

BOARD MEETING DATE: September 16, 2025

ITEM NO: VIIB

For informational purposes for the District Board of Trustees.

- 2025-2026 Workforce Development Capitalization Grant submission
- Electrician PSAV program (curriculum frameworks enclosed)

This program will create a career pathway for students completing the Power and Energy program at Madison County High School, as well as provide dual enrollment and post-secondary career training to residents throughout the service district.

2025-26 Workforce Development Capitalization Incentive Grant

Concept Proposal Part 1: Narrative

Type of Proposal (check one box)	☐	9-12 CTE	☒	Dual Enrollment
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Applicant Information

Submitter Information

Complete the following table with applicant and fiscal agent information for this proposal. Information on specific schools included in the application will be included in the Concept Proposal Part 2: Workbook.

Applicant Information

Fiscal Agent: School District or FCS Institution Name
North Florida College
If a charter school is applying separately from a district application, provide Charter District/School Name *
Counties Served by the Institution
Hamilton, Jefferson, Lafayette, Madison, Suwannee, Taylor
*If a charter district is applying for multiple schools, see Part 2 to provide details. If a charter district has school charters in different districts, a separate application must be received for each fiscal agent.

School Districts (9-12 projects) only – Required Charter School Information

- If your district does have charter schools, complete **Attachment 1: Charter Schools Contact Verification Chart**
- If charter schools are included in this concept proposal, complete **Attachment 2: Supplemental Narrative for Charter Schools Contact for Questions** about the Concept Proposal.

Primary Contact Information		Secondary Contact Information	
Name	David Dunkle	Name	Micah Rodgers
Phone	850-973-9440	Phone	850-973-1604
Email	dunkled@nfc.edu	Email	rodgersm@nfc.edu

Estimated Program Completion Date (check one box)

☒	June 30, 2026	☐	June 30, 2027	☐	June 30, 2028
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Funding Summary

Total amount requested for this project	\$487,000
If applicable, targeted industry amount	\$n/a
Previously awarded CAP Grant amount	\$133,800

2025-26 Workforce Development Capitalization Incentive Grant

Executive Summary and Business Case

Provide a brief executive summary of your concept proposal and how funds will be used to expand opportunities for high school students in your region or statewide. (1,000-word limit)

The executive summary must address:

- How programs and the needs in your region were identified (e.g., your Perkins CLNA process, consultation with employers, workforce partners)
- How external workforce partners contributed to the determination of priorities
- Linkages of programs to the targeted industry (if applicable) and total funds requested for each program listed.

Programmatic inventory needs are identified through a variety of different ways. North Florida College's Dean for Workforce and Economic Initiatives sits on the Executive Board for Career Source North Florida the Local Workforce Development Board. As such he works closely with the Executive Director, and they meet regularly to discuss workforce needs in the region. Programs of need are also identified through the Perkins CLNA process. The electrician program was one such program that has appeared through this process. Workforce needs are also identified by talking with different program advisory boards already established at the College and even with the different contractors that come to do work at the College. Having had a welding program recently added to the workforce building on campus, the electrical supply needed to be upgraded, and through discussions with the engineers and contractors, it was apparent that there was a deficit of trained electricians in the area according to them and their workload. In speaking with the average homeowner in the region, getting a trained electrician to the house is next to impossible and almost always results in being put on a waitlist because there is more work than there are electricians.

The proposed program is great for this particular region because the courses that comprise the program provide different avenues of employment for the student and each possible pathway is needed within the region. The first course is for an electrician's helper, which provides an early option for a student to go to work before program completion, providing some degree of training to benefit a prospective employer. From there, there is a residential electrician course, as well as commercial and industrial electrician courses. The industrial course would pair well with the already established Industrial Machinery Maintenance programs established at the College. These programs also touch on some of the concepts embedded in the Electrician program, so the possibility of the two programs working together and sharing resources is a possibility as well as the possibility for students in one program to at some point desire or need to continue training in the other program, thereby producing a pathway for continued education and training.

