

Industrial Automation A.A.S. (INR)

This program is designed to prepare a student for employment as a technician in an industrial environment that uses automated assembly or processing equipment. The program provides students with knowledge and experiences in the areas of analog and digital electronics, fluid power, robotics, computer-aided drafting (CAD), and computer-aided manufacturing (CAM), so that they are prepared for the “high-technology” methods employed by industry. Graduates will assist engineers in the design, construction, testing, and repair of industrial automation equipment.

Upon successful completion of this program, graduates will be able to:

- connect components into basic electrical circuits and use multimeters to verify circuit operation.
- determine how the different configurations of capacitance, inductance, and resistance affect the instantaneous voltages and resultant instantaneous currents.
- connect digital circuits common to computers, such as logic gates, flip flops, counters, and arithmetic circuits, into functioning circuits.
- write application programs using the BASIC computer language.
- draw the architecture of a typical microprocessor and explain the operation of each section on the microprocessor.
- use the instruction set to write assembly language programs to control the operation of the microprocessor.
- construct and experimentally verify the operation of standard electronic circuits, such as power supplies, amplifiers, and oscillators.
- use electrophysical sensors to measure such conditions as light, heat, pressure, and motion to control and operate power devices.
- use a programmable logic controller to control specific process control operations.
- use operational amplifiers as a component in a variety of circuits, such as amplifiers, regulators, and active filters.
- interpret data sheets of various integrated circuits to select the proper integrated circuit for a given application.
- apply knowledge of sensing devices to measure parameters for a robot to perform specific tasks.
- interpret hydraulic, pneumatic, and electromechanical schematic diagrams as related to robotic systems.
- write programs to control robot functions.
- analyze and repair defective circuits in test equipment and control devices.
- perform operational tests on a variety of hydraulic and pneumatic circuits.
- work from handbooks, catalogs, and other informational sources to obtain the data necessary for selecting a machine component.
- use computer graphics equipment to draw required parts or mechanisms.

First Semester		Credits
BGT 110	Fundamentals of Technology	3
ELE 120	DC Circuits	4
ELE 130	Digital Fundamentals	4
MET 104	Manufacturing	3
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		14
Second Semester		Credits
BGT 103	Fluid Power	3
ELE 165	AC Circuits	4
ELE 175	Introduction to Microprocessors	4
ENG 105	Research and Composition	3
MAT 130*	Industrial Mathematics	3
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		17
Third Semester		Credits
BGT 240	Industrial Automation	3
ELE 210	Electronic Circuits	4
ELE 215	Industrial Electronics	2
ELE 235	Programmable Controllers	2
MTD 200	Introduction to Mechanisms	3
PHY 201	Introduction to Physics I	4
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		18
Fourth Semester		Credits
ENG 107+	Writing in the Workplace	3
MET 111	Computer-Aided Drafting	4
MET 115	Computer-Aided Manufacturing	3
Electives	Social Science/Humanities	6
Elective	General Education	3
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		19
Credit Total		68

*MAT 160 or higher level course will also satisfy the mathematics requirement.

+ENG 106 may be substituted for ENG 107.

Prior Learning Assessment: Previous job training, certificates and work experience that may qualify for college credit (*see academic advisor*).

Gateway Courses: Based on placement testing in reading, writing and math, these prerequisite courses may have to be taken before placement in College English or Mathematics beginning the first semester and concurrently.

RSS 099	Basic Skills Reading	3
RSS 100	Critical Reading	3
ENG 099	Basic Skills Writing	3
ENG 100	Fundamentals of Writing	3
MAT 090	Mathematical Literacy	6
ESL 251	English for Academic Purpose	6
		(Required for ESL students only.)

Please note, taking gateway courses will increase your time for completion.

- demonstrate effective communication skills by writing technical reports based on laboratory experiences.
- demonstrate critical thinking/problem-solving abilities by analyzing a nonfunctioning electrical circuit, determining the problem, and restoring circuit operation.
- demonstrate interpersonal relations, teamwork, and work ethics through group laboratory projects.