IBEW (432IBEW)

IBEW (432IBEW) 702
Electrical Circuitry
This course will include a study in circuitry used in the residential housing industry in the Chicago metropolitan area. Installation practices. Practical hands-on wiring skills such as splicing and termination will be taught. The students are expected to apply themselves, learn and accomplish entry levels of proficiency in these subject areas. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 703
Conduit Bending I
This course is designed to teach the student the various methods of bending conduit employed in the electrical construction industry. The focus of the course is on hand-type benders and methods of conduit installation utilized in the commercial, industrial and residential housing industry. Writing assignments, as appropriate to the discipline, are part of the course.
4.5 Laboratory hours. 2 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 704
Construction Technology
This course will include a study of common hardware and wiring materials used in the electrical construction industry. This course will include first aid, personal safety, and job site safety; the use of rope, knot tying, and basic rigging; drill gauges, drilling and tapping holes in metal, and drill sharpening; using knockout sets, hole saws, concrete anchors and fastening devices; and the use and care of hand tools, drill motors, hammer drills and grinding wheels. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 705
Print Reading I
Upon completion of this course the student will have gained a thorough knowledge of residential prints and their use with the National Electrical Code. Writing assignments, as appropriate to the discipline, are part of the course.
3.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 706
Conduit Bending II
Upon completion of this course the student will have gained skills in advanced conduit bending techniques utilizing mechanical leverage benders and hydraulic benders commonly used in the electrical construction industry. Hand-operated and automatic cutting and threading devices will also be mastered. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 707
Fire Alarm Systems
Upon completion of this course the student will have mastered the basic concepts and theory of installation and maintenance of fire alarms systems and fire suppression systems currently in use in the electrical construction industry. Testing, troubleshooting and safety techniques through hands-on training and field simulated problems are developed. The course will also discuss the Chicago and National Electrical Codes as they pertain to the installation and maintenance of fire alarm systems. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 708
Motor Control Systems
Upon completion of this course the student will have mastered the basic concepts and theory of installation, operation, and maintenance of motor control devices commonly used in the electrical construction industry. Skills in testing, troubleshooting, and safety techniques will be developed through hands-on training and the use of field simulated problems. In addition, this course includes a discussion of the theory and the practical application of transformers as used in the electrical industry. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 709
Print Reading II
Upon completion of this course the student will have gained through knowledge of, commercial and industrial construction prints and their use with both the Chicago Electrical Code and National Electrical Code. Writing assignment, as appropriate to the discipline, are part of the course.
3 Lecture hours. 3 Credit Hours.
Offered At: DA

IBEW (432IBEW) 710
Programmable Control
Upon completion of this course the student will have mastered the basic concepts and theory of installation, operation, and maintenance of programmable control systems commonly used in the electrical industry. Programming techniques and hands-on training will be provided in the lab on Allen-Bradley systems PL5/20, PLC5/11, and SLC 5/03 CPU programmable controllers. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 711
Communications
The BICSI Installer level telecommunications cabling installation training is designed for individuals with 2 to 5 years of low voltage cabling experience. The class combines lecture with hands-on skills practice using tools and equipment provided in class. The following areas are covered: ANSI/TIA/EIA wiring Standards and the National Electrical Code. LAN cabling system characteristics and network topologies, media and media characteristics, transmission fundamentals, connectorization, grounding and bonding, pulling and terminating copper and fiber, testing and troubleshooting copper and fiber, splicing fiber, fire stopping site surveys and safety practices. There will be a final examination and a period of structured on-the-job training to be completed at the student?s workplace. Writing assignments, as appropriate to the discipline, are part of the course.
4.5 Laboratory hours. 2.5 Lecture hours. 4 Credit Hours.
Offered At: DA

IBEW (432IBEW) 712
HVAC Systems
Upon completion of this course the student will have mastered the theory of thermal dynamics and the processes used in the heating, ventilation and air-conditioning systems. Hands-on training is an integral part of the course. The course will cover skills in piping, brazing, soldering, and the E.P.A. standards for charging, and evacuating air-conditioning and refrigeration systems. This course meets the Refrigeration Service Engineers Society Technician Certification Standard. The midterm examination shall be the R.S.E.S. Technician Certification test. It will be mandatory to pass the R.S.E.S. Technician Certification test before becoming a journeyman. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 713
Instrumentation
Upon completion of this course the student will have mastered the basic concepts and theory of installation, operation, and maintenance of instrumentation control process commonly used in the electrical construction industry. The student will master the theory of flow, pressure, temperature, and level. Calibration techniques are taught through hands-on training, bench testing, and lab work with a variety of instruments, the Fluke 702 Calibrator and the Rosemount Communicator. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 714
Technical Math I
Upon completion of this course the student will have mastered the calculations and applications of the formulas used daily in the first year apprentice course of study and in the electrical construction industry. Writing assignment, as appropriate to the discipline, are part of the course.
3 Lecture hours. 3 Credit Hours.
Offered At: DA

IBEW (432IBEW) 715
Technical Math II
Upon completion of this course the student will have mastered code calculations and problem solving techniques used in the application of Ohm?s Law in accordance with the National Electrical Code. Writing assignment, as appropriate to the discipline, are part of the course.
3 Lecture hours. 3 Credit Hours.
Offered At: DA

