WHY REDSTONE? Since 1965, more than 10,000 Redstone College students have become skilled, in-demand graduates, thanks to a formula for success:

- faculty with industry experience
- hands-on experience
- career-focused education
- industry relationships
- career assistance
- tuition-free alumni retraining (books, tools, resource fees may apply)

• preparation for industry certification exams*
• financial assistance†
• no-cost tutoring
• Snap-on® tool kit

*Graduates seeking to attain certification must take and pass any applicable tests/exams
†Available to those who qualify

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THE PROGRAM

Avionics
Associate of Occupational Studies degree in 15 months

Redstone’s career-focused education helps you develop the technical skills manufacturing employers seek. Airplanes are highly complex machines and they must function safely, with extreme tolerances. Avionics technicians work with instruments and computers that control engine, flight and other primary functions including aircraft navigation and radio communications. These systems are now an integral part of aircraft design and have had a huge influence on aircraft capability.

Graduates of the Redstone College Avionics program will master essential avionics concepts in courses such as:

- Digital Electronics
- Communication Theory
- Solid State Electronics
- Gyroscopes and Autopilot Systems
- Troubleshooting Techniques
- Transducer and Wiring Diagrams
- Communications and Navigation Systems
- Pulse Microwave Systems

Get FCC Certifications

Many industry employers prefer graduates with important certifications. Our training helps you prepare for select Federal Communications Commission (FCC) certification tests. Avionics students have the opportunity to take certification exams in elements 1, 3, and 8 under the auspices of the FCC exams. Additional certifications are available through the National Center for Aerospace and Transportation Technologies (NCATT)††. For students who choose NCATT status, Redstone instructors will help prepare them for required tests. All tests are administered on the Redstone campus.

†fcctests.com, ††ncatt.org

Typical Entry-Level Positions for Redstone Graduates

- Avionics Technician
- Field Technician
- Bench Technician

For more information about our graduation rates, the median debt of students who completed the program, and other important information, please visit our website at http://www.redstone.edu/disclosures

Redstone Avionics Training Facilities

- nearly 8,000 square feet of classroom and lab space
- a large variety of test equipment
- advanced oscilloscopes and soldering stations
- three custom auto pilot trainers
- wide range of test benches
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AVIONICS PROGRAM
Avionics are the electronic systems used on an aircraft, satellites and spacecraft. Avionic systems include communications, navigation, the display and management of multiple systems, and the hundreds of systems that are fitted to aircraft to perform individual functions. Avionics play a key role in the development and construction of satellites, helicopters and airplanes of all types and sizes. Technicians in the avionics field are responsible for the assembly, maintenance, repair and installation of these airborne and space-related components.

Career Outlook
Job growth is expected to be about as fast as average compared to all occupations. Avionics technicians, who complete an aircraft mechanic training program will find the most favorable opportunities.

As the economy and population grows, passenger air traffic will also increase, spurring the growth for avionics technicians. That said, most jobs over the next decade will arise due to retirees and workers leaving the field for other careers.*

Boeing Predicts Increased Demand for Airline Technicians
Aerospace giant Boeing released a long-term market outlook report predicting that as global economies grow and tens of thousands of new commercial jetliners are produced, the demand for pilots and educated technicians will also grow exponentially. The company anticipates more than 400,000 pilots and 600,000 airline maintenance technicians will be needed by 2031.**

Career Profile
Today’s airplanes are highly complex machines that require reliable parts and service to fly safely. To keep an airplane in peak operating condition, aircraft and avionics equipment mechanics and technicians perform scheduled maintenance, make repairs, and complete inspections. They must follow detailed federal regulations set by the FAA that dictate maintenance schedules for a variety of different operations.

Avionics technicians typically do the following:
- Test electronic instruments, using circuit testers, oscilloscopes, and voltmeters
- Interpret flight test data to diagnose malfunctions and performance problems
- Assemble components, such as electrical controls and junction boxes
- Install instrument panels, using hand tools, power tools, and soldering irons
- Repair or replace malfunctioning components
- Keep records of maintenance and repair work

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AVIONICS PROGRAM

WIRE YOUR FUTURE FOR SUCCESS.

