Florida Department of Education
Curriculum Framework

The standards and/or benchmarks for this program were updated for the 2026-27 academic year.

Program Title: **Avionics Systems Technician**
Program Type: **Career Preparatory**
Career Cluster: **Transportation, Distribution and Logistics**

Career Certificate Program		
Program Number	T400310	
CIP Number	0647060905	
Grade Level	30, 31	
Program Length	1200 hours	
Teacher Certification	Refer to the **Program Structure** section	
CTSO	SkillsUSA	
SOC Codes (all applicable)	For program SOC codes, please see the Program and Course Tables section of the CTE Program Resources page linked below.	
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml	
Basic Skills Level	Computation (Mathematics): 10	Communications (Reading and Language Arts): 10

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Transportation, Distribution and Logistics career cluster.

The purpose of this program is to prepare students for employment as avionics installation and repair technicians.

The course content includes, but is not limited to, troubleshooting, repair and installation of airborne radio communications, radio navigation and radar equipment systems in accordance with regulatory and industry standards. Also included is instruction in basics of AM and FM transmitters and receivers and avionics equipment. Skills preparation for passing licensing/certification tests required by industry forms an integral part of the curriculum.

The course content should also include training in communication, leadership, human relations and employability skills; and safe, efficient work practices.

This program focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the Avionics industry; planning, management, finance, technical and product skills, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of six occupational completion points.

This program is comprised of courses which have been assigned course numbers in the SCNS (Statewide Course Numbering System) in accordance with Section 1007.24 (1), F.S. Career and Technical credit shall be awarded to the student on a transcript in accordance with Section 1001.44 (3)(b), F.S.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the postsecondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length
A	AVS0680	Basic Electronics Wiring Installer/Technician	AVIONICS @7 7G ELECTRONIC @7 7G	150 hours
B	AVS0681	Electrical Systems Technician		150 hours
C	AVS0682	Aircraft Circuits Technician		150 hours
D	AVS0683	Aircraft Electronics Technician		150 hours
E	AVS0684	Avionics Installer/Technician		300 hours
F	AVS0685	Advanced Avionics Installer/Technician		300 hours

National Standards

Programs identified as having Industry or National Standards have been crosswalked with the corresponding standards and/or benchmarks. Industry or National Standards for the Avionics Systems Technician program can be found using the following link: www.faa.gov/ and www.eta-i.org/

Florida's Career Readiness Skills for CTE Programs

Employability Skills	
01.0	Apply academic skills to workplace scenarios.
01.01	Use reading skills.
01.02	Use writing skills.
01.03	Use mathematical strategies and procedures.
01.04	Use scientific principles and procedures.
02.0	Design a solution to an industry problem.
02.01	Use critical thinking.
02.02	Use creativity.
02.03	Make sound decisions.
02.04	Solve problems.
02.05	Reason.
02.06	Plan and organize.
03.0	Manage resources within an industry project
03.01	Manage time.
03.02	Manage money or resources.
03.03	Manage materials.
03.04	Manage personnel.
04.0	Oversee the subcomponents, operations and output of a technical or organizational system.
04.01	Manage systems.
04.02	Monitor systems.
04.03	Improve systems.
05.0	Use information for decision making.
05.01	Locate information.
05.02	Organize information.
05.03	Use information.

	05.04 Analyze information.
	05.05 Communicate information.
06.0	Apply relevant technology to workplace scenarios to aid productivity.
	06.01 Use technology.
07.0	Interpret and express interpersonal communication.
	07.01 Communicate verbally.
	07.02 Listen actively.
	07.03 Comprehend written material.
	07.04 Convey information in writing.
	07.05 Communicate nonverbally.
	07.06 Interpret nonverbal communication.
08.0	Interact with others to accomplish workplace goals.
	08.01 Collaborate with others in a team.
	08.02 Respond to customer needs.
	08.03 Exercise leadership.
	08.04 Negotiate to resolve conflict.
	08.05 Respect others.
09.0	Manage personal behavior to maximize productivity and professional growth.
	09.01 Demonstrate responsibility and self-discipline.
	09.02 Adapt and show flexibility.
	09.03 Work independently.
	09.04 Demonstrate a willingness to learn.
	09.05 Demonstrate integrity.
	09.06 Demonstrate professionalism.
	09.07 Take initiative.
	09.08 Display positive attitude.
	09.09 Take responsibility for professional growth.

