

Automation and Robotics (ATR)

ATR 112. Introduction to Automation. 3.0 Credits. Class-2.0.

Clinical-0.0. Lab-3.0. Work-0.0

This course introduces the basic principles of automated systems and describes the tasks that technicians perform on the job. Topics include the history, development, and current applications of robots and automated systems including their configuration, operation, components, and controls. Upon completion, students should be able to understand the basic concepts of automation and robotic systems.

ATR 211. Robot Programming. 3.0 Credits. Class-2.0. Clinical-0.0.

Lab-3.0. Work-0.0

This course provides the operational characteristics of robots and programming in their respective languages. Topics include robot programming, teach pendants, PLC integration, operator interfaces, the interaction of external sensors, machine vision, network systems, and other related devices. Upon completion, students should be able to program and demonstrate the operation of various robots.

Prerequisites: Take ATR 112 or ELN 260

ATR 214. Advanced PLCs. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-3.0.

Work-0.0

This course introduces the study of high-level programming languages and advanced I/O modules. Topics include advanced programming languages; system networking; computer interfacing; analog and other intelligent I/O modules; and system troubleshooting. Upon completion, students should be able to write and troubleshoot systems using high-level languages and complex I/O modules.

Prerequisites: Take ELC 228, minimum grade of C

ATR 218. Work Cell Integration. 3.0 Credits. Class-2.0. Clinical-0.0.

Lab-3.0. Work-0.0

This course introduces high technology systems which are currently being used in new automated manufacturing facilities. Topics include integration of robots and work cell components, switches, proxies, vision and photoelectric sensors, with the automated control and data gathering systems. Upon completion, students should be able to install, program, and troubleshoot an automated manufacturing cell and its associated data communications systems.

Prerequisites: Take ELC 228, minimum grade of C

ATR 219. Automation Troubleshooting. 2.0 Credits. Class-1.0.

Clinical-0.0. Lab-3.0. Work-0.0

This course introduces troubleshooting procedures used in automated systems. Topics include logical fault isolation, diagnostic software usage, component replacement techniques, and calibration; safety of equipment; and protection of equipment while troubleshooting. Upon completion, students should be able to analyze and troubleshoot an automated system.

Prerequisites: Take ATR 219, minimum grade of C