North Florida College's service district corresponds with Workforce Region 6 which includes: Hamilton, Lafayette, Madison, Suwannee, and Taylor Counties, as well as Jefferson which recently was moved to Workforce Region 5. Electricians in Region 6 show a -.49% job growth according to the 2025-26 Regional Demand Occupations List. This should really come to no surprise considering the recent plant closings in Taylor County. Most occupations in this particular region have taken a hit. That does not necessarily mean they are not needed, but that would account for the negative growth in this region. State demand for the same SOC Code, 47-2111-Electricians, shows a positive .57% job growth and 4701 annual job openings. Nationally, according to the Bureau of Labor Statistics there will be 11% growth in this occupation between 2023 and 2033 (<https://www.bls.gov/ooh/construction-and-extraction/electricians.htm#tab-6> [Accessed August 6, 2026])

2025-26 Workforce Development Capitalization Incentive Grant

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2025-26 Workforce Development Capitalization Incentive Grant

Support for Strategic Plan

Describe how the project will incorporate one or more of the goals included in the State Board of Education's K-20 Strategic Plan, outlined at: <http://www.fldoe.org/policy/state-board-of-edu/strategic-plan.stml>. . (1,000-word limit)

Adding the Electrician Career Certificate program to North Florida College's workforce training inventory is in line with the Goals in the State Board of Education's K-20 Strategic Plan.

Goal 1- Highest Student Achievement-North Florida College (NFC) strives to ensure all students complete their respective programs of study on time whether they are academic or career minded. Consistently, NFC exceeds the FSC system's average completion rate. With this same commitment to excellence, students enrolling in the new Electrician program will be given the same access to services as all other students on campus. NFC has an early alert system that identifies students who are struggling early each semester in order to reach out to them and assist them before they are left behind and at risk of not completing. Also, North Florida College's Quality Enhancement Plan aims to improve the completion rate of First Generation/PELL Recipient/First Time, Full-Time students through intentional educational planning known as Career Compass. To achieve this goal, NFC students will complete a career exploration activity led by the College's Career and Transfer Center staff to support the students' development of an individualized academic plan (Career Compass) with their academic advisors. This plan will help students identify a transfer and/or career goal early in their academic journey at NFC. Additionally, academic and career program faculty will embed a career/transfer exploration activity within a course in each academic degree program. Having programs and plans like this already in place for students beginning the Electrician program will only enhance the completion rates for these students thus addressing this goal.

Goal 2- Seamless Articulation and Maximum Access- Madison County High School has a Power and Energy program for its high school students. Articulation meetings are in place between District and College staff to ensure that students receiving high school credits and certifications from this program are able to articulate those credits and certifications into the new Electrician program at NFC. High school students from the College's six county service district will be invited to attend the new program. The College is a member of the North Florida Pathways Consortium, in which all six school districts are also members, and information regarding this potential new program will be shared at the meeting scheduled for August 29, 2025. A guidance Counselor summit is scheduled to be held on the College's campus September 12, 2025, and again, information regarding this program will be shared with high school counselors in attendance, as well as school and district administrators who usually attend, in order to help ensure, should this application be approved, the program has maximum access to eligible dual enrolled students.

Goal 3- Skilled Workforce and Economic Development- North Florida College prides itself on its workforce training offerings. The College's service district includes six of the 14 counties that comprise the North Central Rural Area of Opportunity. A skilled workforce is needed in order to assist economic development agencies with attracting industry and business to the region. The Electrician program at North Florida College would bring another pathway of training to assist in providing a skilled workforce to existing business but also aiding to attract new business and industry to this area.

2025-26 Workforce Development Capitalization Incentive Grant

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2025-26 Workforce Development Capitalization Incentive Grant

Project Deliverable Schedule

In this section, the proposal should demonstrate that the applicant has a detailed plan for implementation to help ensure the project's success. The applicant must provide a high-level summary of the project milestones, activities required to meet the milestones and the completion date for the milestone.

Notes:

1. Do not alter this table in any form, use the designated space to enter your agency information. If working with multiple sites, enter milestones in chronological order for the project, do not separate by site/district/charter.
2. Upon recommendation for funding, the milestones with specific associated costs will be submitted in response to the Request for Application.