Job Attainment	
10.0	Find, assess and apply to job opportunities.
10.01	Identify online job posts relevant to his or her career aspirations.
10.02	Compare and contrast the job posts' required qualifications, job duties, compensation, benefits and employers.
10.03	Define what information, documentation and writing prompts are required for the positions.
11.0	Communicate personal competence, character and fit for a job opportunity.
11.01	Develop a resume.
11.02	Write a cover letter.
11.03	Curate a professional portfolio that includes work products.
11.04	Prepare for and experience a mock job interview.
12.0	Cultivate and leverage relationships to professionally advance.
12.01	Request a signed reference letter, letter of recommendation and/or an online skill/professionalism endorsement.
12.02	Develop a plan to cultivate a professional digital footprint.
12.03	Develop a networking plan for a specific industry of interest.

Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate an understanding of workplace safety practices.
02.0 Demonstrate proficiency in the fundamentals of aviation maintenance technology.
03.0 Demonstrate skills in technical communications.
04.0 Demonstrate proficiency in basic aircraft wiring and PCB practices.
05.0 Demonstrate proficiency in basic direct current (DC) circuits.
06.0 Demonstrate proficiency in advanced direct current (DC) circuits.
07.0 Demonstrate proficiency in aircraft direct current (DC) power systems.
08.0 Demonstrate proficiency in alternating current (AC) circuits.
09.0 Demonstrate proficiency in advanced alternating current (AC) circuits.
10.0 Demonstrate proficiency in alternating current (AC) circuit components.
11.0 Demonstrate proficiency in aircraft alternating current (AC) power systems.
12.0 Demonstrate proficiency with aircraft drawings.
13.0 Demonstrate proficiency in solid state devices.
14.0 Demonstrate proficiency in analog circuits.
15.0 Demonstrate an understanding of basic avionics corrosion.
16.0 Demonstrate proficiency in aircraft aerodynamic fundamentals.
17.0 Demonstrate proficiency in Unmanned Aerial Systems Foundations.
18.0 Demonstrate knowledge in Unmanned Aerial Vehicle Operations.
19.0 Demonstrate proficiency in digital circuits.
20.0 Demonstrate proficiency in fundamental microprocessors.
21.0 Demonstrate appropriate communication skills.
22.0 Demonstrate employability skills.
23.0 Demonstrate an understanding of entrepreneurship.
24.0 Demonstrate knowledge of basic avionics systems.
25.0 Demonstrate proficiency in installing avionics systems.
26.0 Demonstrate proficiency in structural applications.
27.0 Demonstrate proficiency in avionics radio station regulations and procedures.
28.0 Demonstrate proficiency in AM and FM transmitters.
29.0 Demonstrate proficiency in AM and FM receivers.
30.0 Demonstrate proficiency in AM and FM transceivers.
31.0 Demonstrate proficiency in electromagnetic wave emissions.
32.0 Demonstrate proficiency in line maintenance of airborne communication systems.
33.0 Demonstrate proficiency in line maintenance of aircraft instrument systems.
34.0 Demonstrate proficiency in aircraft data bus systems.
35.0 Demonstrate proficiency in line maintenance of airborne navigation systems and equipment.
36.0 Demonstrate proficiency in primary and secondary radar systems.

37.0 Demonstrate proficiency with in-flight entertainment systems.
38.0 Demonstrate proficiency with engine and airframe monitoring systems.
39.0 Demonstrate proficiency with pitot-static systems.
40.0 Demonstrate proficiency with aircraft safety systems.

Florida Department of Education
Student Performance Standards

Program Title: **Avionics Systems Technician**
Career Certificate Program Number: **T400310**

Course Description: This course introduces students to the fundamentals of aviation maintenance, technical communication skills, basic aircraft wiring, PCB practices, basic and advanced DC circuits and power systems. It emphasizes troubleshooting techniques and it brings elements that help to develop fine motor skills. This course defines techniques, requirements and expectations for those seeking to enter the job market as employees or small business owners.

