Aviation Maintenance Technology |  | (3)  Units: 17.5 |
| --- | --- | --- | --- | --- |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (4) Lecture / Lab Hours: | | |  | |  | (8)Classification: | | | | | | | | |
| Total Course Hours | | | Total Lec hours: | | 15 |  | | | | | | | | |
|  | | | Total Lab hours: | | 15 |  | | | | Degree applicable: | | | | x |
| Lec will generate |  | | | hour(s) outside work | |  | | | | Non-degree applicable: | | | |  |
| Lab will generate |  | | | hour(s) outside work. | |  | | | | Pre-collegiate basic skills: | | | |  |
|  | | | | | |  | | | |  | | | |  |
| (9)RC | | Fulfills AS/AA degree requirement: (area) | | | | | |  |
| (5)Grading Basis: | | Grading scale only | | | x |  | | General education category: | | | | | |  |
|  | | Pass/No Pass option | | |  |  | | Major: | | | Aeronautics | | | |
|  | | Pass/No Pass only | | |  |  | |  | | |  | | | |
| (6)Basic Skills Prerequisites: | | | | | | (10)CSU: | | | | Baccalaureate: | | | | x |
| (11) Repeatable: (A course may be repeated  three times) | | | | | | | | 0 |
| Basic Skills Advisories:  Eligibility for English 125, English 126, and Math 101 | | | | | | For Office Use Only | | | | | | | | |
| New |  | | Mod | | | x | Effective Date: 08/01/2010 | |
| (7)Subject Prerequisites (requires C grade or better): | | | | | | SAM Priority: C | | | | | | | DATATEL ID: 4997 | |
| Unit Code: 272040 | | | | | | | TOPS Code: 0950.00 | |
| Reporting ID: 600992.00 | | | | | | | Date Reporting ID Assigned | |
| Subject Corequisites: | | | | | | Program Status: | | | | | | | Course LHE: 26.25 | |
| Subject Advisories: | | | | | | Replaced by:  Date: | | | | | | | | |
| (12)Catalog Description:    Aero 1 meets the FAA General requirements including: 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, Human Factors. Computer subjects include terminology, storage devices, word processing, and computer based training applications. Completion of Aero 1, 2, 3 and 4 qualifies the student for Licenser eligibility to maintain all aircraft Airframe and Powerplants. | | | | | | | | | | | | | | |

|  |  |  |
| --- | --- | --- |
| Course ID: AERO 1 |  | Course Title: Aviation Maintenance Technology |

**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:

A. Meet the Federal Aviation Administration requirements “General” subjects as specified in the Approved Aviation Maintenance Technician School.

B. Recognize implication of ethical and legal maintenance standards as prescribed in the Federal Aviation Administration, Federal Aviation Regulations.

C. Complete assigned inspections, modifications, repairs, calculations, and/or troubleshooting procedures, while determining if provided documentation is valid.