Milestone	Description of Activities to Meet Milestone	Completion date for the milestone
Example 1: Procurement	General contractor will complete – the submittals/approvals/ procurement process. 999 Agency – ABC Location – XYZ Program	11/30/2025
Example 2: Instructor training	Instructors will receive specialized training on new equipment as they prepare to teach this program.	04/30/2026
Example 3: Install laboratory equipment and required software	Delivery of computers, laboratory equipment and classroom supplies.	04/30/2026
Example 4: New or expanded program start date	Begin classes for the first-level courses ABC, ZXY	08/15/2026
General Construction	Lab space will be created through the demolition of two load bearing walls in an existing building. Lab space will be adjacent to an existing classroom.	04/15/2026
Computers	Delivery and setup of 25 student laptops and a laptop cart for student use	05/15/2026
Lab furniture	Delivery of lab furniture for lab to include tables/stools/chairs, tool cabinets	5/15/2026
Lab Equipment	Installation of lab equipment/Instructors will receive specialized training on lab equipment at time of installation	05/30/2026
Materials and supplies	Delivery of materials and supplies for student use	5/30/2026
New program start date	Begin classes for Electrician program	8/20/2026

2025-26 Workforce Development Capitalization Incentive Grant

If needed, insert additional rows above this one

2025-26 Workforce Development Capitalization Incentive Grant

Assurances

Applicants must thoroughly read the assurances to determine whether to submit an application for the grant. If awarded funds, the applicant will become a grantee and must agree to all terms and conditions.

- The agency understands that the grant is a one-time, non-recurring grant to be used to create or expand eligible programs.
- The agency has evaluated the funding sources for purchasing equipment. The amount received from this grant may be combined with other sources, but it must supplement and not supplant.
- Equipment will be purchased, installed and available for use by students by the earlier possible date.
- If fixed capital outlay expenditures are included, the agency confirms that all facilities impacted are owned and operated by the fiscal agent.
- If the fiscal agent is an authorizer for charter schools, the eligible charter schools have been contacted regarding the availability of these funds and have been permitted to participate in the application.
- The agency agrees to comply with all applicable rules for the expenditure of state funds as well as any conditions in the Request for Application upon award.

2025-26 Workforce Development Capitalization Incentive Grant

Attachment 1

Charter Schools Contact Verification Chart

In this table, provide a list of all charter schools chartered within your school district that serve students eligible for enrollment in 9-12 CTE programs. Include the name of the charter school, the name of the charter school representative your agency contacted regarding this funding opportunity, the district representative responsible for communication, and the date of contact.

Charter school name	Charter school representative contacted	District person responsible for communication	Is the charter school seeking CAP Grant funding?	If seeking funding, has the school district included their proposal in the funding packet? If not included, explain why the proposal was not included in the funding packet.	Date of contact
Ex. Atlantic Charter High School	James Wilson	Olivia Jackson	Yes	Yes	07/15/2025
Ex. Gulf Charter High School	James Wilson	Olivia Jackson	Yes	No, the charter school is applying separately.	07/15/2025
Ex. River Charter High School	James Wilson	Olivia Jackson	No	Non-applicable.	07/15/2025
If needed, insert additional rows above this one					

Signature of Superintendent

Date

2025-26 Workforce Development Capitalization Incentive Grant

Attachment 2

Supplemental Narrative for Charter Schools

In the following tables, please provide the charter school name, contact information, program summaries and requested funds. Complete this form for each charter school mentioned in your agency's concept proposal.

Eligible Charter Information

Charter School Name	
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Contact for Questions about the Concept Proposal

Primary Contact Information		Secondary Contact Information	
Name		Name	
Phone		Phone	
Email		Email	

Summary of Programs

School Name	School Address	Program Name	Funds Requested
Example: Atlantic Charter High School	204 Atlantic Blvd. Atlantic Beach, FL 32233	Veterinary Assisting	\$40,000
If needed, insert additional rows above this one			

Funding Summary

Total amount requested for this project	\$
If applicable, targeted industry amount	\$
Previously awarded CAP Grant amount	\$

Florida Department of Education
Curriculum Framework

Program Title: Electrician
Program Type: Career Preparatory
Career Cluster: Architecture and Construction

Career Certificate Program		
Program Number	I460314	
CIP Number	0646030204	
Grade Level	30,31	
Program Length	1500 Hours	
Teacher Certification	Refer to the Program Structure section.	
CTSO	SkillsUSA	
SOC Codes (all applicable)	Please see the CIP to SOC Crosswalk located at the link below.	
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.shtml	
Basic Skills Level	Computations (Mathematics): 9	Communications (Reading and Language Arts): 9

Purpose

The purpose of this program is to prepare students for employment or advanced training in a variety of electrical construction industries.

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 Architecture and Construction 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 Architecture and Construction career cluster. The content includes but is not limited to planning and installing electrical wiring, equipment, or fixtures based on job specifications and local codes.

