

ELT – Electrical Technology

ELT 106 - Electrical Prints, Schematics, and Symbols

4.00 Credits /5 Contact hours

Prerequisite: IFC 100; IFC 101

Introduces electrical symbols and their use in construction blueprints, electrical schematics, and diagrams. Topics include electrical symbols, component identification, and print reading.

ELT 107 - Commercial Wiring I

5.00 Credits /7 Contact hours

Prerequisite: ELT 121; ELT 106; IFC 100

Introduces commercial wiring practices and procedures. Topics include National Electrical Code, commercial load calculations, and safety.

ELT 108 - Commercial Wiring II

5.00 Credits /7 Contact hours

Prerequisite: ELT 107

Presents the study of three-phase power systems, fundamentals of AC motor control, and the basic transformer connections. Topics include three-phase power systems, fundamentals of AC motor control, and transformer connections (single-phase and three-phase step down).

ELT 109 - Commercial Wiring III

5.00 Credits /7 Contact hours

Presents the theory and practical application of conduit installation, system design, and related safety requirements. Topics include conduit installation, system design concepts, and safety procedures.

ELT 111 - Single-Phase/Three-Phase Motors

5.00 Credits /7 Contact hours

Prerequisite: ELT 119; IFC 100; IFC 101

Introduces the fundamental theories and applications of single-phase and three-phase motors. Topics include motor theory/operating principles, motor terminology, motor identification, National Electrical Manufacturers Association (NEMA) standards, motor efficiencies, preventive maintenance, troubleshooting/ failure analysis, and NEC requirements.

ELT 112 - Variable Speed/Low Voltage Controls

3.00 Credits /5 Contact hours

Prerequisite/Corequisite: ELT 111

Introduces types of electric motor control, reduced voltage starting, and applications. Emphasis will be placed on motor types, controller types, and applications. Includes information on wye and delta motor connections; part wind, autotransformer; adjustable frequency drives and other applications; and oscilloscopes and their operation. Topics include types of reduced voltage starting, reduced voltage motor connections, and adjustable frequency drive.

ELT 115 - Diagnostic Troubleshooting

3.00 Credits / 7 Contact hours

Prerequisite: Departmental approval

Introduces diagnostic techniques related to electrical malfunctions. Special attention is given to use of safety precautions during troubleshooting. Topics include problem diagnosis, advanced schematics, and sequential troubleshooting procedures.

ELT 116 - Transformers

4.00 Credits / 6 Contact hours

Prerequisite: ELT 119; IFC 101

Provides instruction in the theory and operation of specific types of transformers. Emphasis will be placed on National Electrical Code requirements related to the use of transformers. Topics include transformer theory, types of transformers, National Electrical Code requirements, and safety precautions.

ELT 117 - National Electrical Code Industrial Applications

4.00 Credits / 7 Contact hours

Prerequisite: ELT 109

Provides instruction in industrial applications of the National Electrical Code. Topics include rigid conduit installation, systems design concepts, equipment installation (600 volts or less), and safety precautions.

ELT 118 - Electrical Controls

5.00 Credits / 8 Contact hours

Introduces line and low voltage switching circuits, manual and automatic controls and devices, and circuits. Emphasis will be placed on switching circuits, manual and automatic controls and devices, line and low voltage switching circuits, operation, application and ladder diagrams, AC and DC servo drives, and DC stepper drives. Topics include ladder and wire diagrams, switching circuits, manual controls and devices, automatic controls and devices, and application and operation of controllers and controls.

ELT 119 - Electricity Principles II

4.00 Credits /5 Contact hours

Prerequisite: IFC 100

Introduces the theory and application of varying sine wave voltages and current. Topics include magnetism, AC wave generation, AC test equipment, inductance, capacitance, and basic transformers.

ELT 120 - Residential Wiring I
5.00 Credits /8 Contact hours
Prerequisite: IFC 100

Introduces residential wiring practices and procedures. Topics include residential circuits, print reading, National Electrical Code, wiring materials, determining the required number and location of lighting/ receptacles and small appliance circuits, wiring methods (size and type conductors, box fill calculations and voltage drop), switch control of luminaries and receptacle installation including bonding, GFCI and AFCI circuits, special purposes outlets- ranges, cooktops, ovens, dryers, water heaters, sump pumps, etc., and sizing OCPD's (circuit breakers and fuses).

ELT 121 - Residential Wiring II
6.00 Credits /8 Contact hours
Prerequisite/Corequisite: ELT 120

Provides additional instruction on wiring practices in accordance with the National Electrical Code. Topics include residential single family service calculations, residential two-family service calculations, load balancing, sub-panels and feeders, residential single-family service installation, residential two-family service installation, concepts of TV and CATV installation, swimming pool installation, and remote control of lighting and intercom installation.

ELT 122 - Industrial PLCs
6.00 Credits /10 Contact hours
Prerequisite: ELT 111; ELT 112; ELT 118

Introduces operational theory, systems terminology, PLC installations, and programming procedures for programmable logic controls. Emphasis is placed on PLC programming, connections, installations, and start-up procedures. Topics include PLC hardware and software, PLC functions and terminology, introductory numbering systems, PLC installation and setup, PLC programming basics, relay logic instructions, timers and counters.