MOHAWK VALLEY COMMUNITY COLLEG UTICA AND ROME, NEW YORK

Course Outline

**Course Name:** ET241 Programable Logic Controllers II

**Course Credit Hours**: C - 2, P - 4, CR - 3

# Catalog Description:

This course is a continuation of Programmable Logic Controllers (PLC). The nature of the PLC programming framework, as specified by the IEC 61131-3, is explored as well as other PLC systems and Advanced Programming Interfaces (API). Student design and build PLC motor control circuits and discuss troubleshooting techniques for PLC based systems. Topics include Proportional Integral Derivative (PID) controls, analog based circuits, motor controls circuits with Variable Frequency Drives (VFD), and Human Machine Interface (HMI).

Prerequisite: ET141 Programmable Logic Controllers

# Student Learning Outcomes:

* + *Demonstrate an understanding of the IEC 61131-3 standard common framework for programming PLCs*
  + *Open a programming interface and read code sequences written in different IEC 1131-3 PLC programming languages.*
  + *Using a programming interface design and construct a simple program written in the IEC 61131-3 Functional Block Diagram language.*
  + *Demonstrate an understanding of PLC and PLC based systems troubleshooting*
  + *Construct and troubleshoot PLC based hardware applications.*
  + *Demonstrate an understanding of analog based PLC control systems*
  + *Design and construct analog and discreet control circuits*
  + *Demonstrate an understanding of the concepts and methods used for PID control.*
  + *Build and troubleshoot simple laboratory PLC PID control applications.*
  + *Demonstrate knowledge of basic functions and identify components of Human Machine Interface (HMI)*
  + *Demonstrate an understanding of HMI as compared to Supervisory HIM vs Supervisory Control and Data Acquisition (SCADA)*
  + *Demonstrate an understanding of the methods to read, aggregate, and store data from PLC memory.*