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 four occupational completion points. The recommended sequence allows students to complete specified portions of a program for employment or to remain for advanced training. A student who completes the applicable competencies at any occupational completion point may either continue with the training program or terminate as an occupational completer.

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 courses 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	BCV0603	Electrician Helper	ELECTRICAL @7 7G IND ENGR 7G TEC ED 1@2 ENG&TEC ED1@2	300 Hours
B	BCV0640	Residential Electrician	ELECTRICAL @7 7G	450 Hours
C	BCV0652	Commercial Electrician		450 Hours
D	BCV0667	Industrial Electrician		300 Hours

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.
2. Apply appropriate academic and technical skills.
3. Attend to personal health and financial well-being.
4. Communicate clearly, effectively and with reason.
5. Consider the environmental, social and economic impacts of decisions.
6. Demonstrate creativity and innovation.
7. Employ valid and reliable research strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
9. Model integrity, ethical leadership and effective management.
10. Plan education and career path aligned to personal goals.
11. Use technology to enhance productivity.
12. Work productively in teams while using cultural/global competence.

Standards

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

- 01.0 Explain the importance of health, safety, environmental stewardship and related regulatory compliance.
- 02.0 Identify, use and maintain the tools and accessories used in the electrical industry.
- 03.0 Demonstrate an understanding of basic Direct-Current (DC) electrical-circuit skills.
- 04.0 Apply mathematics knowledge and skills to electricity.
- 05.0 Demonstrate an understanding of basic electricity.
- 06.0 Read and interpret basic electric codes.
- 07.0 Apply further mathematics knowledge and skills to electricity.
- 08.0 Demonstrate further understanding of electricity.
- 09.0 Demonstrate analytical and trouble shooting skills related to electrical principles.
- 10.0 Demonstrate proficiency in electrical math problems and skills.
- 11.0 Demonstrate an understanding of Alternating Current (AC) circuit skills.
- 12.0 Explain the importance of employability and entrepreneurship skills.
- 13.0 Install residential wiring.
- 14.0 Install residential wiring systems.
- 15.0 Demonstrate proficiency in commercial wiring.
- 16.0 Demonstrate specialized electrical skills.
- 17.0 Demonstrate competency in industrial wiring.
- 18.0 Demonstrate competency in Alternating Current (AC) and Direct Current (DC) motors.
- 19.0 Demonstrate competency in electrical and electronic control circuits and equipment.

**Florida Department of Education
Student Performance Standards**

Program Title: Electrician
Career Certificate Program Number: I460314

Course Number: BCV0603 Occupational Completion Point: A Electrician Helper – 300 Hours	
01.0	Explain the importance of health, safety, environmental stewardship and related regulatory compliance. The student will be able to:
01.01	Understand the role and purpose of the Occupational Safety and Health Administration (OSHA) rules and regulations.
01.02	Clean the work area and maintain it in a safe condition.
01.03	Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments.
01.04	Identify and operate workplace safety electrical devices.
01.05	Identify health related problems that may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
01.06	Explain emergency procedures to follow in response to workplace accidents.
01.07	Create a disaster and/or emergency response plan for specific incidences.
01.08	Explain the importance of CPR (cardiopulmonary resuscitation) and first aid.
01.09	Describe "Right-to- Understand" Law as recorded in (29 CFR.1910.1200).
02.0	Identify, use and maintain the tools and accessories used in the electrical industry. The student will be able to:
02.01	Identify and select tools, equipment and materials to complete a job.
02.02	Drill holes in metal, wood and concrete for electrical installations.
02.03	Determine the layout of electrical devices, complying with local, state and national electric code regulations.
02.04	Install the following, complying with the appropriate local, state or national electric codes: • Conductors and cable • Standard outlets and switch boxes • Cord connections on equipment • Cords, switches, receptacles and dimmers, including a single-pole switched lighting circuit, a three-way switched lighting circuit and a four-way combination circuit

