

Amatrol Content for HCC Industrial Technology Courses

HCC purchased Amatrol trainers for use in the Industrial Technology courses; these trainers allow faculty to lead students through very complicated, technical, hands-on learning activities, including troubleshooting. HCC has also switched to Amatrol-based course materials. The Amatrol-based materials are available to students digitally; they incorporate the use of text, video, quizzes, knowledge checks, and interactive computer simulations of industrial equipment, situations, and troubleshooting. The following pages of this document include descriptions of the equipment modules being used for each of the HCC courses.

MAIN 101

V11133-AA00UEN-E1 - AC/DC Electrical Systems (990-ACDC1)

AC/DC Electrical course teaches fundamentals of AC/DC electrical systems used for power and control in industrial, commercial, agricultural, and residential applications using Amatrol's virtual training technology. Students learn industry-relevant skills included in subject areas such as Basic Electrical Circuits, Electrical measurement, Circuit Analysis, Inductance and Capacitance, Combination Circuits, and Transformers.

W12204-XA00AEN-E1 - Electrical Fabrication 1 (T7021)

Electrical fabrication introduces electrical system wiring and develops fundamental knowledge of electrical wiring and components. Covers basic electrical system wiring, interpreting wire installation plans, handling non-metallic cable, understanding application of basic components such as switches, outlets, and lighting, and connecting electrical services.

V17401-CL00JEN-E2 - Electric Motor Control (85-MT5)

Electric motor control teaches electric relay control of AC electric motors found in industrial, commercial, and residential applications. Learners gain understanding of the operation, installation, design, and troubleshooting of AC electric motor control circuits for many common applications. Develops skills in interpreting schematics, system design, motor start / stop circuits, motor sequence control, reversing motor control, and motor jogging. Safety is emphasized throughout, highlighting motor safety, lockout/ tagout and safety interlocks.

WB862-XG00JEN-E1 - Rotating Electric Machines (85-MT2)

Basic electrical Machines introduces electrical circuits and works through many industry tasks in Electrical Systems including DC Series Motors, DC Shunt and Compound Motors, Motor Speed and Torque, Motor Performance, Split-Phase AC Motors, Capacitor-Start AC Motors, Permanent-Capacitor and Two-Capacitor Motors, and Three-Phase AC Induction Motors.

MAIN 102

W19146-XB00UEN-E1 - Mechanical Drives 1 (970-ME1)

This course covers vital knowledge related to mechanical drives training, such as motor mounting, key fasteners, power transmission systems, V-belt drives, chain drives, spur gear drives, and multiple shaft drives. Learners will study specific objectives like: methods of measuring motor shaft speed, how to calculate rotary mechanical power, the operation of a flexible jaw coupling, methods of adjusting belt tension, allowable chain sag for various applications, the function of backlash, and the alignment procedure of a sleeve coupling.

W19152-XA00UEN-E1 - Mechanical Drives 2 (970-ME2)

This course covers the construction, operation, installation, and alignment of heavy-duty V-belt drives, synchronous belt drives, and heavy-duty chain drives. The course covers V-belt maintenance and troubleshooting, timing belt drives, lubricant management, flange couplings, grid and gear couplings, and chain selection.

W19153-XA00UEN-E1 - Mechanical Drives 3 (970-ME3)

This course covers plain bearings, ball bearings, roller bearings, anti-friction bearing selection and maintenance, gaskets, seals, advanced gear drives, and gear drive selection and maintenance.

W19154-XB00AEN-E1 - Mechanical Drives 4 (970-ME4)

The Mechanical Drives 4 eBook course teaches linear axis drives, clutches, and brakes. Students will learn industry-relevant skills related to these new topics including operation, installation, performance analysis, troubleshooting, and design.

MAIN 201

(W17448-XB00JEN-E1) - Electric Wiring System (850-MT6B)

This course provides a comprehensive lesson on the function, operation, installation, and construction of electrical wiring and wiring components. More specifically, it covers areas like electrical control system wiring, pneumatic control circuit wiring, conductors, disconnects, and overcurrent protection.

W17471-XB00JEN-E1 - Electrical Power Distribution (85-MT7-B)

Electrical Power Distribution introduces electrical power concepts as well as covers a broad range of functions and skills used in electrical power distribution. Concepts taught start with the introduction to raceways including conduit basics, EMT conduit cutoff and preparation, conduit bodies and boxes, and conduit fittings. Basic conduit bending includes conduit benders, basic conduit bending, and offset bends. This course leads into more in depth topics such as advanced raceways including IMC conduit and flexible conduit, conductors, disconnects, and over current protection, and conduit sizing and wire pulling techniques.

MAIN 202

VB780-AA00AEN-E1 - Basic Pneumatics (96-PNE1)

Basic pneumatics prepares learners to work intelligently in industry with pneumatic applications. It introduces pneumatic power and takes learners through key topics and skills in pneumatic power and safety, pneumatic circuits, pneumatic schematics, the principles of pneumatic pressure and flow, and pneumatic speed control circuits. It covers pressure regulation, air filtration, how to connect pneumatic circuits, pneumatic cylinders, valves, and actuators, a wide array of pneumatic applications, pressure and cylinder force, pneumatic leverage, pressure and volume, and air flow resistance

VB831-XC00UEN-E1 - Basic Hydraulics (85-BH)

Basic hydraulics introduces hydraulic power use and application, allowing learners to develop skills and knowledge needed to apply hydraulics in modern industry. It takes learners through key topics and skills in hydraulic power & safety, hydraulic circuits, hydraulic schematics, the principles of hydraulic pressure and flow, and hydraulic speed control circuits. It covers pumps, fluid friction, how to connect hydraulic circuits, hydraulic cylinders and valves (including needle valves), and a wide array of hydraulic applications.

MAIN 220

WX25050-AA00UEN-E1 - Tabletop Mechatronics

This interactive multimedia course for Tabletop Mechatronics covers automation operations, programmable logic controller operation, basic PLC programming, PLC motor control, pick and place feeding, PLC event sequencing, indexing, and sorting and parts storage. Study in-depth topics like types of operator station discrete logic output devices, the basic structure of a PLC ladder logic program, how to create a PLC project, the operation of a PLC program for a reversing motor control, how to adjust a vacuum switch, how to adjust a capacitive sensor, and much more.

WX17411-CH00JEN-E1 - Variable Frequency AC Drive

Variable frequency AC drives teaches variable frequency AC solid-state control of 3-phase electric motors. Learners develop knowledge in the operation, installation, performance analysis, troubleshooting, and design of AC solid state control using 2-wire, 3-wire, manual, and open-loop speed control. Highlights motor jogging and dynamic braking as well as programmable acceleration and deceleration.

MAIN 222

W40085-CB00UEN-E1 - Portable PLC Learning System - Allen-Bradley CompactLogix L16 (990-PAB53A)

Portable PLC covers PLC (Programmable Logic Controller) programming, operation, and applications used in industry. This course covers a wide variety of program commands, ranging from timers and contacts, stepper motor control, and PWM control that will quickly develop relevant and critical skills to be job ready in modern industry environments.