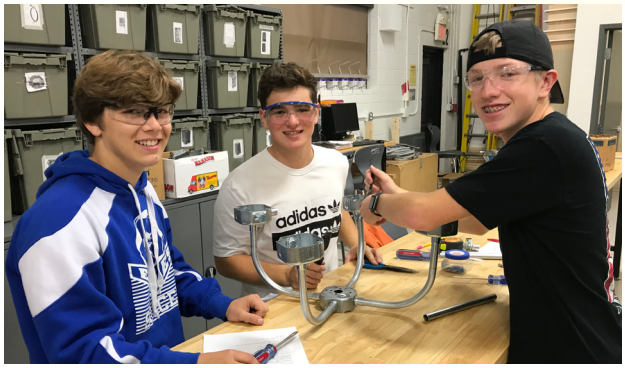
Residential and Commercial Electrical

"Enlighten" your future



Learn electrical theory, wiring, and to interpret and apply the requirements of the National Electric Code for residential and commercial construction projects.

Units of Study

- Electrical Fundamentals
- Introduction to The National Electrical Code
- Conductor Properties
- Basic Wiring Methods
- Basic Electrical Installations/ Grounding
- Emergency Power
- Electrical Planning
- Specialized Electrical Installations
- Professional Techniques for Electricians
- Advanced Wiring Methods
- Advanced Electrical Installations/ Grounding
- Advanced Branch Circuits and Feeders
- Transformers
- Basic Motor Control
- Alternative Energy-Wind/Solar

Integrated Academics

- English
- Science

Licensing / Industry- Based Certifications

OSHA 10 Construction Industry

Work-Based Learning

CTE programs bring students into the workplace for real life experiences. Businesses that support our Electrical program:

- Citygate Electric
- CM Armitage
- Horizon Solutions
- Monroe 2 BOCES Operations and Maintenance
- RADEC Corporation

Articulation Agreements

Alfred State

Career Paths

All CTE programs correlate to many career paths.

↓ Start Here
- Electrician Helper

Go Here ↓
with more education & experience
- Electrician
- Electrical Inspector
- Electrical Contractor
- Engineer

Explore more:

https://www.careerzone.ny.gov/
https://www.onetonline.org/find/

WEMOCO Career & Technical Education Center
Monroe 2-Orleans Board of Cooperative Educational Services
Monroe2BOCES.org/cte 585-352-2471
3589 Big Ridge Road, Spencerport, New York 14559
@WEMOCOCTE

Residential and Commercial Electrical

Employability Profile

Western Monroe & Orleans counties
WEMOCO
Career & Technical Education Center

Work-Related Skills

Productivity and Accountability

- Follows procedures to meet expectations and deadlines
- Displays consistent work performance and quality of work

Flexibility and Adaptability

- Works effectively in varied roles and responsibilities
- Responds well to and implements feedback

Initiative and Self-Direction

- Identifies, prioritizes, and completes tasks without direct oversight
- Seeks to learn and develop new knowledge and skills

Leadership and Responsibility

- Leverages strengths of others to accomplish a goal
- Takes ownership of one's work, performance, behavior, and actions

Communication

- Articulates thoughts and ideas clearly and effectively through speaking and writing
- Practices active listening skills

Collaboration

- Works effectively with others
- Open and responsive to new and diverse perspectives

Critical Thinking and Problem Solving

- Asks questions to lead to better solutions
- Identifies possible options and their outcomes

Electrical Fundamentals

- Ohms Law
- Series Circuits
- Parallel Circuits
- Complex circuits
- Power Formula

National Electrical Code

- Identify via the NEC book -circuits, devices and wiring code
- Interpret the NEC general requirements for installing cables and wiring
- Utilize the NEC for ground fault circuit requirements
- Utilize the NEC for specialized circuits
- Utilize the NEC for arc fault circuit requirements
- Utilize the NEC for grounding and bonding requirements

Tools and Testing

- Use of Hand tools
- Use of Power tools
- Use of Voltage Meter
- Use of Ohm Meter
- Use of Amp Meter/current clamp

Wiring Methods

- Non Metallic Sheathed Cable
- Conduit
- Armored Cable
- Flexible conduit
- PVC conduit

Electrical Installation

- Calculate size of service, minimum number of circuits required for residence size & equipment to be installed
- Locate device boxes and correct wiring for residential circuits using the NEC
- Install single pole switch circuits, 3-way switch circuits, 4-way switch circuits
- Install switched outlet circuits
- Install GFCI receptacles and breakers
- Install Arc Fault Circuit breakers
- Installing duplex outlet circuits in both 15A and 20A configurations
- Install small appliance circuits
- Size and install Range and Dryer circuits

Electrical Planning

- Read Blueprints for Residential construction
- Read Blueprints for Commercial/Industrial construction
- Interpret Specifications on prints

Specialized installations

- Farm wiring
- Mobile Home Wiring
- Swimming Pool Wiring
- Telephone and Computer Networking
- Emergency and Standby systems

Electrical Professions and Techniques

- Electrical Remodeling
- Maintenance and Trouble shooting
- Electrical Careers

Motors and Motor Control

- Types of single phase motors
- Three Phase Motors
- Size motor replacement by use of Frame number
- Distinguish and select correct motor enclosure types based on applications
- AC motor wire and fuse installation
- Install 3 wire motor control for Start/Stop
- Repairing motor contactors, replacing contact, coils and Overloads
- Troubleshoot 3 wire motor control circuits
- Use the NEC to correctly size motor wire and components

Solar Energy

- Demonstrated ability To Work With Solar Panels Safely
- Locate and Site Solar Panels
- Determine System Types- Grid-Tie, Storage or Back-up Systems

Technical Math

- Use Ohms Law for circuit Calculations
- Use Formula for Box Fill
- Use formula For Conduit Fill
- Use Formula For Voltage Drop of Wire

Safety

- Completed OSHA 10 for Certification
- Use of Personal Protective Equipment
- Recognize potential accident issues
- Lock-out/Tag-out procedures
- Inspection of power and hand tools
- Fire Safety
- First Aid
- Ladder Safety