

## **ELECTRICAL APPRENTICE**

### **(TECHNICAL AND INDUSTRIAL DIVISION – WORKFORCE TRAINING DEPARTMENT)**

**ELAPR-100 Electrical Theory IA (3 cr.)** Designed to be taken in conjunction with working as an apprentice in the field with a journeyman electrician. Information includes an introduction to the basics of electricity. Topics include electrical math, hand tools, Atomic theory, Ohm's Law, series circuits, parallel circuits, combined circuits, electrical testing, and an introduction to the National Electrical Code.

**ELAPR-101 Electrical Theory IB (3 cr.)** Covers raceways, boxes, fittings, conduit bending, conductors, blueprint reading, commercial and industrial wiring, and residential wiring. Prerequisite: ELAPR 100.

**ELAPR-102 Electrical Theory IIA (3 cr.)** Study of alternating current, induction in alternating currents, RL series circuits, capacitors, capacitance in AC, RC series circuits, RL parallel circuits, RLC series circuits, three phase circuits, transformers, and three phase transformers. Pre-requisite: ELAPR 101.

**ELAPR-103 Electrical Theory IIB (3 cr.)** Study continues with motor theory and application, grounding, boxes & fittings, conductor installations, cable trays, conductor termination and splices, installation of electrical services, circuit breakers and fuses, contactors and relays, and electrical lighting. Pre-requisite: ELAPR 102.

**ELAPR-104 ELEC YEAR 1 (10 cr.)** This practicum consists of 2000 hours of on the job training with a journeyman electrician. Students will obtain experience with basic electricity, hand tools, atomic theory, Ohm's Law, series circuits, parallel circuits, comb circuits, electrical testing, raceways, boxes, fittings, conduit bending, conductors, blueprint, reading, commercial and industrial wiring, and residential wiring. Students are responsible for finding employment with a journeyman electrician. Co-requisites: ELAPR 100 & ELAPR 101.

**ELAPR-105 ELEC YEAR II (10 cr.)** This practicum consists of 2000 hours of on the job training with a journeyman electrician. Students will experience working with alternating current, induction in the alternating current, RL series circuits, capacitors, capacitance in AD, RC series circuits, RL parallel circuits, RLC series circuits, three phase circuits, transformers, three phase transformers, motors, grounding, boxes & fittings, conductor installations, cable trays, conductor termination and splices, installation of electrical services, circuit breakers and fuses, contactors and relays, and electrical lighting. Students are responsible for finding employment with a journeyman electrician. Co-requisites: ELAPR 102 & ELAPR 103.

**ELAPR-200 Electrical Theory IIIA (3 cr.)** Builds on Electrical Theory II-B with load calculations, branch circuits and feeders, conductor selection and calculations, over current protection, raceway box and fitting fill requirements, wiring devices and distribution equipment. Pre-requisite: ELAPR 103.

**ELAPR-201 Electrical Theory IIIB (3 cr.)** Continues from Electrical Theory III-A with distribution system transformers, electrical symbols and diagrams, lamps, ballasts, and components, logic applied to line diagrams, hazardous locations, and control devices. Pre-requisite: ELAPR 200.

**ELAPR-202 Electrical Theory IVA (3 cr.)** Intensive advanced study of the National Electrical Code, purpose, definitions, and general requirements. Information as it relates to

code on grounded conductors, branch circuits, feeders, service calculations and outside branch circuits, services and over-current protection, grounding and bonding. Pre-requisite: ELAPR 201.

**ELAPR-203 Electrical Theory IVB (3 cr.)** Continued intensive advanced study of the National Electrical Code in surge arresters, TV surge suppressors, wiring methods, conductors for general wiring, enclosures, cords, and cables, fixture wires, panel boards and control panels, motors, motor circuits, and controllers, air conditioning and refrigeration, equipment and generators, transformers, hazardous locations, pools and hot tubs. Pre-requisite: ELAPR 202.

**ELAPR-204 ELEC YEAR III (10 cr.)** This practicum consists of 2000 hours of on the job training with a journeyman electrician. Students practice load calculations, branch circuits and feeders, conductor selection and calculations, over current protection, raceway box and fitting fill requirements, wiring devices, distribution system transformers, electrical symbols and diagrams, lamps, ballasts and components, logic applied to line diagrams, motor calculations, solenoids, DC motors & transformers, motor controls, contactors and motor starters, hazardous locations, and control devices. Students are responsible for finding employment with a journeyman electrician. Co-requisites: ELAPR 200 & ELAPR 201.

**ELAPR-205 ELEC YEAR IV (10 cr.)** This practicum consists of 2000 hours of on the job training with a journeyman electrician. Students experience real-life work using the National Electrical Code as it relates to grounded conductors, branch circuits, feeders, service calculations and outside branch circuits, services and over current protection, grounding, bonding, surge arresters, TV surge suppressors, wiring methods, conductors for general wiring, enclosures, cords and cables, fixture wires, panel boards and control panels, motors, motor circuits and controllers, air conditioning, refrigeration equipment and generators, transformers, hazardous locations, pools, and hot tubs. Students are responsible for finding employment with a journeyman electrician. Co-requisites: ELAPR 202 & ELAPR 203.