Course Number: AVS0680 **Occupational Completion Point: A** **Basic Electronics Wiring Installer/Technician – 150 Hours**	
01.0	Demonstrate an understanding of workplace safety practices. The student will be able to:
01.01	Use Safety Data Sheets (SDS) information to determine the use, safety precautions, and disposition of chemicals used in avionics applications.
01.02	Identify health-related problems, which may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
01.03	Describe flight line safety to include foreign object elimination, situational awareness, aircraft movement precautions, fire classifications, and fire extinguishing.
02.0	Demonstrate proficiency in the fundamentals of aviation maintenance technology. The student will be able to:
02.01	Apply proper Occupational Safety Health Administration (OSHA) safety standards.
02.02	Research and report on a career field that supports aviation maintenance technology
02.03	Identify the parts of an aircraft.
02.04	Describe how avionics systems integrate with aircraft airframe and propulsion systems.
02.05	Research and describe the certifications associated with the avionics maintenance technician.
02.06	Research and report on a type of unmanned aerial vehicle (UAV) or unmanned aerial system (UAS).
03.0	Demonstrate skills in technical communications. The student will be able to:
03.01	Draw and interpret electronic schematics
03.02	Write reports and make oral presentations.
03.03	Maintain test logs.
03.04	Write formal reports of component testing.
03.05	Read and follow written instructions.

	03.06 Answer and ask questions coherently and concisely
	03.07 Read critically by recognizing assumptions and implications and evaluating ideas.
04.0	Demonstrate proficiency in basic aircraft wiring and printed circuit board (PCB) practices. The student will be able to:
	04.01 Explain the theoretical concepts and safety precautions of soldering.
	04.02 Use appropriate hand tools to cut, strip, crimp, splice, solder, and stamp/identify wires and cables to industry standards for aircraft installation.
	04.03 Prepare, use, install, and inspect general purpose connectors.
	04.04 Research and identify the proper AN-MS connectors for use in aircraft electrical systems.
	04.05 Identify and use power tools properly.
	04.06 Demonstrate acceptable PCB soldering techniques.
	04.07 Demonstrate acceptable de-soldering techniques.
	04.08 Demonstrate electrostatic discharge (ESD) safety procedures.
	04.09 Describe the construction of printed circuit boards (PCB's).
	04.10 Demonstrate proficiency in reworking and repairing aircraft wiring and PCB’s.
05.0	Demonstrate proficiency in basic direct current (DC) circuits. The student will be able to:
	05.01 Solve problems in electronic units utilizing metric prefixes.
	05.02 Identify sources of electricity.
	05.03 Define voltage, current, resistance, power, and energy.
	05.04 Adjust and operate power supplies for DC circuits.
	05.05 Describe the types of aircraft DC generation systems.
	05.06 Describe the purpose and operation of aircraft DC current limiters, regulators, and reverse current relays.
	05.07 Apply Ohm's law and power formulas to circuits.
	05.08 Read and interpret color codes and symbols to identify electrical components and values.
	05.09 Measure properties of a DC circuit using an analog volt-ohm (VOM) meter.
	05.10 Measure properties of a DC circuit using a digital multi-meter (DMM).
	05.11 Measure properties of a DC circuit using an oscilloscope.
	05.12 Compute conductance and compute and measure resistance of conductors and insulators.
	05.13 Apply Ohm's law to series circuits.

	05.14 Analyze and troubleshoot series circuits.
	05.15 Apply Ohm's law to parallel circuits.
	05.16 Analyze and troubleshoot parallel circuits.
06.0	Demonstrate proficiency in advanced direct current (DC) circuits. The student will be able to:
	06.01 Solve algebraic problems to include exponentials to DC.
	06.02 Relate electricity to the nature of matter.
	06.03 Apply Ohm's law to series-parallel and parallel-series circuits.
	06.04 Troubleshoot and verify the operation of series-parallel, parallel-series, and bridge circuits.
	06.05 Identify, define and verify voltage divider circuits (loaded and unloaded).
	06.06 Analyze and troubleshoot voltage divider circuits (loaded and unloaded).
	06.07 Describe magnetic properties of circuits and devices.
	06.08 Determine the physical and electrical characteristics of capacitors and inductors.
	06.09 Define resistor-capacitor (R-C) and resistor-inductor (R-L) time constants.
07.0	Demonstrate proficiency in aircraft direct current (DC) power systems. The student will be able to:
	07.01 Identify the types and construction of aircraft batteries.
	07.02 Define battery shop safety features and precautions when servicing various types of aircraft batteries.
	07.03 Explain the process of servicing lead-acid and nickel-cadmium batteries.

Course Description: Students in the Electrical Systems Technician course will learn basic and advanced AC circuitry, components, aircraft AC power systems, and aircraft drawings.

