ELECTROMECHANICAL TECHNOLOGY (620)

Electromechanical Technology (620)

620-702. Mechatronic Principles. (2 Credits)
Course learning outcomes will examine both introductory mechanical & electrical concepts as a foundation for future coursework and on-the-job learning. Troubleshooting principles associated with mechatronics will also be introduced. Apprentices will explore safety, rigging, measurement, mechanical principles, electrical principles, mechanisms, metallurgy, and troubleshooting. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=702)

620-703. DC Electricity. (1 Credit)
This course introduces the fundamental concepts and computations related to DC electricity. Emphasis is placed on circuit analysis and the problem-solving skills necessary for the maintenance of mechatronic systems and manufacturing equipment. Competencies related to metering and safe use of measuring devices are included. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=703)

620-704. AC Electricity. (1 Credit)
This course is designed to introduce the mechatronic technician apprentice to the basic concepts of alternating current. Emphasis is placed on circuit analysis and the problem-solving skills necessary for the maintenance of mechatronic systems and manufacturing equipment. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=704)

620-705. Motors & Motor Control. (2 Credits)
This course examines the fundamentals of electric motors and motor control. Apprentices will learn to recognize and draw basic symbols, use the language of motor control, and apply these in industry adopted formats. Apprentices will also learn to draw and read ladder and wiring diagrams, and be introduced to the logic used in motor control. Learners will apply this logic to correctly interpret, install, service, and wire control circuits. Wiring of panels, machines, and systems will also be examined. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=705)

620-706. Electrical Code. (1 Credit)
Apprentices will examine the National Electric Code and apply information to work practices involving mechatronic systems. Terminology needed to communicate and coordinate electrical work with other trades will be explored. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=706)

620-708. Fluid Power Systems. (2 Credits)
Course learning outcomes include inspecting, testing, servicing, and troubleshooting hydraulic, pneumatic, compressed air, and vacuum systems. Apprentices will review safety procedures for various common maintenance tasks. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=708)

620-709. Servos and Drives. (1 Credit)
Course introduces concepts, terminology, and safety associated with drives and servos used in industry and manufacturing. Course is designed to give the apprentice the knowledge required to program, service and maintain variable frequency drives and related equipment. Course learning outcomes include setting up and programming drives in a lab, shop or training center setting. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=709)

620-710. Power Transmission Systems. (1 Credit)
Course learning outcomes include examining mechanical power transmission systems and components. Belts, chain drives, gears & gear drives, couplings, and clutches & brakes will be examined. Apprentices will develop skills inspecting, installing, and maintaining power transmission systems and troubleshooting failures. Apprentices will also learn about safety, documenting work performed, communicating the status of work, and working collaboratively. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=710)

620-711. Machining Concept Mechatronics. (2 Credits)
Course introduces cutting, drilling, lathes, and milling operations to apprentices in mechatronics. Course topics also include work holding devices, measuring tools and measurement, safety, machine guards, tooling, print reading, and speeds & feeds. Math skills will be applied to machining related work practices.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=711)

620-712. Introduction to PLCs. (2 Credits)
This course is designed to teach the fundamentals of programmable logic controller and its programming software. The course will introduce terminology, concepts, schematic reading and basic programming. Technologies and PLC use in manufacturing and mechatronic systems will be emphasized. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=712)

620-714. HMI Technologies & PLC Apps. (2 Credits)
Human machine interface devices, software and technologies will be examined for mechatronic systems. Apprentices will work in a lab/shop/training center setting to create touchscreens, set-up networks, and configure systems. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=714)

620-715. Intro to Robotic Systems. (2 Credits)
Course introduces the apprentice to the robot teach pendant and methods of robot jogging. Learners will be taught to replace servo motors, re-master the robot, and back up robot software and programs. Maintenance, servicing and safety will be emphasized. Cable management systems will be examined. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=715)

620-716. Intro to Robotic Integration. (3 Credits)
Mechatronic apprentices will explore offsets, vision systems and system integration using robotic simulation and capstone project. The project will tie everything learned during their apprenticeship together – safety, machine integration, vision systems, CNC, machine applications for robotics, troubleshooting, and work documentation. Must be a state-indentured apprentice.
See sections of this course (http://www.wctc.edu/academics/programs-courses/course-search/course-search-listing.php?code=620&num=716)