03.0	Demonstrate an understanding of basic Direct-Current (DC) electrical-circuit skills. The student will be able to:
03.01	Define the following terms: voltage, current, resistance and power.
03.02	Measure voltage, amperage and resistance using industry standard electrical measuring devices.
03.03	Analyze and explain series, parallel, and series parallel (combination) circuits.
03.04	Draw each type of circuit and calculate the circuit values.
03.05	Explain and apply Ohm's Law.
03.06	Compute conductance and resistance of conductors.
04.0	Apply mathematics knowledge and skills to electricity. The student will be able to:
04.01	Demonstrate knowledge of arithmetic operations.
04.02	Analyze and apply data and measurements to solve problems and interpret documents.
04.03	Construct charts, tables and graphs using functions and data.
05.0	Demonstrate an understanding of basic electricity. The student will be able to:
05.01	Relate electricity to the nature of matter.
05.02	Describe various ways that electricity is produced.
05.03	Explain the magnetic properties of circuits and devices.
05.04	Explain the principles of electromagnetism.
06.0	Read and interpret basic electric codes. The student will be able to:
06.01	Describe the importance of following the local, state and national electric codes.
06.02	Read and interpret basic electric codes, wiring plans and specifications.
06.03	Identify licensure requirements for electrical occupations.
06.04	Demonstrate knowledge of National Fire Protection Association (NFPA) 70E and how it relates to job safety.
07.0	Apply further mathematics knowledge and skills to electricity. The student will be able to:
07.01	Demonstrate and solve basic algebraic formulas related to electricity.

07.02	Solve basic trigonometric functions related to electrical theory.
07.03	Explain basic Alternating Current (AC) theory and solve related mathematical problems using appropriate test equipment.
07.04	Solve math related problems from measurements on training aids.
08.0	Demonstrate further understanding of electricity. The student will be able to:
08.01	Explain how voltage is produced by chemical, mechanical, thermal, photoelectric and piezo electric means.
09.0	Demonstrate analytical and trouble shooting skills related to electrical principles. The student will be able to:
09.01	Identify conditions and resolutions to overcurrent and ground fault conditions in electrical circuits.
09.02	Discuss the dangers, conditions and resolutions to short circuit and arc fault conditions in electrical circuits.

Course Number: BCV0640
Occupational Completion Point: B
Residential Electrician – 450 Hours

10.0	Demonstrate proficiency in electrical math problems and skills. The student will be able to:
10.01	Calculate wiring costs.
10.02	Calculate voltage drop.
10.03	Determine ampacity correction factors.
10.04	Calculate conduit fill.
10.05	Calculate box fill.
10.06	Calculate range loads.
11.0	Demonstrate an understanding of Alternating Current (AC) circuit skills. The student will be able to:
11.01	Identify the physical and electrical characteristics of capacitors and inductors.
11.02	Demonstrate proficiency in measuring, testing and connecting a transformer.
11.03	Analyze and apply the principles of transformers to AC circuits.
11.04	Identify the properties of an AC signal. (optional)

11.05	Identify AC sources.
12.0	Explain the importance of employability and entrepreneurship skills. The student will be able to:
12.01	Identify and demonstrate positive work behaviors needed to be employable.
12.02	Develop personal career plan that includes goals, objectives and strategies.
12.03	Examine licensing, certification and industry credentialing requirements.
12.04	Maintain a career portfolio to document knowledge, skills and experience.
12.05	Evaluate and compare employment opportunities that match career goals.
12.06	Identify and exhibit traits for retaining employment.
12.07	Identify opportunities and describe requirements for career advancement.
12.08	Describe the benefits of ongoing professional development.
12.09	Examine and describe entrepreneurship opportunities as a career planning option.
13.0	Install residential wiring. The student will be able to:
13.01	Identify residential-wiring requirements and specifications in accordance with a wiring plan.
13.02	Identify electrical symbols in construction documents.
13.03	Draw a residential wiring plan, using electrical wiring symbols.
13.04	Identify and install a recessed lighting fixture, a fluorescent lighting fixture and a surface lighting fixture according to the specifications, complying with the appropriate local, state and national electric codes.
13.05	Identify, install and wire a duplex receptacle outlet circuit, a split circuit duplex receptacle outlet circuit, and a special purpose receptacle outlet circuit, a Ground Fault Circuit Interrupter (GFCI) receptacle or circuit, and an Arc Fault Circuit Interrupter (AFCI) receptacle or circuit, according to the specifications, complying with the appropriate local, state and national electric codes.
14.0	Install residential wiring systems. The student will be able to:
14.01	Install and wire a low voltage signal system.
14.02	Install conduit systems.
14.03	Provide power for Heating, Ventilation and Air Conditioning (HVAC) equipment.
14.04	Install the following, complying with the appropriate local, state and national electric codes: • Service entrance main panel.