Redstone uses Snap-on tools. Specific Snap-on tools vary depending on program requirements.
AVIONICS PROGRAM COURSES

Associate of Occupational Studies in 15 Months

AV121 Communication Theory
6.0 credit hours/40 lecture hours/40 lab hours
This course explores the use of electronic circuits for the purpose of communication via RF signals which includes AM, FM and Phase Modulation. Circuits studied include oscillators, modulators, mixers, buffers, filters, as well as a discussion of fiber optic theory. The course also induces an introduction to fiber optics, radio wave propagation and antenna theory. Soldering skills are reinforced by building an AM/FM radio. Upon successful completion of this course, students should be able to exhibit basic knowledge and skills in communication and fiber optic theory and possess an understanding of the operation of the transmitter and receiver circuitry.

AV122 Wiring I
4.0 credit hours/30 lecture hours/20 lab hours
Course will introduce students to basic wiring concepts. Covered will be wiring diagrams, types of connectors, installation tools and common materials, as well as installation procedures and techniques. Students will fabricate a basic wiring harness. Course includes the study of Avionics installation practices, with the main emphasis on wiring techniques using a wide range of specialized crimpers and use of installation manuals. Aircraft systems, including batteries, electrical power generation, and aircraft data buses, are introduced. Also discussed are the rules and regulations of the aviation industry, including Federal Aviation regulations, Air Transport Association codes, manufacturer’s manuals, and industry documentation requirements. Upon successful completion of this course, students should have basic understanding of wiring concepts, know the power producing systems of aircraft, and have basic knowledge of documents and manuals in the aviation industry.

AV123 Wiring II
6.0 credit hours/35 lecture hours/70 lab hours
Course builds on the basic wiring concepts presented in Wiring I. Advanced install practices and techniques as well as detailed workmanship criteria are presented. Very detailed lab projects include the building of a complete wiring harness for multiple units utilizing a complex schematic. Course also includes instruction on manual usage, component installation manuals, aircraft wiring diagrams, plans and preparation of complex wiring projects, continuity and power-on checks, troubleshooting, and documentation requirements. Upon completion of this course, students should be able to construct a complex wire harness build-up from initial planning to final completion of documentation.

AV124 Communication and Navigation Systems
9.0 credit hours/40 lecture hours/100 lab hours
The course includes material covering VHF, HF, and SatCom forms of communication and aviation navigation systems to include the ILS system components, VOR, and GPS. Also presented in the class will be an overview of various cockpit display systems and enhanced vision systems to include Synthetic Vision systems. Lab exercises will simulate real world shop repair experience by requiring students to evaluate, troubleshoot, and identify equipment failure to the component level utilizing schematics and industry standard test equipment and procedures on actual aircraft avionic equipment. Upon completion of this course the student should be able to demonstrate a basic understanding of the various communication and navigation systems presented in class at both the theoretical and application level as well as practically displaying skills utilizing the necessary resources to troubleshoot aviation electronic equipment to the component level.

AV125 Gyroscopes and Autopilot Systems
6.0 credit hours/35 lecture hours/50 lab hours
Course will include the study of basic theory of flight, flight controls, gyroscopes and gyroscopic systems, INS/IRS, AHRS, and FMS utilized in modern aircraft Flight Director/Autopilot systems. Time will also be spent discussing RVSM principles and system concepts and requirements including the ADC and pitot/static system. Upon successful completion of this course students should be able to explain the fundamental theory of flight and aerodynamics related to lift and flight control. The student should also possess a basic knowledge of the various motion/position sensing and command/control systems studied and be able to describe and explain the interconnection between the various aircraft systems comprising the modern aircraft autopilot to include the different modes of autopilot system operation available to the pilot.

AV126 Pulse Microwave Systems
9.0 credit hours/40 lecture hours/100 lab hours
Course includes the study of basic microwave principles and theory as a basis for understanding radar and microwave devices and systems. Specific aircraft systems covered to include Transponders, DME, TCAS I and II, ADS-B/Next Gen systems, WX Radar, and TAWS/EGPWS. Lab exercises will simulate real world shop repair experience by requiring students to evaluate, troubleshoot, and identify equipment failure to the component level utilizing schematics and industry standard test equipment and procedures on actual aircraft equipment. Upon course completion the student should be able to display a fundamental understanding of the theory, operation, and practical usage of the various systems studied and their relationship to safe flight in aviation. Additionally, the student should display practical skills utilizing the necessary resources to troubleshoot aviation electronic equipment to the component level.
EL121 DC Electronics
5.0 credit hours/40 lecture hours/20 lab hours
This course is an introduction to basic DC electronics. Students are introduced to the concepts of voltage, current, and resistance, and to components including conductors, semiconductors, insulators, resistors, insulators, and capacitors, along with their characteristics in circuits. The course also covers the application of these concepts and components in series, parallel, and series-parallel circuits. Upon completion of this class, students should understand the concepts of voltage, current, and resistance, various DC circuit components, and how these components react in series, parallel, and series-parallel circuits.

