

Aviation Technology- Maintenance
Standard Course Outline

AVTG 1021 – BASIC PHYSICS

Catalog Description: Basic principles of physics for mechanics such as simple machines, heat dynamics, fluid and gas laws, work and power, and air pressure. Clock hours: 21 lecture, 9 shop

Prerequisite: AVTG 1001

Credit hours/ Contact hours/ Load hours: 1/30/6 hours per day for 5 days

Target Audience & Transferability:

This course is designed for students seeking a Certificate of Proficiency, Technical Certificates in Airframe and Powerplant, an AAS in Aviation Maintenance Technology, or an AS in Aviation Maintenance Management. Individual AVT courses or Certificates may be transferable to other FAA Certified Aviation Maintenance Technician schools under Federal Regulations.

Student Outcomes/ Course topics:

REFERENCES: ABS; AC 65-15A.

FAA Standard: *FAA-S-8081-26* 1-10, Changes 2 (9/24/03) & 3 (6/21/04)

By the end of the course, students will:

1. Exhibit knowledge of at least two of the following—
 - a. any of the simple machines, how they function, and/or how mechanical advantage is applied in one or more specific examples.
 - b. sound resonance, how it can be a hazard to aircraft, and how sound may be used to aid in inspecting aircraft.
 - c. the relationship between fluid density and specific gravity.
 - d. the characteristic of specific gravity of fluids and how it may be applied to aircraft maintenance.
 - e. the general effects of pressure and temperature on gases and liquids and how the qualities of compressibility and/or incompressibility of gases and liquids are generally applied to aircraft systems.
 - f. density altitude and the effects of temperature, and/or pressure, and/or humidity on aircraft and/or engine performance.
 - g. heat, how it is manifested in matter, and how heat transfer is accomplished through conduction, and/or convection, and/or radiation.
 - h. coefficient of linear (thermal) expansion as related to aircraft materials.
 - i. aircraft structures and theory of flight/physics of lift.
 - j. the operation of aerodynamic factors in the flight of airplanes and/or helicopters.
 - k. the relationship between force, area, and pressure.
 - l. the five forces or stresses affecting aircraft structures.
 - m. the two forms of energy and how they apply to aircraft and/or aircraft systems.
2. N/A
3. Demonstrate the ability to perform at least one of the following—
 - a. identify any parts or systems of an aircraft and/or engine where Bernoulli's principle and/or Newtonian law is applied. (Level 2)

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- b. identify parts or systems of an aircraft where Boyle's, Charles', and/or Pascal's Laws apply. (Level 2)
- c. calculate force, area, or pressure in a specific application. (Level 3)
- d. identify one or more methods of heat transfer in aircraft systems and where and how heat damage may occur when performing aircraft maintenance. (Level 2)
- e. identify any of the following and describe how they function aerodynamically: stall strips, wing fences, vortex generators, flaps, slats, spoilers, ailerons, stabilators, elevators, rudders, or trim tabs. (Level 2)
- f. determine which of the five forces/stresses are acting on an aircraft or aircraft parts at specific points under given conditions. (Level 2) design a simple machine (on paper) that uses one or more methods of mechanical advantage. (Level 2)

Required Text(s):

General Textbook (ASA)	ISBN # 1-56027-550-3
General Test Study Guide (ASA)	ISBN # 1-56027-570-7
FAR Handbook for AMT (ASA)	ISBN # 1-56027-563-4
AC43.13-1B Acceptable Methods, Practices, & Techniques (ASA)	ISBN # 1-56027-488-3

Optional Text(s):

Technician General Textbook (Jeppesen)	ISBN # 0-88487-203-3
Technician General Workbook (Jeppesen)	ISBN # 0-88487-212-2
AC65-9A Aircraft Mechanics Handbook General (FAA)	ISBN # 1-56027-064-0

Supporting Reference(s)

O&P Study Guide (ASA)	ISBN # 1-56027-406-9
Maintenance Handbook (ASA)	ISBN # 1-56027-518-9
Dictionary of Aeronautical Terms (ASA)	ISBN # 1-56027-587-2

The workbooks and test study guides may be used to aid the instructor and students to reinforce the textbook information. Other Textbooks may be issued depending upon availability.

Required Methods of Instruction:

Classes are taught off-campus in a full time day or night format, requiring maximum attendance. Attendance is taken every hour. Missed time must be made up outside of regular scheduled class time before moving to the next subject.

Required Forms of Assessment:

Periodic exams will be performed by FAA approved instructors as required to insure progress. Students must pass this course with a 70% or better to qualify for an FAA approved Certificate of Completion in the General Section.