Course Number: AVS0681 Occupational Completion Point: B Electrical Systems Technician – 150 Hours	
08.0	Demonstrate proficiency in alternating current (AC) circuits. The student will be able to:
	08.01 Solve basic trigonometric problem as applicable to electronics.
	08.02 Measure the properties of AC circuits using multi-meters.
	08.03 Measure the properties of an AC circuit using an oscilloscope.
	08.04 Identify the sources of AC electricity.

	08.05 Use a function generator to inject signals into an AC circuit.
	08.06 Define frequency, cycle, Hertz, wavelength, sine wave, phase angle, and period.
	08.07 Calculate peak-to-peak, average, and RMS values of an AC signal.
	08.08 Identify sine waves, square waves, saw-tooth waves, and ramp waveforms.
	08.09 Use Ohm's law to determine resistance in an AC circuit.
	08.10 Define, analyze and troubleshoot the characteristics of AC capacitive circuits.
	08.11 Define, analyze and troubleshoot the characteristics of AC inductive circuits.
09.0	Demonstrate proficiency in advanced alternating current (AC) circuits. The student will be able to:
	09.01 Define characteristics of resistive, Inductive and Capacitive (RLC) circuits (series, parallel and complex).
	09.02 Define the characteristics of series and parallel resonant circuits.
	09.03 Analyze and troubleshoot R-C, R-L, and RLC circuits.
	09.04 Define the characteristics of frequency selective filter circuits.
	09.05 Analyze and troubleshoot frequency selective filter circuits.
	09.06 Define the characteristics of poly-phase circuits.
10.0	Demonstrate proficiency in alternating current (AC) circuit components. The student will be able to:
	10.01 Define and apply the principles of transformers to AC circuits.
	10.02 Calculate transformer primary and secondary voltage, turn ratio, current, and power.
	10.03 Analyze and troubleshoot step-up, step-down, and auto transformers.
	10.04 Describe the characteristics and operation of relays and switches.
	10.05 Analyze and troubleshoot relays and switches.
	10.06 Define basic AC generator theory and operation.
	10.07 Define basic AC motor theory and operation.
	10.08 Adjust and operate power supplies for AC circuits.
	10.09 Analyze and measure power in AC circuits.
11.0	Demonstrate proficiency in aircraft alternating current (AC) power systems. The student will be able to:
	11.01 Describe the types and operation of aircraft AC generation systems.
	11.02 Describe the operation of basic aircraft DC and AC power distribution systems.

	11.03 Describe the operation of aircraft multi-engine power distribution systems.
12.0	Demonstrate proficiency with aircraft drawings. The student will be able to:
	12.01 Identify and define the symbols, lines, and markings on aircraft flowcharts, drawings and diagrams.
	12.02 Read and interpret aircraft drawings and blueprints.
	12.03 Prepare sketches of aircraft repairs and alterations.
	12.04 Use of charts and graphs.
	12.05 Describe the types of CAD systems and demonstrate the basic functions of a CAD program.

Course Description: Students in the Analog Circuits Technician course will learn solid state devices, analog circuits, basic avionics corrosion, aircraft aerodynamics, foundations of Unmanned Aerial Systems, and Unmanned Aerial Systems operations.

Course Number: AVS0682 Occupational Completion Point: C Analog Circuits Technician – 150 Hours	
13.0	Demonstrate proficiency in solid state devices. The student will be able to:
	13.01 Identify and define properties of semiconductor materials.
	13.02 Identify and define operating characteristics and applications of junction diodes.
	13.03 Identify and define operating characteristics and applications of special diodes.
	13.04 Analyze and troubleshoot diode circuits.
	13.05 Identify and define operating characteristics and applications of bipolar transistors,
	13.06 Identify and define operating characteristics and applications of field effect transistors.
	13.07 Identify and define operating characteristics and applications of single-stage amplifiers.
	13.08 Analyze and troubleshoot single-stage amplifiers.
	13.09 Analyze and troubleshoot thyristor circuitry.
	13.10 Set up and operate DVM for solid-state devices.
	13.11 Set up and operate power supplies for solid-state devices.
	13.12 Set up and operate oscilloscopes for solid-state devices.
	13.13 Set up and operate function generators for solid-state devices.
	13.14 Demonstrate transistor testing techniques.

