

Syllabus

**Aviation Maintenance Technology for Electronics
Technicians**

Instructor

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Location

Southwest Technology Center
North Building
711 W. Tamarack
Altus, Ok 73521

Methodology

Course is self paced within the set time frame of the course. Delivery of instruction consists of computer aided courseware, lectures, individual projects, and team activities.

Attendance

All students will be required to be in attendance ninety (90) percent of the time. This means you cannot miss more than 4 days during a nine week period. Three tardy slips equal 1 absence. Students are counted tardy if they arrive to class within 59 minutes from the start of class. After this time, students are considered absent. If you are in high school and miss more than 5 days, you will not be given credit for this course for the semester and be terminated the following semester. If you are an adult and miss 5 days, you will be terminated as a student and not allowed to enroll the next semester unless you file and are granted an appeal. Students must submit an appeal to the Chief Operating Officer and/or Student Services Director with documented extenuating circumstances for admittance back into the course. If you violate the attendance policy, you will **lose your eligibility with financial aid and it cannot be appealed.**

Evaluation

Skills	20%
Quiz	20%
Exams	30%
<u>Daily Grade (daily assignments)</u>	<u>30%</u>
Total	100%

Grading

Grades will be issued according to the following scale:

Above	90%	A
	80-89%	B
	70-79%	C
	60-69%	D
Below	60%	F

I – Incomplete (Given when student does not complete course or owes make-up time.)

W – Withdraw (Given when student withdraws from SWTC or exceeds attendance policy.)

Competencies

Required Certifications:

State ODCTE assessments:

Electronics Assembler

General Electronics Technician (G.E.T.)

Optional Certifications:

International Society of Certified Electronics Technicians assessments:

DC Electronics Systems Associates Certification Exam

AC Electronics Systems Associate Certification Exam

Solid State Electronics Systems Associate Certification Exam

Digital Electronics Systems Associate Certification Exam

(Successful completion of the above four certification exams will satisfy the requirements for the International Society of Certified Electronics Technicians (I.S.C.E.T.) Associate Level Certification)

Curriculum Resources

NIDA Corporation Basic Electronics Series Courseware.

Tel-a-Train, Safety Training Series

NFPA 70 and 70E.

Chaney Inc, Solder Kits

Multistate Academic and Vocational Curriculum Consortium; Electronics Technician Series.

Employment / Workplace Skills- CIMC

Professional Development Program – SkillsUSA

Parallax Stamps in Class

Grob, Bernard. Basic Electronics. 7th Edition. Glencoe/McGraw-Hill. 1992.

Meade, Russell L. Foundations of Electronics. Delmar Publishers. 1994

Schuler, Charles A. Electronics. 4th Edition. Macmillan/ McGraw-Hill. 1994.

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Course Title

Course #	Course	Theory	Lab	Total
ETC 1140	Aviation Maintenance Technology for Electronics Technicians	60	60	120

Course Description

This course provides instruction in aircraft theory, safety rules and regulations for technicians, with practical hands-on experiments. Experiments and troubleshooting tasks emulate aircraft circuits found in aviation instrumentation, protection and control systems, ignition systems, and communications.

Knowledge and Skills

Introduction to Aviation Technology

- Identify the types of careers that support the aviation industry.
- Describe a brief history of Aviation Maintenance.
- Describe the certification process of the Aviation Maintenance Technician.
- Describe the certification process of the Avionics Technician.

General Aircraft Principles

- Describe the major sections of a typical aircraft.
- Define and describe the physics principles that affect thrust, drag, lift, and gravity.
- Define and describe the three axes of flight.
- Define and describe the primary flight controls of an aircraft.
- Define and describe the secondary flight controls of an aircraft.
- Define and describe the auxiliary flight controls of an aircraft.

Aircraft Structures

- Describe the types of materials used in aircraft construction.
- Describe the advantages and disadvantages of using metals in aircraft construction.
- Describe the advantages and disadvantages of using composites in aircraft construction.
- Describe fuselage shapes, construction, and their effect on aircraft flight.
- Describe wing shapes, construction and their effect on aircraft flight.
- Describe tail shapes, construction and their effect on aircraft flight.

Aircraft Power Plants

- Describe the principles and operation of internal combustion engines.
- Describe the principles and operation of jet propulsion engines.
- Understand the fundamentals of propellers.

Training Equipment Familiarization

- Identify the power requirements for the Nida Model 130 Test Console.
- Identify the two test console panels.
- Recognize test console controls, switches, and indicating devices.
- Identify an experiment card.
- Describe insertion and removal procedures.
- Insert and remove an experiment card.