D. Develop acceptable documentation for return to service certification of aircraft and/or related component parts.

E. Work successfully in a team atmosphere, alternately assuming the roles of leader and of team player.

F. Apply safety procedures in a shop environment and follow hazardous material handling procedures.

G. Become familiar with the general operating procedures of a personal computer and its standard peripheral devices.

**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:

1. Determine the relationship of voltage, current, and resistance in electrical circuits (Level 3)

2. Calculate and measure electrical power (Level 2)

3. Measure voltage, current, resistance, and continuity (Level 3)

4. Read and interpret electrical circuit diagrams (Level 3)

5. Inspect and service batteries (Level 3)

6. Calculate and measure capacitance and inductance (Level 2)

7. Use drawings symbols and schematic diagrams (Level 2)

8. Draw sketches of repairs and alterations (Level 3)

9. Use blueprint information (Level 3)

10. Use graphs and charts (Level 3)

11. Weigh aircraft (Level 2)

12. Perform complete weight and balance checks and properly record data (Level 3)

13. Fabricate and install rigid and flexible fluid lines and fittings. (Level 3)

14. Identify and select aircraft hardware and materials (Level 3)

15. Identify and select appropriate nondestructive testing methods

16 Perform penetrant, chemical etching, and magnetic particle inspections (Level 2)

17. Perform precision measurements (Level 3)

18. Inspect and check welds (Level 3)

19. Start, ground operate, move, service, and secure aircraft and identify typical ground operation hazards (Level 2)

20. Identify and select fuel (Level 2)

21. Identify and select cleaning materials (Level 3)

22. Inspect, identify, remove, and treat aircraft corrosion and perform aircraft cleaning (Level 3)

23. Service and repair wood structures (Level 1)

24. Identify wood defects (Level 1)

25. Inspect wood structures (Level 1)

26. Inspect, test, and repair fabric (Level 1)

27. Select and apply fabric and fiberglass covering materials (Level 1)

28 Apply trim, letters, and touch-up paint (Level 1)

29. Identify and select aircraft finishing materials (Level 2)

30. Apply finishing materials (Level 2)

31. Inspect finishes and identify defects (Level 2)

32. Determine areas and volumes of various geometrical shapes (Level 3)

33. Solve ratio, proportion and percentage problems (Level 3)

34. 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)

36. 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)

37. Read, understand, and relate technical information (Level 3)

38. Write descriptions of aircraft condition and work performed including aircraft discrepancies and corrective actions using

typical aircraft maintenance records (Level 3)

39. Complete required maintenance forms, records, and inspection reports (Level 3)

40. Exercise mechanic privileges with the limitations prescribed by Part 65 of the Federal Aviation Regulations. (Level 3)

41. Use and understand the principles of simple machines; sound, fluid, dynamics, basic aerodynamics, aircraft structures

and theory of flight (Level 2)

42. Weld magnesium and titanium (Level 1)

43. Solder stainless steel (Level 1)

44. Solder, braze, gas-weld, and arc-weld steel (Level 2)

45. Weld aluminum and stainless steel (Level 1)

46. Fabricate tubular structures (Level 1)

47. Understand the role human factors plays in aviation maintenance safety (Level 1)

48. Operate a windows-based computer for CBT training (Level 2)

49. Activate a personal computer and load/save Lab Volt data files and ATP (Aircraft Technical Publishers) type certificate data files.

50. Access and use TDATA software to research and record aircraft airworthiness directives for aircraft.

51. Access the internet at FAA.GOV and other sources to research aircraft airworthiness directives and to look up other pertinent aircraft information.

52. Use email messaging to request information from aircraft and aircraft parts vendors for product information.

\*Skill Levels (Federal Aviation Administration Format):

1. Knowledge/Skill Level 1 C requires comprehension of general principle, but no manipulative skill application.

2. Knowledge/Skill Level 2 C requires comprehension of general principles, limited practical application and development of limited manipulative skills to perform basic operations.

3. Knowledge/Skill Level 3 C requires comprehension of general principles, performance of practical application and development of manipulative skills to minimum airworthiness standards.

|  |  |  |
| --- | --- | --- |
| Course ID: AERO 1 |  | Course Title: Aviation Maintenance Technology |

**IV. COURSE CONTENT OUTLINE**:

**Lecture;**

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 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.

|  |  |  |
| --- | --- | --- |
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**V*.* APPROPRIATE READINGS**

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

A. Federal Aviation Regulations, Aviation Maintenance Technician, Jeppesen, 2010

B. Airframe and Powerplant Technician General Text Book, Jeppesen, 2009

C. Airframe and Powerplant Technician Airframe Textbook, Jeppesen, 2009

D. Airframe and Powerplant Technician Powerplant Textbook, Jeppesen, 2009

E. Aircraft Inspection and Repair (AC-43.13-1B &2B, FAA, supplied by Jeppesen, 2008

F. Dictionary of Aeronautical Terms, Crane, 2008

G. Aviation Mechanic Handbook, Crane, 2006

H. Aircraft Gas Turbine Powerplants, Jeppesen, 2002

I. Computer-Based-Training hardware and software

J. Aircraft and aircraft mock-up components

K. Microfiche Library, ATP, 2008

L. CD library, various

M. 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.

|  |  |  |
| --- | --- | --- |
| Course ID: AERO 1 |  | Course Title: Aviation Maintenance Technology |

**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 papers(s) |  | e. reading reports |
| x | c. laboratory reports |  | f. other (specify) |

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

Discrepancy reports

Laboratory reports

Log Book entries

**Sample Student Prompt;**

Complete aircraft discrepancy reports and maintenance forms and records.

|  |  |  |  |
| --- | --- | --- | --- |
| **B. Problem Solving**  1. 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