14.0	Demonstrate proficiency in analog circuits. The student will be able to:
14.01	Identify and define operational characteristics and applications of multistage amplifiers.
14.02	Analyze and troubleshoot multistage amplifiers.
14.03	Identify and define operating characteristics and applications of linear integrated circuits.
14.04	Identify and define operating characteristics and applications of basic power supplies and filters.
14.05	Analyze and troubleshoot differentiator and integrator circuits.
14.06	Identify and define operating characteristics and applications of differential and operational amplifiers.
14.07	Analyze and troubleshoot differential and operational amplifier circuits.
14.08	Identify and define operating characteristics of audio power amplifiers.
14.09	Analyze and troubleshoot audio power amplifiers.
14.10	Identify and define operating characteristics and applications of power supply regulator circuits.
14.11	Analyze and troubleshoot power supply regulator circuits.
14.12	Identify and define operating characteristics and applications of active filters.
14.13	Analyze and troubleshoot active filter circuits.
14.14	Identify and define operating characteristics and applications of sinusoidal and non-sinusoidal oscillator circuits.
14.15	Analyze and troubleshoot oscillator circuits.
14.16	Identify and define operating characteristics and applications of cathode ray tubes.
14.17	Identify and define operating characteristics and applications of optoelectronic devices.
14.18	Define the operating characteristics of analog-type servo motors.
14.19	Use basic electronics test equipment to measure and analyze analog circuits.
15.0	Demonstrate an understanding of basic avionics corrosion. The student will be able to:
15.01	Understand molecular action because of temperature extremes, chemical reaction, and moisture content.
15.02	Describe the types of corrosion and explain their effects on avionics equipment.
15.03	Describe the preventative processes to reduce or eliminate avionics corrosion.
16.0	Demonstrate proficiency in aircraft aerodynamic fundamentals. The student will be able to:
16.01	Identify and explain the effects of aerodynamic forces on aircraft structures and components
16.02	Identify and describe the purpose aircraft flight controls and aircraft how they affect flight operations.

	16.03 Define the concept of weight and balance in aircraft to include arms, weights, moments, the Law of Lever, and the center of gravity.
	16.04 Describe the effects of installing equipment, modifying equipment, modifying airframe structures, and repositioning equipment on weight and balance.
17.0	Demonstrate proficiency in Unmanned Aerial Systems Foundations. The students will be able to:
	17.01 Compare and contrast the differences between UAS and UAV components, elements, and systems.
	17.02 Identify UAV structures, fabrication methods, and components.
	17.03 Describe the types of UAV aerodynamics and flight characteristics
	17.04 Define the certifications and requirements required of UAS operators and technicians
	17.05 Explain cost and risk factors associated with and alleviated by the usage of Unmanned Aerial System.
18.0	Demonstrate knowledge in Unmanned Aerial Vehicle Operations. The students will able to:
	18.01 Demonstrate an understanding of the levels of direct and autonomous control currently in use for guiding, navigating, and controlling a UAV.
	18.02 Discriminate the various types of UAV payloads, power, and communications systems.
	18.03 Understand and apply the regulatory requirements outlined by the FAA (Federal Aviation Administration) in the ownership, use, and operation of an Unmanned Aerial Vehicle.

Course Description: Students in the Aircraft Electronics Technician course will learn digital circuitry, microprocessors, workplace safety skills, communication skills, employability skills, entrepreneurship, and the basics of avionic systems**.**

Course Number: AVS0683 **Occupational Completion Point: D** **Aircraft Electronics Technician – 150 Hours**	
19.0	Demonstrate proficiency in digital circuits. The student will be able to:
	19.01 Define and apply numbering systems to codes and arithmetic operations.
	19.02 Analyze and minimize logic circuits using Boolean operations.
	19.03 Set up and operate logic probes for digital circuits.
	19.04 Set up and operate power supplies for digital circuits and solve power distribution and noise problems.
	19.05 Set up and operate pulsers for digital circuits.
	19.06 Set up and operate oscilloscopes for digital circuits.
	19.07 Set up and operate logic analyzers for digital circuits.
	19.08 Set up and operate pulse generators for digital circuits.