	• Service entrance meter base. • Alarm systems and smoke detectors.
14.05	Demonstrate knowledge of the requirements for the installation of a swimming pool electrical system.
14.06	Connect single-phase and three-phase transformers.
14.07	Troubleshoot residential electric circuits.
Course Number: BCV0652 Occupational Completion Point: C Commercial Electrician – 450 Hours	
15.0	Demonstrate proficiency in commercial wiring. The student will be able to:
15.01	Read and interpret a commercial wiring plan and specifications.
15.02	Draw a commercial electrical wiring plan.
15.03	Select tools, equipment and materials to complete a job.
15.04	Install or identify the following according to the plan and specifications, complying with appropriate electric codes: • Wire mold. • Conduit, duct and raceway systems. • Conductors in a conduit.
15.05	Describe the difference between a residential and a commercial lighting circuit.
15.06	Describe poly-(three)-phase circuits.
15.07	Install a simple poly-(three)-phase circuit.
15.08	Construct control circuits from schematics.
15.09	Describe high voltage (over 1000 volts) wiring requirements.
15.10	Demonstrate a general knowledge of hazardous locations and wiring methods.
15.11	Explain a commercial three-phase receptacle circuit and an emergency lighting system.
15.12	Explain commercial service entrance requirements.
16.0	Demonstrate specialized electrical skills. The student will be able to:
16.01	Demonstrate an understanding of solid state control devices such as Variable Frequency Drives (VFD's), electronic ballast, electronic motor starters, motion sensors, etc.

16.02	Demonstrate an understanding of data cable installation according to the plans and specifications.
16.03	Demonstrate an understanding of the basic concepts of grounding and bonding.
Course Number: BCV0667 Occupational Completion Point: D Industrial Electrician – 300 Hours	
17.0	Demonstrate competency in industrial wiring. The student will be able to:
17.01	Draw an industrial one line power diagram.
17.02	Test insulation resistance using a megohmmeter.
17.03	Install a motor branch circuit.
17.04	Using the National Electrical Code (NEC), make the following required calculations: • Conductor size • Overcurrent protection • Overload protection • Short circuit protection
17.05	Install a 277 volt lighting branch circuit.
17.06	Describe a bus duct power distribution system.
17.07	Describe fiber optic installation requirements.
17.08	Demonstrate the use of industrial test equipment.
17.09	Install the following: • Disconnect switch, fused and unfused • Raceways • Emergency stop switch • Circuit breaker • Panel board
17.10	Explain the basic principles of mutual induction and transformer action.
17.11	Explain the operation and use of a current transformer.
17.12	Explain the operation and use of a potential transformer.
17.13	Explain the operation and use of a buck boost transformer and when it is used.

17.14	Explain and connect three-phase transformers in both delta and wye configuration.
17.15	Calculate the over current protection requirements for the primary and secondary.
17.16	Explain what transformer impedance is and its importance.
18.0	Demonstrate competency in Alternating Current (AC) and Direct Current (DC) motors. The student will be able to:
18.01	Install and connect the following types of DC motors: • Series • Shunt • Compound
18.02	Install and connect the following types of single-phase AC motors: • Capacitor start • Capacitor start and run • Split-phase inductor • Universal • Repulsion start, induction run
18.03	Install and connect the following types of three-phase AC motors: • Squirrel cage induction • Wound rotor • Synchronous
18.04	Select and connect a three-phase induction motor for either high or low voltage requirements.
19.0	Demonstrate competency in electrical and electronic control circuits and equipment. The student will be able to:
19.01	Draw an elementary motor control ladder diagram.
19.02	Interpret symbols, read and troubleshoot from schematics and ladder diagrams.
19.03	Describe the operation of the following overload relays: • Thermal • Magnetic • Thermal magnetic
19.04	Install a manual single-phase and three-phase control station.
19.05	Install a three-phase magnetic starter.
19.06	Install the following control devices: • Start/stop station • Forward/reverse/stop station

- Hands/off/auto station
- Start/jog/stop station
- Limit switches
- Pressure, temperature, level and float switches
- Pilot, run and stop indicator lights
- Control relay and timing relays
- Multi-motor push button station

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)

SkillsUSA is the co-curricular career and technical student organization for 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.

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.