Industrial Course Topics:

IND120 Industrial Electrical I, 3 CrHr, 64 contact hours

- Basic DC & AC Electricity, series & parallel circuits
- Capacitors and Inductors
- Basic relay circuits, types of switches
- Basic JIC symbols and basic electrical control circuit
- Troubleshooting electrical circuits

IND121 Industrial Electrical II, 3 CrHr, 64 contact hours, PreReq: IND120

- OSHA safety, arc flash, PPE, Electrical Panels
- Basic motors (DC, single & three phase)
- Wiring control circuits (24 Vdc & 120 Vac)
- Interpreting electrical prints
- Wiring an AB Micrologix PLC from a print
- Basic control circuit troubleshooting

IND223 Motors & Controls, 3 CrHr, 64 contact hours, PreReq: IND121

- Single & three phase power and industrial transformers
- Three phase motors and motor branch circuits
- Reversing circuits (power and control)
- Wire and program VFDs (GS2, PF40 and PF525
- PLC controlling a VFD (analog and Ethernet)
- Troubleshooting VFDs

PLC200 Programmable Controller I, 3 CrHr, 64 contact hours, PreReq: IND120

- Allen Bradley SLC-500 and CompactLogix hardware
- RSLinx, RS-232, USB, Ethernet & Ethernet IP
- Basic PLC addressing and TAG structure
- Basic PLC instructions (relay, timers, counters, compares)
- Interpreting a PLC system on an electrical print
- Program with RSLogix500 and Logix Designer
- Troubleshooting PLCs

PLC210 Programmable Controller II, 3 CrHr, 64 contact hours, PreReq: PLC200

- AB CompactLogix and ControlLogix hardware
- TAGs and Data Types
- L5000 project structure, Tasks, Programs, Routines
- Logix Designer searching and documentation
- Analog I/O on the L5000 processors
- Troubleshooting an L5000 system

IND221 Instrumentation & Controls, 3 CrHr, 64 contact hours, PreReq: IND120, PLC200

- Analog signals (4-20 mA, 0-10 Vdc, 3-15 psi, etc.)
- Sensors and transmitters (pressure, level, flow and temperature)
- Calibrating transmitters (Passive-Acromag, Smart-Endress Hauser)
- Interpreting Piping & Instrument Diagrams (P&ID), pumps, valves & heat exchangers
- Powerflex VFD, AB Panelview & AB ControlLogix integration
- Tuning and Troubleshooting an instrument loop

IND134 Industrial Fluid Power I, 3 CrHr, 64 contact hours, PreReq:

- Introduction to fluid power safety and stored energy
- Pneumatic control valves (way & position), and single and double-acting cylinders
- Pneumatic valves (flow, check, shuttle, AND and pressure relief valves)
- Predict the operation of a pneumatic circuit based on the pneumatic print
- Troubleshoot a pneumatic circuit using circuit prints and test equipment
- Interpret and explain how electrical systems interface to pneumatic circuits
- Interpret and explain how a pneumatic circuit is controlled by a PLC