19.09	Identify types of logic gates and their truth tables.
19.10	Verify combinational logic circuits made up of integrated circuits.
19.11	Troubleshoot logic circuits.
19.12	Analyze and troubleshoot different types of flip-flops and their truth tables.
19.13	Identify, define and measure characteristics of integrated circuit (IC) logic families.
19.14	Identify and troubleshoot different types of registers and counters.
19.15	Analyze and troubleshoot clock and timing circuits.
19.16	Identify and troubleshoot different types of arithmetic-logic circuits.
19.17	Identify and trouble different types of encoding and decoding devices.
19.18	Identify and troubleshoot different types of multiplexer and de-multiplexer circuits.
19.19	Identify types of memory circuits.
19.20	Relate the uses of digital-to-analog and analog-to-digital conversions.
19.21	Troubleshoot digital-to-analog and analog-to-digital circuits.
19.22	Identify and troubleshoot different types of digital displays.
19.23	Demonstrate the operating characteristics of digital-type servo and stepper motors
20.0	Demonstrate proficiency in fundamental microprocessors. The student will be able to:
20.01	Identify central processing unit (CPU) building blocks and their uses (architecture).
20.02	Analyze bus concepts.
20.03	Analyze various memory schemes.
20.04	Verify memory device operation.
20.05	Set up and operate oscilloscopes for microprocessor systems.
20.06	Identify types of input and output devices and peripherals.
20.07	Interface input and output ports to peripherals.
20.08	Analyze and troubleshoot input and output ports.
20.09	Develop a simple microprocessor and/or microcontroller application program.
21.0	Demonstrate appropriate communication skills. The student will be able to:
21.01	Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.

	21.02 Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
	21.03 Demonstrate appropriate telephone/communication skills.
	21.04 Make equipment failure reports.
	21.05 Specify and requisition simple electronic components.
	21.06 Compose technical letters and memoranda.
	21.07 Draft preventive maintenance procedures.
	21.08 Use an analysis of technical data to form conclusions and recommend changes.
22.0	Demonstrate employability skills. The student will be able to:
	22.01 Discuss elements of job search.
	22.02 Develop sources of information about a job.
	22.03 Identify documents that may be required when applying for a job.
	22.04 Complete a job application correctly.
	22.05 Demonstrate competence in job interview techniques.
	22.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor, or other persons.
	22.07 Identify acceptable work habits.
	22.08 Demonstrate knowledge of how to make appropriate job changes.
	22.09 Demonstrate acceptable employee health habits.
	22.10 Demonstrate knowledge of the Federal Law as recorded in (29 CFR–1910.1200).
	22.11 Write a proper resume.
23.0	Demonstrate an understanding of entrepreneurship. The student will be able to:
	23.01 Define entrepreneurship.
	23.02 Describe the importance of entrepreneurship to the American economy.
	23.03 List the advantages and disadvantages of business ownership.
	23.04 Identify the risks involved in ownership of a business.
	23.05 Identify the necessary personal characteristics of an entrepreneur.
	23.06 Identify the business skills needed to operate a small business efficiently and effectively.
	23.07 Define various corporate structures. (e.g., S-Corp, C-Corp, Sole Proprietor, LLC, and ESOP).

24.0	Demonstrate knowledge of basic avionics systems. The student will be able to:
	24.01 Identify and describe aircraft communications systems.
	24.02 Identify and describe aircraft short-range navigation systems.
	24.03 Identify and describe aircraft long-range navigation systems
	24.04 Identify the types of flight instruments and state their purpose.

Course Description: Students in the Avionics Installer/Technician course will learn avionic systems installation, structural applications, radio station regulation, AM and FM transmitter/receiver/transceiver principles, electromagnetic wave emission, and airborne communication systems.

Course Number: AVS0684 Occupational Completion Point: E Avionics Installer/Technician – 300 Hours	
25.0	Demonstrate proficiency in installing avionics systems. The student will be able to:
	25.01 Prepare an avionics installation plan
	25.02 Design wiring interconnection for Comm, Nav, GPS, Traffic Avoidance, Audio Integrating etc.
	25.03 Install circuit protective devices, switches, lamps, and relays.
	25.04 Install aircraft antennas.
	25.05 Fabricate wiring harnesses
	25.06 Perform a mechanical avionics installation
	25.07 Perform an electrical installation
	25.08 Perform an original manufacturers equipment (OEM) installation
	25.09 Determine antenna placement with regards to noise interference
26.0	Demonstrate proficiency in structural applications. The student will be able to:
	26.01 Select, install, and remove conventional and special fasteners
	26.02 Layout, form, inspect, modify, and repair metal structures.
	26.03 Fabricate, modify, and repair composite structures
27.0	Demonstrate proficiency in avionics radio station regulations and procedures. The student will be able to:
	27.01 Define repair station related regulatory and standardization agencies and their purposes.
	27.02 Define repair station certification requirements.

