

## Advanced Courses

### 2. Blueprint Reading 201

This course builds upon BP 101 and provides an understanding of how the electrical craft interfaces with other crafts in order to complete an entire project from blueprint specifications. Architectural design, elevations, job specifications are covered in depth. Civil engineering drawings are interpreted from the perspective of the entire scope of the project. 24 contact hours.

### 3. Cable Splicing – Class A Certification (CS-A)

**430** is offered to journeyman electricians who wish to advance into a certified specialty that equips them to work on high-voltage portions of electrical systems.

Course objectives include

1) heavy emphasis on safety;  
2) theory and practice of high voltage cable construction and installation to include:

- A) Hand taping of splices & terminations, heat shrink & cold shrink, solid rubber splices & terminations.
- B) Proper testing of newly installed systems that include cabling, transformers, switching, and other devices.

Electrical businesses must be re-supplied with trained craftsmen who are certified in this physically and mentally grueling specialty. The current qualified workforce is ageing and a new cohort must be trained.

This is the first of a four-module, hands-on course. 36 Contact hours.

### 4. Cable Splicing 431

This is the second module cable splicing course which covers several methods of terminating cable, Tee splices, and Protective Grounds. The hands-on exercises include the construction of a 5kV termination and 15kV Tee splice. Materials are presented from many different manufacturers of cable splicing materials. 36 Contact hours.

### 5. Cable Splicing 432

This is the third module of the hands-on cable splicing course. This module covers Cable Insulation testing and fault locating. Besides covering different test instruments and uses, several taping methods and rule-of-thumb dimensions will be used during the hands-on exercises. 36 Contact hours.

## **6. Cable Splicing 433**

This is the fourth module of the hands-on cable splicing course. This module covers termination and splice kits. The course presents information on several types of cable splices and terminations used in the field. Materials used are from different manufacturers of cable splicing kits. 36 Contact hours.

## **7. Code and Practices 201**

Construction Electricians need a thorough understand of the principles involved in the sizing of building wire, calculating conductor ampacity, and NEC requirements for cable assemblies. Students will explore branch circuits, outside branch circuits and feeders, services lighting and receptacles. 24 contact hours.

## **8. Code Calculations 301**

This course delves into higher applications of NEC to experience examples of how the Code is applied. Rules and formulas of the NEC are practiced for proper procedures for a particular installation. 50 contact hours.

## **9. Codeology**

This course builds upon National Electric Code (NEC) by enabling the electrical worker to use the Code effectively and easily on the job. It develops NEC Code book skills by identifying key words and phrases to work with and apply NEC exceptions, interpretation, and easy reference. 32 contact hours.

## **10. Conduit Fabrication 201**

This course is a basic overview of fabrication methods for rigid metallic and PVC conduits. Students will experience and practice the skills involved in fabricating conduit of various types and sizes. They will also learn applicable electrical code so that their work will meet legal and professional specifications. Conduit fabrication is a fundamental skill of commercial and industrial electrical construction. 24 Contact hours.

## **11. Construction Wireman 102**

This course builds upon CW 101. Students will gain understanding of wire and cable installation, construction based mathematics, electrical testing instruments, National Electric Code, and leading product familiarity. After 1000 work-hours, CW-1 will advance to CW-1B, and after 200 work-hours, to CW-2. They receive wage increases, retirement plans, and fully paid health benefits that include dental and vision. The health insurance package provides full coverage for their families, at no cost to the employee. Continued employment will qualify CW's for further wage increases, training opportunities, entry into JAET's electrical apprenticeship program, and a college degree opportunity. 30 Contact hours.

## **12. Craft Certification**

This enables a worker, who has certain acquired skills in the electrical trade, to be placed at an appropriate level of responsibility and pay-grade. Thus, he/she will not be required to start at the beginning with the unskilled. In order to slot semi-skilled or skilled craftsmen into their proper level of work, they must first demonstrate competencies. This is especially important to veterans who are transitioning into the civilian workforce. Veterans, and other experienced workers, possess knowledge, skills, and abilities (k/s/a) that warrants pay-grade placement above Level I. Written evaluation is followed by a one-on-one, hands-on demonstration, in a craft evaluation lab where the participant performs prescribed work and identifies particular anomalies to the electrical trade. 5 contact hours.