Lab reports

Lab projects

**Sample Student Prompt;**

Trouble shoot failure in electrical system

List procedures to repair to operating condition

|  |  |  |
| --- | --- | --- |
| Course ID: AERO 1 |  | Course Title: Aviation Maintenance Technology |

|  |  |  |  |
| --- | --- | --- | --- |
| **C. Skill** demonstrations, including: | | | |
| x | a. class performance(s) | x | c. performance exam(s) |
|  | b. field work | x | d. other (specify) |

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

Lab project

Research project

Exam

**Sample Student Prompt;**

Weight aircraft and compute new empty weight and center of gravity

|  |  |  |  |
| --- | --- | --- | --- |
| **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

**FOR DEGREE APPLICABLE COURSES**

|  |  |  |
| --- | --- | --- |
| Course ID: AERO 1 |  | Course Title: Aviation Maintenance Technology |

# 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**  A. Federal Aviation Regulations, Aviation Maintenance Technician, Jeppesen, 2010  B. Airframe and Powerplant Technician General Text Book, Jeppesen, 2009  C. Airframe and Powerplant Technician Airframe Textbook, Jeppesen, 2009  D. Airframe and Powerplant Technician Powerplant Textbook, Jeppesen, 2009  E. Aircraft Inspection and Repair (AC-43.13-1B &2B, FAA, supplied by Jeppesen, 2008  F. Dictionary of Aeronautical Terms, Crane, 2008  G. Aviation Mechanic Handbook, Crane, 2006  H. Aircraft Gas Turbine Powerplants, Jeppesen, 2002  I. Computer-Based-Training hardware and software  J. Aircraft and aircraft mock-up components  K. Microfiche Library, ATP, 2008  L. CD library, various  M. Hard-copy Service Manuals, Maintenance Manuals, Parts Manuals; various | | | |
| **Comments:** | | | |
|  | This course requires special or additional library materials (list attached). | | |
| x | This course requires special facilities: Aero Lab | | |

**FORM A**

|  |  |  |  |
| --- | --- | --- | --- |
| **TARGET COURSE** | **AERO 1** |  | Aviation Maintenance Technology |
|  | Number |  | Title |

BASIC SKILLS ADVISORIES PAGE The skills listed are those needed for eligibility for English 125, 126, and Math 101. 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.

|  |  |
| --- | --- |
| Math Skills (eligibility for Math 101)  (as outcomes for Math 250)  x Performing the four arithmetic operations on whole numbers, arithmetic fractions, and decimal fractions.  x Making the conversions from arithmetic fractions to decimal fractions, from decimal fractions to percents, and then reversing the process.  Applying the concepts listed above to proportions, percents, simple interest, markup and discount.  x Applying the operations of integers in solving simple equations.  Converting between the metric and English measurement systems | 1. Perform the four arithmetic operations on whole numbers and fractions.  2. Convert fractions to decimals  3. Perform mathematical calculations |
| Reading Skills (eligibility for English 126)  (as outcomes for English 262)  x Using phonetic, structural, contextual, and dictionary skills to attack and understand words.  Applying word analysis skills to reading in context.  x Using adequate basic functional vocabulary skills.  x Using textbook study skills and outlining skills.  Using a full range of literal comprehension skills and basic analytical skills such as predicting, inferring, concluding, and evaluating. | 1. Read college level textbooks.  2. Federal Aviation Requirement to read, write, and speak the English language  3. Read lab job sheets |
| Writing Skills (eligibility for English 125)  (as outcomes for English 252)  x Writing complete English sentences and avoiding errors most of the time.  x Using the conventions of English writing: capitalization, punctuation, spelling, etc.  x Using verbs correctly in present, past, future, and present perfect tenses, and using the correct forms of common irregular verbs.  Expanding and developing basic sentence structure with appropriate modification.  ­ Combining sentences using coordination, subordination, and phrases.  Expressing the writer's ideas in short personal papers utilizing the writing process in their development. | 1. Complete aircraft discrepancy reports and maintenance forms and records.  2. Federal Aviation Requirement to read, write, and speak the English language.  3. Write discrepancy reports and maintenance records |

Check the appropriate spaces.

x Eligibility for Math 101 is **advisory** for the target course.

x Eligibility for English 126 is **advisory** for the target course.

x 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.*

|  |  |  |  |
| --- | --- | --- | --- |
| Content review completed by |  | Date |  |