COLUMBUS STATE COMMUNITY COLLEGE

Columbus State Community College
Engineering and Transportation Technologies
Aviation Maintenance Technology

COURSE: AMT 1106 BASIC ELECTRICITY FOR THE AMT

CREDITS: 6 CLASS HOURS PER WEEK: 27 PREREQUISITES: ENGL 1100; MATH 1050 or 1099

DESCRIPTION OF COURSE

The aircraft that are being manufactured today have become more dependent on electronics and electrical systems. An understanding of basic electrical concepts is essential to the success of the modern aircraft maintenance technician. In this course, students will develop a fundamental understanding of basic electrical circuits with an emphasis on airborne installations. AC and DC electrical theory and practical application will be accomplished and proven through extensive experimentation and calculations. Aircraft maintenance practices as they relate to batteries, power calculations, and the relationship of voltage, current, and resistance will be examined, as well as precision measurement of these values on operational circuits.

COURSE GOALS

- Use basic electric theories to determine the relationship of voltage, current, power, and resistance in electrical circuits.
- Use precision instruments to measure voltage, current, resistance, and continuity.
- Participate in the inspection and servicing of batteries.
- Calculate and measure parameters of AC circuits.
- Read and interpret aircraft electrical circuit diagrams
- Quantitative Skills
- Scientific Literacy

COURSE STUDENT LEARNING OUTCOMES

Determine the relationship of voltage, current, and resistance in electrical circuits.
Calculate and measure electrical power.
Measure voltage, current, resistance, and continuity.
Inspect and service batteries.
Calculate and measure capacitance and inductance.
Read and interpret aircraft electrical circuit diagrams

PROGRAM OUTCOMES

Upon completion of the Aviation Maintenance Technology curriculum, the graduate will be able to: • Service, inspect, and complete repairs and alterations on airframes, engines, propellers, and associated systems (including environmental, electrical, fuel, hydraulic, and pneumatic systems) • Utilize the regulations and technical manuals to complete inspections, repairs, and alterations of aircraft safely and to complete the required maintenance entries after finishing inspection, repair and/or alteration • Properly use precision measuring equipment for the accuracy demanded by the aviation industry • Understand blueprints used for the repair and alteration of aircraft and utilize them to affect the repair or alteration • Identify aircraft materials and hardware and their structural properties. Correctly identify corrosion and the proper treatment and prevention methods and techniques • Identify and use nondestructive testing methods used in the aviation industry • Meet FAA certification requirements for the Airframe and Powerplant Certificates.

OUTCOMES BASED ASSESSMENT OF STUDENT LEARNING
For this course, students are expected to demonstrate the skills associated with the Institutional Learning Goals (ILG) identified below:

- Critical Thinking
- Quantitative Skills
- Scientific Literacy

COURSE MATERIALS REQUIRED
TI 30 Calculator or equivalent
Analog Multimeter – See Instructor

TEXTBOOKS—REQUIRED AND OPTIONAL READINGS
General 8083-30-ATB
General Workbook
General Test Guide
AC 43.13 1B/2B
ASA/FAR/AMT 2015 by ASA
Aviation Mechanic Handbook

AVIATION MAINTENANCE TECHNOLOGY SYLLABUS STATEMENTS
Aviation Maintenance Technology required College Syllabus Statements on **Assessment**, **Participation and Safety**, and **Attendance** can be found at http://www.cscc.edu/academics/departments/aviation-maintenance/requirements.shtml or on the College website –Search 'Aviation'; click on 'Aviation Maintenance'; click on 'Requirements' tab.

SPECIAL COURSE REQUIREMENTS
Part 147 Para 147.21 (d) (3) and 147.31 (b) state that tests must be given in all subject areas and that the tests given must all be passed.

As students progress through the program, they will be given subject area tests relative to the course subject areas. Students must demonstrate a 70% minimum passing score on every subject test. If a subject area test is failed, the student will be given additional opportunities to pass the subject test. All subject tests must be passed before a certificate of program completion can be issued.

FAA Subject Are Test for this course:

I – A Basic Electricity

To be awarded a Certificate of Program Completion, in addition to subject area testing, the student must also:

Successfully pass each course required for the certificate. Requirements for passing each course include:

A 70% average evaluation for graded course elements. Instructors determine the weights of course grading.

Successful completion of all required laboratory requirements of the course.

Attendance in compliance with the attendance policy.

Students can pass a course with a grade of "D", however students must have a minimum overall Grade Point Average of 2.0 (out a possible 4.0) to be awarded a certificate of completion. Courses can be repeated to improve grades.

Grade Area	Weight	Percentage Earned		Lab Project	Pass	Fail
Unit Tests	50%			Electrical Energy		
Mid-Term				Aircraft Batteries		
Final	20%			Circuit Arrangement		
Participation & Safety	10%			Electrical Instruments		
Other – Lab Sheets	20%			AC Circuits		
Total	100%			Electron Control Devices		
Course Letter Grade				Binary Logic		
				Wiring Diagrams		
				Troubleshooting		

Student Resources, Rights, and Responsibilities: Columbus State Community College required College Syllabus Statements on College Policies and Student Support Services can be found at https://www.cscc.edu/academics/syllabus.shtml.

UNITS OF INSTRUCTION – AMT 1106

ASSIGNMENT	LEARNING OBJECTIVES/GOALS	ASSESSMENT METHODS	ASSIGNMENTS		
Assignment 1	Theories and Principles	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-1 – 3-15	
			Labs:	Lab worksheets	
			Test:	Test 1	
Assignment 2	Aircraft Batteries	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-65 – 3-77	
			Labs:	Battery Labs	
			Test:	Test 2	
Assignment 3	Circuit Elements and Arrangement	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-15 – 3-41	
			Labs:	Circuit arrangement labs	
			Test:	Test 3	
Assignment 4	Electrical Measuring Instruments	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-139 – 3-150	
			Labs:	Lab worksheets	
			Test:	Test 4	
Assignment 5	Alternating Current Theory	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-81 – 3-107	
			Labs:	Lab worksheets	
			Test:	Test 5	
Assignment 6	Binary Logic and Electron Control Devices	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-116 – 3-134	
			Labs:	Lab worksheets	
			Test:	Test 6	
Assignment 7	Basic Troubleshooting Theory	Test, Quizzes, Worksheets	Read:	Jeppesen Gen. Text 3-153 – 3-159	
			Labs:	Circuit analysis labs	
			Test:	Test 7	