## **14. Electrical Project Supervision – 1 (EPS-1)**

Electrical Project Supervision – Level 1 (EPS-1). EPS-1 offered to journeyman electricians who wish to advance into the role of supervisor, foreman, or project manager. The market dictates that we have qualified individuals to supervise various aspects of any given job. In addition, our company requires any supervisor to have completed this course. This course will provide foremen with an overall understanding of supervision. Participants will learn ways to plan and manage jobs with greater efficiency. Basic human resource management principles will equip the participant with knowledge and skills to motivate and productive team with high morale, which will contribute toward customer satisfaction. 27 Contact hours.

## **15. Electrical Project Supervision – Level 2 (EPS-2)**

EPS-2 builds upon EPS-1, a pre-requisite for this course. This course acquaints first-line supervisors with best practices of management and leadership in order to plan and manage jobs with greater efficiency. Key to management productivity is the ability to motivate workers and work as a team to accomplish goals. Effective practices increase customer satisfaction. 24 Contact hours.

## **16. Electrical Project Supervision – Level 3 (EPS-3)**

EPS-3 builds upon EPS-1 & 2, pre-requisites for this course. Journeyman electricians will expand their knowledge and skills in areas of Team Building, Verbal & Written Communication, Employee Relations, Tool Management, Planning and Scheduling, and Cash Flows. 24 Contact hours.

## **17. Fiber Optics 420**

The purpose of this course is to attain certification from the national Fiber Optics Association (FOA). This 42 hour hands-on course provides journeymen training in how to install structured cabling systems for both telephone and local area network (LAN) computer systems.

Upon completion of this course the student will have an understanding of Fiber Optic Systems including a history of fiber up to present systems. The course will also include approximately 16 contact hours of Fiber Optic termination including several different types/manufacturers connectors. The course will include methods to test and troubleshoot Fiber Optic Systems. Also included will be an understanding of the different types of Fiber Optic that are used in varying environments/locations. A general overview of fire-stopping and other general installation information will also be presented. A cost analysis of Fiber Optics versus Structured Cabling Systems will be discussed as well as new emerging installations including Fiber Optics to the home (FTTH). 36 Contact hours.

## **18. Fire Alarm Systems**

FASA 0007197, sponsor #FASA 0002964, is offered for Fire Alarm Systems Agents who need continuing education units to maintain their FASA certification. To maintain this certification, each license holder needs to take this six (6) hour course every two (2) years to re-certify.

This course is designed to keep technicians abreast of most recent National Electrical Code related to fire protection signaling circuits. Participants will upgrade their knowledge and skill of installation and operation of fire alarm systems including avoiding and troubleshooting false alarms. 6 Contact hrs.

## **19. Grounding & Bonding 301**

The use of electricity presents many challenges ranging from how to install a safe electrical system to how to develop minimum Code requirements for safe electrical installations. These installations depend on several minimum requirements, cited in National Electric Code. The study of grounding and bonding includes those electrical basics, such as electrical circuits. The process of grounding and bonding is the building of safety circuits associated and working together with electrical circuits and systems. This course presents instructions for reducing hazards through design and installation of grounding in electrical distribution systems. 16 contact hours.

## **20. Instrumentation 501**

This is a hands-on course that provides training in the skills required to install and calibrate instruments used for process control applications. This is a basic course that emphasizes those skills relating to specific instruments used to measure pressure, temperature, flow, or level and are identified as the basic understanding required by anyone working in this rapidly changing industry. 36 Contact hours.

## **21. LonWorks 500**

This course is recommended for individuals who want to sharpen their computer skills before taking the LonWorks course which requires intermediate level computer skills. 8 contact hours.

## **22. LonWorks 510**

This introductory course is your starting point in the discovery of LonWorks fundamentals, terminology, and application of LonWorks networks. We begin with an overview of networks and protocols, highlighting the technical aspects of the LonTalk protocol from a high level perspective. We include four hands-on labs to gain familiarity with the technology and the features of Echelon LonMaker Integration tool used to design and commission LonWork networks. 8 contact hours.