IBEW (432IBEW) 716
Electronics
This course covers basic electronic and its application to the communications industry. The course will cover basic electric theory, direct current, alternating current, Writing Ohm?s Law, the use and calibration of electrical test equipment, electrical safety, soldering skill, series, parallel and combination circuits, and electronic components. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 717
Structured Wiring
This course provides the student with a thorough knowledge of the wiring materials commonly used in the communications industry. This course provides instruction on personal safety, jobsite safety and shop safety as it applies to the communications industry. In addition, there will be instruction in applicable EIA/TIA standards, BICSI requirements, media characteristics, transmission characteristics, fire protection, documentation, grounding, bonding, electrical protection, and other relevant industry practices. Upon satisfactory completion of the course, the student will be eligible for the BICSI Level I Installer Examination. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 718
Integrated Systems I
This course will introduce the student to the basic concepts and theory of digital and analog based audio communications systems. This course will cover skills in installation, balancing, testing and troubleshooting of audio communications equipment. Included are constant voltage audio systems, paging systems, background music systems. and sound reinforcement systems. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 719
Integrated Systems II
This course will cover the basic concepts and theory of transmission and distribution of digital and analog based video signals. This course will cover transmission line theory and signal propagation along with installation, testing and troubleshooting of video communications equipment. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 720
Communication Systems Verification
This course covers the testing, benchmarking and troubleshooting of fiber optic and copper based communications systems. Also covered are the proper use of field test equipment, electrical safety, transmission characteristics, fault location and analysis of field test results. Writing assignments, as appropriate to the discipline, are part of this of course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 721
Fiber Optics
This course covers the basic concepts and theory of digital transmission of communications over fiber optic communications cabling. This course will cover skills in installation, testing and troubleshooting of fiber optic connectors and cabling systems. This course meets the Fiber Optic Association Certification standards for Fiber Optic Association Certification standards for fiber optic installation. Writing assignments, as appropriate to the discipline, are part of this course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 722
Computer Networking
This course provides the student with an overview of the basics of networking from the component hardware to the topology and theoretical foundation of networks. Various types of networks and network topologies will be covered. Writing assignments as appropriate to the discipline, are part of this course.
3 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 723
Industrial Control Systems
Upon completion of this course, the student will be proficient in the field of industrial control and planning. Industrial control training will focus on modern systems incorporating feedback loops, analog and pneumatic signals, and the smart family of transmitters. The dominant process variables -- temperature, pressure, level, and flow -- will be employed in the development of these skills. The planning section of this course will cover electrical layout with an emphasis on initial conduit installation, reading blueprints of various building trades, calculating loads based on the electrical code, designing distribution systems, and sizing and protecting electrical conductors. Writing assignments, as appropriate to the discipline, are part of the course.
2 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 724
Electrical Power Systems
Upon completion of this course, the student will have mastered the theory of distribution and usage of electricity in common industrial settings. Hands-on training is an integral part of the course. The student will learn the basics of power distribution with an emphasis on transformers and the four basic power systems: delta, corner grounded delta, high leg delta, and wye. The student will learn about the largest user of this distributed power: rotating equipment - motors. The motors portion of the course covers single phase and three phase motors. The single phase motors include shaded pole, AC series, permanent split capacitor and motors with starting relays. The three phase motors include wye, delta and wye/delta motors. Finally, the students will learn the newest technique for motor control, variable speed drives. The course will cover the theory of pulse width modulation and the safe operation of frequency drive motors. The student will learn about line lengths, over voltage, overheating, harmonics, and drive components. Writing assignments, as appropriate to the discipline, are part of the course.
2 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 725
Low Voltage Systems
Upon completion of this course, the student will have mastered the basic concepts and theory of the installation and maintenance of low voltage systems currently in use in the electrical construction industry. Installation, testing, troubleshooting and safety techniques through hands-on training and field simulated problems are developed. This course will cover topics in security, life safety, access, environmental controls, communications, data transfer, and data storage. The associated electrical codes are included in daily discussions as they pertain to installation and maintenance of low voltage systems. Writing assignments, as appropriate to the discipline, are part of the course.
3 Laboratory hours. 2.5 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 726
Low Voltage Systems Communications
This course is designed for students who have completed 431IBEW-716 Electronics I. Student will be introduced to the basic concepts and theory of the installation and maintenance of fire alarm systems currently in use in the electrical construction industry. Testing, troubleshooting and safety techniques through hands-on training and field simulated problems are developed. This course will also discuss the various power systems that the fire alarm systems are powered from. The fire alarm and electrical codes are included in daily discussions as they pertain to the installation and maintenance of fire alarm systems. Students will also be introduced to computer componentry, hardware and software. Installation and testing techniques will be introduced. IT troubleshooting will also be emphasized.
Grade of C or better in 432IBEW 716 - Electronics
2.5 Laboratory hours. 3 Lecture hours. 3.5 Credit Hours.
Offered At: DA

IBEW (432IBEW) 727
Photovoltaic Systems
This course is designed to provide students with knowledge of the principles, design and installations of Photovoltaic Systems. Coverage includes renewable energy sources and systems, parallel/series circuits and DC theory, solar site assessment. PV system design, PV module technology, PV system componentry, PV system installation techniques and utility interconnection will be focused on. This course is comprised of lectures, discussion, problem solving, and hands-on activities to demonstrate the safe and productive use of Solar Electricity. Students will be required to write reflections as well as provide written assessments on the principles and techniques of Photovoltaic Systems. 2 Laboratory hours. 3.5 Lecture hours. 4.5 Credit Hours.
Offered At: DA