



Addendum to 2023-2024 Course Catalog

3/13/2024–Additional degree offering

INDUSTRIAL AUTOMATION TECHNOLOGY (PG. 83)

ST. LOUIS

ASSOCIATE OF TECHNOLOGY OR ASSOCIATE OF SCIENCE

Industrial Automation Technology is designed to prepare students to for employment with companies that automate multiple facets of their manufacturing processes. The curriculum was built for industry needs in such as to construct electrical circuits utilizing National Electrical Code guidelines, install, maintain, troubleshoot and repair industrial, commercial, and residential electrical systems, program and configure equipment controlling various types of electrical motors and automated processes, build and install various mechanical, hydraulic, and pneumatic systems to standard industry codes and job specifications.

DAY PROGRAM COURSES			HOURS	PREREQUISITES
First or Second Semester	EEL1120	Electrical Applications	13	MTH1110 (Co. Req.)
First or Second Semester	EEL1220	Intro to Automation & Control Circuits	14	
Third or Fourth Semester	ELA 2015	Automated Motors and Drives Applications	13	EEL1220
Third or Fourth Semester	ELC 2010	PLCs and HMIs Graphical Displays	13	EEL1220
Fifth Semester	IMT 1000	Mechanical Power Fluid System	15	
<i>Total Technical Credit Hours Required</i>			<i>68</i>	

COURSE DESCRIPTIONS

EEL1120 Electrical Applications

This course will focus on electrical safety, tools used in the electrical trade and wiring of electrical circuits used in residential and commercial buildings. Students begin the course with an OSHA approved 10-hour class in electrical safety. This course will cover construction documents for electricians and AutoCAD to represent the electrical circuits in a building. The National Electrical Code (NEC) will be utilized so that students understand and implement safe and acceptable wiring methods. Electrical concepts such as types of electricity, units of measurement and electrical/electronic equipment and devices will be introduced and reinforced throughout this course. *Thirteen credit hours*

EEL1220 Introduction to Automation and Control Circuits

Offers fundamentals of relay logic control circuits and a basic understanding of control circuits, ladder logic and component wiring design and operation. This topic is covered in both theory and hands-on practice. Students will explore various methods used to distribute electrical power common in both residential and commercial applications. An overview of electronic control components such as diodes, transistors and integrated circuit chips are also explored. The course will also cover an introduction to electrical safety, and types of electrical equipment and devices are also studied. Students will construct various branch circuit lighting and receptacle wiring systems utilizing different cabling and conduit methods. The National Electrical Code (NEC) will be utilized throughout the course. *Fourteen credit hours*

ELA2015 Automated Motors and Drives Applications

This course covers both alternating current (AC) and direct current (DC) machines and how to install, maintain and troubleshoot these machines. Focus is on National Electric Code (NEC) calculations for single and multiple motor installations. Students will also learn how to construct, configure and troubleshoot AC and DC motor drive systems and single axis motion control systems. Instruction on AC drives includes both the volts/hertz and vector modes. Students also learn how to program and monitor equipment through specific software and industrial networks.

Thirteen credit hours

ELC2010 Programmable Logic Controllers (PLCs)/ Human Machine Interfaces (HMIs) Graphical Displays

This class provides extensive, in-depth instruction in the design, development and troubleshooting of Programmable Logic Controller (PLC) projects and Human Machine Interface (HMI) applications that communicate with and control PLCs. Hands-on PLC and HMI hardware setup, programming, process monitoring and troubleshooting are studied. This course also covers PLC project wiring, operation and process control in simulated installations, configuration of motor control circuits and industrial networking. Students will also gain experience with industrial application of robotics technology.

Thirteen credit hours

IMT 1000 Mechanical and Power Fluid Systems

Students in this course will begin with interpretation of machine operation and maintenance documentation, read and interpret technical drawings, safely move and store materials and equipment, and properly use hand tools for equipment maintenance. Students will also adhere to mechanical power transmission safety rules, use dimensional measurement tools, install, and align power transmission systems, and properly lubricate machines in accordance with maintenance schedules. This course will then segue to cover the skills and knowledge to successfully adhere to fluid power schematics by running hydraulic and pneumatic systems and adjusting system pressures as needed, install hydraulic and pneumatic conductors, install, test, and troubleshoot components in a basic hydraulic and pneumatic circuit. *Fifteen credit hours*