## **23. LonWorks Device Development 520**

This course is intended for engineers embarking on their first LonWorks device development project. The course provides extensive hands-on experience designing LonWorks network devices that meet LonMark interoperability guidelines. The course includes hands-on practice in designing, debugging, and testing new LonWorks devices using the Neuron C programming language and Echelon's device and network development tools. 40 contact hours.

## **24. Motor Controls 201**

Before an electrical worker can gain a mastery over electric motors, he/she must first thoroughly understand the fundamentals, including the rules, acronyms and formulas relating to motors and how they are designed. Principles of electronic variable-speed control through examination of electronic DC and AC variable-speed drives, as well as eddy-current and magnetic clutches, are covered. 30 Contact hours.

## **25. National Electrical Code (NEC) Update – 2008**

NEC 2008 contains significant changes that are important to the electrical industry. Changes include safety and other standards which are paramount considerations in electrical work. Every three years the NEC is updated to reflect the newest installation practices utilized by the electrical industry. The National Electric Code is fundamental knowledge for electrical workers and is heavily tested on the State of Florida licensing exam for electricians. NEC is the most widely recognized and accepted electrical standard in the world. Conforming to standards is essential for electrical work that must pass local government inspections before Certificates of Occupancy and other approvals are granted. 8 contact hours.

## **26. OSHA – 30**

OSHA –30 Construction builds upon OSHA-10 for an additional 20 contact hours and covers all required knowledge sets of 29 CFR, Part 1926. Construction hazards and protection methods are presented and practiced. Such hazards include prevention injury or death from falls, cave-ins, and hazardous materials. Proper procedures for record-keeping, transmission and distribution, and operation of equipment are also included. 20 Contact hours.

## **27. Photovoltaic Systems 510**

This is a study of the most rapidly growing sector of the renewable energy market: solar. It is a comprehensive guide to design, installation, and evaluation of photovoltaic (PV) systems. Learning resources include solar radiation data sets, sun path charts, and solar time calculators. 36 contact hours.

## **28. Power Quality Analysis**

Industry now recognizes power quality engineering as an important discipline. Electrical contractors recognize power surveys and mediation as a very profitable market because of the rapid rise of power-related problems and the fact that the quality of power within a facility can be controlled. This course provides the information needed to develop a solid, verifiable process for controlling the power within a facility. Knowledge of waveforms gives workers ability to determine causes and effects of poor power quality. 20 contact hours.

## **31. Structured Cabling 410**

This 42 hour hands-on course trains Voice-Data-Video technicians to install structured cabling systems for both telephone and local area network (LAN) computer systems. The course emphasizes skills necessary to install unshielded twisted pair (UTP) cables to meet the new EIA/TIA-568 Cabling standards for Category 5 data installations, but includes training in other architectures including Categories 3 and 4 twisted pair as well as Ethernet LAN coaxial cable Cabling systems. 30 contact hours.

## **32. Test Instruments**

Industry demand for safety, quality, and productivity requires the routine use of test instruments by electricians. As electrical devices have become more technologically complex, taking accurate measurements has become more critical. This course provides an overview of typical electrical test instruments used for installation, process equipment operation, quality control, troubleshooting activities, and in-depth training on state-of-the-art test equipment such as satellite finder meters, and fiber optic visual fault locators. 30 contact hours.

## **33. Transformer Motor Controls 201**

Electrical applications of the fundamentals of transformers and the different types of transformers are covered. Topics include transformer connections and distribution systems, installation of transformers and motors, preventive maintenance, and troubleshooting. 60 contact hours.

## **34. Welding 210**

Basic fundamentals of welding is needed by electricians on certain construction sites. Electricians are responsible for the fabrication and welding of electrical support systems, often used to mount electrical equipment. This hands-on course will provide the foundation upon which advanced welding techniques may be developed. 24 contact hours.

**35. Welding 220**

Pre-requisite: Welding 210.

Students will use advanced welding techniques to demonstrate knowledge and skills in mig and tig. Welding metallurgy is a focal concept in welding steel, stainless steel, and aluminum. 24 Contact hours.