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Modern Industrial Practices
This course presents a broad introduction of topics related to industrial and manufacturing environments. Topics include safety and workplace hazard awareness, quality practices and measurement methods, modern manufacturing processes and production methods, and maintenance procedures in manufacturing environments.

Technical Mathematics 1
This course covers the four fundamental operations on integers, rational numbers, and real numbers. It includes the study of weights and measures, exponents and radicals, factoring, and linear equations, with an emphasis on technical applications.

Computer Control Fundamentals
This introductory course covers the personal computer and software for electrical service technicians. It includes a survey of fundamental personal computer hardware: keyboard, microprocessor, mouse, disk drives, and printers. It introduces DOS and Windows operating systems and hands-on experience with software packages. It concludes with an introduction to BASIC, which is used to solve practical problems in the electrical/electronic field.

Mechanical Systems
This course is a study of the basic mechanical components in a complex mechatronics system. Topics include basic functions and physical properties of mechanical components and the roles they play in the system, as well as troubleshooting techniques and strategies used to identify, localize, and correct malfunctions. Concepts in systemic preventative maintenance and mechanical component safety are presented along with technical documentation, such as data sheets and specifications of mechanical elements.

Technical Electricity 1
This introductory course provides the basic knowledge and skills necessary within any electrical service technician program. It includes an in-depth study of electron theory, Ohm's Law, series and parallel circuits, as well as electrical energy and power relationships. Also included are methods of generation of electromotive force, electromagnetism, and motor principles and capacitance as these apply to DC circuits. Uses, construction, and calibration of voltmeters and ammeters are investigated.

Pneumatic and Hydraulic Systems
This course presents a study of fluid power technology using fluids or compressed air as the transfer media. Complete hydraulic and pneumatic systems, including power sources, reservoirs, pumps, compressors, lines, valves, and actuators will be discussed. Additional topics include troubleshooting strategies used to identify, localize and correct malfunctions in pneumatic and hydraulic systems, preventative maintenance, and safety issues.

Technical Electricity 2
A continuation of ET101 Technical Electricity 1, this course reinforces previously acquired information and applies it to alternating current (AC) circuits. It investigates AC sine wave generation, mutual inductance inductive and capacitive reactance, instantaneous values of voltage and current, and real and apparent power. Uses, construction, and calibration of AC metering equipment are an integral part of this course. Practical application of each topic in both introductory courses are included in all laboratory experiments.

Electrical Machinery and Controls
This introductory course investigates the construction, operation, and control of electrical equipment installed and maintained by the various electrical trades. Topics pertain to direct current equipment and include shunt, series, and compound motors and generators, manual and automatic DC controllers, stepping motors, and DC meters. It emphasizes the practical aspects of magnetic flux, counter-electromotive force, armature and field currents, motor and generator loading conditions, and the relationship of these electrical characteristics to specific types of mechanical, electrical, and electronic controllers.

Mechatronics Systems
This course provides hands-on experience in the control, maintenance, and simulation of a mechatronics system in a team environment to promote learning a broad array of job-ready troubleshooting skills in integrated technologies. Topics include system level programming/troubleshooting, application and calibration of hall-effect sensors, vacuum grippers, pneumatic robots, material feeding system, magnetic sensors, photoelectric sensors, magnetic Reed switches, limit switches, inductive sensor, capacitive sensors, ultrasonic sensor, synchronous belt drive, ball screw drives, part rejection/transfer, stepper motors, homing sensors, GMR (Giant Magnetoresistive) sensors, pneumatic screw feeders, pick and place assembly, gravity feeders, servo robotics, and parts transfer.