- Perform procedures to end an experiment.
- Perform procedures to start an experiment.
- Insert and remove an experiment card.
- Perform procedures to end an experiment.

Basic Aircraft Systems Troubleshooting

- Describe the types of aircraft systems and their purpose.
- Describe the steps in a typical troubleshooting process.
- Use the basic troubleshooting process to identify probable faults in a generic operational circuit card system.

Introduction to Linear Measurements

- Become familiar with the two different standards of measurement.
- Define precision and determine which measurement applications require more or less precision.
- Identify the following measurement tools: Standard ruler Micrometer Vernier caliper
- Define linear measurement.
- Describe how the following measurement tools are used: Standard ruler.

Metric and Scientific Conversions

- Become familiar with units of British and metric units and be able to convert from one to the other.
- Become familiar with the concepts of scientific notation and be able to add, subtract, multiply, and divide values in scientific notation.
- Angular And Circular Measurement
- Become familiar with some basic concepts of angular and circular characteristics including: angle, diameter, and radius.
- Describe angular measurement using: try square, carpenter's square, protractor, sliding T-bevel, and combination square.
- Describe diameter and radius measurements using calipers, micrometers, and vernier calipers.

Area Measurements

- Define rectangles and squares.
- Determine the difference between the two.
- Use the area formula for squares and rectangles.
- Define parallelograms and triangles.
- Determine the relationship between the two.
- Use the area formula for parallelograms and triangles.
- Define a trapezoid.
- Differentiate trapezoids from parallelograms.
- Define the dimensions of a circle: radius, diameter, and circumference.
- Use the formulas for area and circumference.

Volume Measurements

- Define volume and describe how it relates to area.
- Differentiate between liter, centimeter, and meter.
- Solve problems of volume measurement in a solid rectangle.
- Define and be able to recognize a prism.

- Define and be able to recognize a pyramid.
- Using the formulas for each, solve problems of prism and pyramid volume.
- Define and be able to recognize a cylinder.
- Define and be able to recognize a cone.
- Define and be able to recognize a sphere.
- Using the formulas for each, solve problems of cylinder, cone, and sphere volume.

Velocity and Acceleration

- Define vector and scalar quantities and be able to differentiate between the two.
- Define and be able to solve problems of velocity.
- Define and be able to solve problems of acceleration.

Force Measurements

- Describe force as it relates to inertia and Newton's First Law of Motion.
- Describe force as it relates to acceleration and Newton's Second Law of Motion.
- Describe force as it relates to interaction and Newton's Third Law of Motion.

Work and Power Measurements

- Define work and be able to solve problems using the standard measure of work, the Newton (N).
- Define power and be able to solve problems using the standard measure of power, the joule (J).

Magnetism and Electromagnetism

- State the Laws of Magnetism.
- Describe permanent magnets.
- Describe electromagnets.
- Observe magnetic poles.
- Demonstrate temporary magnets.
- Examine electromagnetic operation.
- Demonstrate application of electromagnetism.

Introduction to Chemistry

- Define chemistry.
- Describe the history of chemistry.
- Recognize chemistry's impact on everyday life.

Matter and Energy

- Define Matter and Energy.
- Name the three states of matter.
- Distinguish classes of matter.
- Differentiate between physical changes and chemical reactions.

The Periodic Table

- Recognize the periodic table.
- Understand the structure of the periodic table.
- Identify Groups and Periods.
- Relate various element names to their corresponding chemical symbol.
- Describe some properties that are common to elements located in the same groups on the periodic table.

Solids, Liquids, and Gases

- Identify the three physical states of matter.
- Define the properties of the three states of matter.
- Understand how matter changes from one state to another.

Aeronautical Regulatory Publications

- Identify the FAR Parts that apply to the Airframe and Powerplant Technician.
- Identify the FAR Part titles that apply to the Airframe and Powerplant Technician.
- Define selected Part 1 abbreviations.
- Describe the purpose of FAA Regulatory Publications.

Aircraft Drawings

- Identify types of aircraft drawings.
- Understand symbols, markings, and lines on aircraft drawings.
- Describe the ways information is presented in an aircraft drawing.
- Prepare drawing in accordance with instructor provided.

Flight Line Safety

- Describe the personal protection required when working on an aircraft flight line.
- Describe and identify flight line ground support equipment.
- Demonstrate the procedures and safety precautions on an aircraft flight line.
- Identify the danger zones associated with aircraft movement and operations.