	27.03 Define requirements for certification of radio repair technicians.
	27.04 Practice proper station operation procedures.
	27.05 Prepare repair station reports and documentation.
28.0	Demonstrate proficiency in AM and FM transmitters. The student will be able to:
	28.01 Describe FCC rules pertaining to AM and FM transmitter maintenance and operation.
	28.02 Define Double Sideband (DSB), Single Sideband (SSB) and FM modulation.
	28.03 Analyze and troubleshoot AM and FM Radio Frequency (RF) oscillator circuits.
	28.04 Analyze and troubleshoot buffer and multiplier circuits.
	28.05 Analyze and troubleshoot RF power amplifier circuits.
	28.06 Analyze and troubleshoot AM and FM modulation circuits.
	28.07 Analyze and troubleshoot microphone circuits.
	28.08 Analyze and troubleshoot balanced modulators and SSB filter circuits.
	28.09 Analyze and troubleshoot AM and FM power supply circuits.
	28.10 Make power, frequency and modulation measurements of AM and FM transmitters.
	28.11 Align and troubleshoot AM and FM transmitters.
29.0	Demonstrate proficiency in AM and FM receivers. The student will be able to:
	29.01 Analyze and troubleshoot receiver audio voltage and power amplifiers and speaker/headphone circuits.
	29.02 Analyze and troubleshoot AM and FM detector circuits.
	29.03 Analyze and troubleshoot AM Intermediate Frequency (IF) amplifier circuits.
	29.04 Analyze and troubleshoot FM IF amplifier and limited circuits.
	29.05 Analyze and troubleshoot receiver oscillator and automatic frequency control (AFC) circuits.
	29.06 Analyze and troubleshoot RF mixer/heterodyne circuits.
	29.07 Analyze and troubleshoot receiver RF amplifier circuits.
	29.08 Analyze and troubleshoot automatic voltage control/automatic gain control (AVC/AGC) circuits.
	29.09 Analyze and troubleshoot receiver power supplies.
	29.10 Align and troubleshoot AM and FM receivers.
30.0	Demonstrate proficiency in AM and FM transceivers. The student will be able to:

	30.01 Analyze and troubleshoot transceiver control, metering and switching circuits.
	30.02 Analyze and troubleshoot transceiver frequency synthesizers and phase locked loop circuits.
	30.03 Analyze and troubleshoot squelch circuits.
	30.04 Align and troubleshoot transceivers.
31.0	Demonstrate proficiency in electromagnetic wave emissions. The student will be able to:
	31.01 Define the radio frequency spectrum.
	31.02 Define types and classification of RF emissions.
	31.03 Define the characteristics of radio waves.
	31.04 Define radio wave propagation method.
	31.05 Define the basic types of antennas.
	31.06 Draw the voltage and current relationships and radiation patterns for the basic types of antennas.
	31.07 Define methods for antenna tuning, gain and directivity.
	31.08 Define transmission lines in terms of electrical and physical properties.
	31.09 Define standing waves, cause and effect, and measure standing wave ratios.
	31.10 Define tuned transmission lines and describe applications.
	31.11 Construct transmission lines.
	31.12 Define waveguides, resonant cavities and their applications.
32.0	Demonstrate proficiency in line maintenance of airborne communication systems. The student will be able to:
	32.01 Identify regulatory agencies affecting aircraft electronic systems
	32.02 Analyze and troubleshoot Aircraft Audio Integration Systems
	32.03 Analyze and troubleshoot VHF/HF Communication Systems.
	32.04 Analyze and troubleshoot Satellite Communication Systems
	32.05 Describe the operation of a selective calling system.
	32.06 Define the operation and the types of data managed by the Aircraft Communication Automatic Reporting System (ACARS).

Course Description: Students in the Advanced Avionics Installer/Technician course will learn aircraft instrument systems, data bus systems, navigation systems, primary and secondary radar systems, in-flight entertainment systems, engine and airframe monitoring systems, pitot-static systems, and aircraft safety systems.