EL122 AC Electronics
7.0 credit hours/50 lecture hours/40 lab hours
This course is an introduction to basic AC electronics. Students are introduced to the concepts of voltage, current, and resistance, and to components including conductors, semiconductors, insulators, resistors, insulators, and capacitors, along with their characteristics in AC circuits. The course also covers the application of these concepts and components in series, parallel, and series-parallel circuits. Students are also introduced to a digital multimeter and an oscilloscope. Upon completion of this class, students should understand the concepts of voltage, current, and resistance, various circuit components, and how these components react in series, parallel, and series-parallel circuits.

EL123 Solid State Electronics
6.0 credit hours/40 lecture hours/40 lab hours
This course is a study of amplifiers, operational amplifiers, transistors, capacitors, and oscillators. The course includes decibel conversions, gain calculations, amplifier construction, transistor configuration, as well as signal injection. Students will troubleshoot solid state electronic equipment utilizing common test equipment. Upon successful completion of this course, students should be able to describe the basic concepts of solid state theory and how to troubleshoot solid state electronics using common test equipment.

EL124 Digital Electronics
6.0 credit hours/40 lecture hours/40 lab hours
This course consists of instruction in troubleshooting techniques and how to logically approach problems using extensive practice in interpreting schematic diagrams and lab work. The course includes troubleshooting of small circuits using standard test equipment using a logical approach to problem solving. Voltage regulators and power supplies are introduced to the students. Upon successful completion of this course, students should be able to describe the principles of troubleshooting electrical circuits and be able to apply this knowledge to various circuits.

EL126 Troubleshooting Techniques
6.0 credit hours/40 lecture hours/40 lab hours
This course consists of instruction in troubleshooting techniques and how to logically approach problems using extensive practice in interpreting schematic diagrams and lab work. The course includes troubleshooting of small circuits using standard test equipment using a logical approach to problem solving. Voltage regulators and power supplies are introduced to the students. Upon successful completion of this course, students should be able to describe the principles of troubleshooting electrical circuits and be able to apply this knowledge to various circuits.

ENG118 Business Writing
4.5 credit hours/35 lecture hours/20 lab hours
The emphasis of this course is to prepare students to apply the writing process to the documents and situations students will encounter in the workplace. Upon completion of this course students should be able to prepare well-constructed business correspondence, reports, proposals, instructions, presentations, contracts specific to the requirements of the program, and elements of research, email, and use of technology for visual presentations.

MTH118 Applied Mathematics
4.5 credit hours/35 lecture hours/20 lab hours
This course stresses basic mathematical concepts needed for understanding of electronics. Topics include: addition, subtraction, multiplication, division, fractions, decimals, exponents, percentages, signed numbers, as well as simple algebra and introductory trigonometry. Students will complete a series of worksheets designed to stress not only the mathematical concept desired, but how the concept applies to electronics. Upon completion of this course, students should be able to describe the fundamental behaviors of matter and energy and to apply their knowledge to various circuits.

PHY118 Physical Science
4.5 credit hours/35 lecture hours/20 lab hours
This course stresses the fundamental behaviors of energy and matter. Topics to be discussed include phases of matter, force and motion, work, simple machines, conservation and transformation of energy, heat, waves, sound, light and magnetism. Upon completion of this course, students should be able to discuss the fundamental behaviors of matter and energy and to apply their knowledge to the workplace and real life situations.

SOC118 Human/Customer Relations
4.5 credit hours/35 lecture hours/20 lab hours
This class focuses on understanding today’s society and customer relations concepts in the development of a customer service culture. Topics include basic customer relations concepts, verbal and non-verbal communication skills, effective listening techniques, problem solving and the aspects of today’s society that create difficult customers, telephone and Internet techniques, communication do's and don'ts, and best ideas and techniques. Upon completion of this course, students should be able to demonstrate proper customer relations concepts and be able to solve various customer related problems.

Please see current academic catalog for course prerequisite information