

**Central Ohio Technical College**  
**Course Description Listing – Electromechanical Engineering Technology Courses**  
**2009-2010 Academic Year**

**EMT-3243 Hydraulics and Pneumatics**

4 credit hours, 6 contact hours (2 hours lecture and 4 hours lab). Prerequisite: C grade (2.00) or better in PHY-1726 or EET-3029. Course is graded A-E.

This course covers hydraulic and pneumatic fluid power systems. First, basic principles and laws and their influence are described. Types of pressure, flow, and directional control valves are presented and analyzed. Students learn to select and size pumps and actuators for specific applications. Complete circuits are studied and analyzed, and basic electrical control of fluid power circuits is introduced.

**EMT-3244 Industrial Power**

4 credit hours, 6 contact hours (3 hours lecture and 3 hours lab). Prerequisite: EET-3029. Course is graded A-E.

This course covers the use and control of industrial electronic power. Control of AC loads with semiconductor devices used in conjunction with phase-shift, timing, and opto-electronics is explored and reinforced with laboratory experiments. Types of DC and AC single and three phase motors and their operating characteristics are studied. Basic motor control devices and circuits as well as current electronic motor control technology are studied and then used in the lab. During these laboratory experiences, students will also learn wiring practices and how to select and apply proper protection devices.

**EMT-3252 Programmable Logic Controllers**

4 credit hours, 6 contact hours (2 hours lecture and 4 hours lab). Prerequisite: C grade (2.00) or better in EET-3029 and EET-3154. Course is graded A-E.

This course includes electrical control of Fluid Power/Electrical systems with relay ladder diagrams, but concentrates mainly on PLC's and their use for control of on/off electrical devices. Sensing devices such as limit and temperature switches and control switches and their use in ladder circuits are reviewed. Timing and counting devices as well as event-driven and time-driven sequencing schemes are studied. Architecture, use, and programming of PLC's are covered and reinforced in practically oriented laboratory projects.

**EMT-3253 Mechanical Components and Mechanisms**

3 credit hours, 5 contact hours (2 hours lecture and 3 hours lab). Prerequisite: C grade (2.00) or better in PHY-1726. Course is graded A-E.

Mechanical elements of power transmission including gears, levers, chains, belts, and pulleys are introduced and the student will learn basic design rules for these elements. The course also includes analysis of simple power trains and linkage devices, and the study of the nature of gear tooth contact.

**EMT-3261 Electromechanical Systems**

5 credit hours, 9 contact hours (3 hours lecture and 6 hours lab). Prerequisite: EMT-3252. Course is graded A-E.

Concepts and applications of sensors, controllers, actuators, and industrial processes used in closed loop process control are studied in this course. System stability and controller tuning are explored. The use of PLC's for analog process control is also covered. For laboratory activities, the student will make use of material from previous courses to complete capstone design projects typical of industrial process control applications.

**EMT-3262 Industrial Instrumentation**

4 credit hours, 6 contact hours (2 hours lecture and 4 hours lab). Prerequisite: C grade (2.00) or better in EET-3028 and completion of or concurrent enrollment in PHY-1728. Course is graded A-E.

Students will measure various physical quantities by using industrial sensors. Specifications and suitable applications as well as calibration procedures for different types of sensors will be discussed. Process and Instrumentation Drawings (P&ID) are introduced.