Course Number: AVS0685 Occupational Completion Point: F Advanced Avionics Installer/Technician – 300 Hours	
33.0	Demonstrate proficiency in line maintenance of aircraft instrument systems. The student will be able to:
33.01	Identify and define the operation of basic flight instruments.
33.02	Identify and define the operation of electronic flight instruments.
33.03	Identify and define the operation of navigation instruments to include HSI, RMI, VOR.
33.04	Identify, and define the operation of compass systems.
34.0	Demonstrate proficiency in aircraft data bus systems. The student will be able to:
34.01	Define the operation of an aircraft digital data communications system
34.02	Compare and contrast the differences between ARINC data bus systems used in commercial aircraft.
34.03	Identify data bus systems used in general aviation aircraft and explain their operation.
34.04	Troubleshoot an aircraft data bus system.
35.0	Demonstrate proficiency in line maintenance of airborne navigation systems and equipment. The student will be able to:
35.01	Use navigation principles to understand dead-reckoning, earth coordinate system, great circle navigation, short-range navigation and long-range navigation.
35.02	Understand the operating principles of Global Position Satellite (GPS) System.
35.03	Distinguish the operation principles of a VHF Omni Range (VOR) System.
35.04	Define the operating characteristics of a Distance Measuring Equipment (DME) System.
35.05	Explain the purpose and operation of, and the precautions when using, an Automatic Direction Finder (ADF) System.
35.06	Define the elements of an Instrument Landing System (ILS) to include the characteristics of the localizer, glide slope, and marker beacon.
35.07	Explain the operating principles of a Microwave Landing System (MLS).
35.08	Describe the purpose and operation of ADS-B/transponder systems.
35.09	Understand the relationships of various navigation systems to the aircraft flight management system.
35.10	Define the operation of an autopilot, auto-throttle, and auto stabilization system.
36.0	Demonstrate proficiency in primary and secondary radar systems. The student will be able to:
36.01	Explain the theory and operation of the primary radar system.
36.02	Given a primary radar block diagram, explain the relationship between the major components of the system.

	36.03 Describe the operation of a Doppler radar.
	36.04 Secondary (ATC) Radar Transponder.
	36.05 Define the purpose and operation of the altitude encoding function of radar.
	36.06 Define the purpose and operation of the lightning detection function of radar.
	36.07 Describe the operation of a XM Weather System.
	36.08 Analyze and troubleshoot a radar system.
37.0	Demonstrate proficiency with in-flight entertainment systems. The student will be able to:
	37.01 Describe the types of in-flight entertainment systems and compare their operation to each other.
	37.02 Determine installation considerations when installing or upgrading an in-flight entertainment system.
38.0	Demonstrate proficiency with engine and airframe monitoring systems. The student will be able to.
	38.01 Identify and interpret data from various types of displays.
	38.02 Define aircraft built-in test equipment systems.
	38.03 Interpret data from built-in test equipment.
39.0	Demonstrate proficiency with pitot-static systems. The students will be able to:
	39.01 Understand purpose and function of pitot-static systems
	39.02 Perform pitot-static integrity checks
	39.03 Troubleshoot pitot-static systems
40.0	Demonstrate proficiency with aircraft safety systems. The students will be able to:
	40.01 Understand purpose and function of caution, warning and advisory systems
	40.02 Understand the purpose and operation of terminal collision avoidance systems (TCAS)
	40.03 Understand the purpose and operation of ground proximity warning systems (GPWS).
	40.04 Define the purpose and data collected by the aircraft flight data computer and voice recorder.
	40.05 Describe the purpose, operation and testing of the Emergency Locator Transmitter (ELT)
	40.06 Describe the operation of the stall warning and avoidance systems.

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools, and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate, and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Career and Technical Student Organization (CTSO)

CTSOs are co-curricular career and technical student organizations providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered. Other CTSOs not listed in this curriculum framework or recognized by the Florida Department of Education are permissible provided they support student mastery over the standards and benchmarks of this curriculum framework.

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

Basic Skills

In Career Certificate Programs offered for 450 hours or more, in accordance with Rule 6A-10.040, F.A.C., the minimum basic skills grade levels required for postsecondary adult career and technical students to complete this program are: Computation (Mathematics) and Communications (Reading and Language Arts). These grade level numbers correspond to a grade equivalent score obtained on a state designated basic skills examination.

Adult students with disabilities, as defined in Section 1004.02, Florida Statutes, may be exempted from meeting the Basic Skills requirements (Rule 6A-10.040). Students served in exceptional student education (except gifted) as defined in s. 1003.01, F.S., may also be exempted from meeting the Basic Skills requirement. Each school district and Florida College System Institution must adopt a policy addressing procedures for exempting eligible students with disabilities from the Basic Skills requirement as permitted in Section 1004.91, F.S.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Postsecondary students with disabilities must self-identify, present documentation, request accommodations if needed, and develop a plan with their counselor and/or instructors. Accommodations received in postsecondary education may differ from those received in secondary education. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as

instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

Note: postsecondary curriculum and regulated secondary programs cannot be modified.