

Industrial Electronics and Robotics Technician

Program Description:

In the Industrial Electronics and Robotics Technician program, students learn to install, diagnose, maintain, modify, test, and calibrate electronic, electrical, and mechanical systems used in manufacturing support equipment and production machinery, including precision machine tools (CNC) and industrial robots. The program consists of a certificate of training in Basic Electricity, a one-year Electrical Technician certificate, and a two-year Industrial Technology degree that prepares students for entry into electrical apprenticeships. The program features equipment and software from industry leaders such as Allen Bradley, Rockwell Automation, FANUC Robotics, Bosch, Siemens, Famic Technologies, and National Instruments. Focus is on the intelligent control of machines and processes using programmable logic controllers (PLCs), embedded controllers, variable frequency drives (VFDs), industrial networks, sensors & transducers, instrumentation and robotics. The electrical curriculum is based on guidelines from the National Joint Apprenticeship Training Committee (NJATC) for electrical trades. The program also offers in-depth career training for those interested in becoming an electronics technician in the manufacturing, scientific, aerospace, or civilian military industries.

For program costs and fees refer to the catalog TUITION AND FEES PAGE.

Program Learning Outcomes:

1. Describe current status of robotics technology and new development
2. Identify common electronic components, devices and symbols
3. Analyze direct current and alternating current circuits using various circuit simplification and analysis techniques
4. Apply theoretical principles to physically design electric circuits to solve technical problems
5. Operate/program/repair industrial robots
6. Solve real-world and theoretical problems related to semiconductors, digital systems and PLCs
7. Identify common electronic components, devices, and symbols and verify their operation
8. Construct and troubleshoot the operation of DC and AC circuits using lab equipment
9. Measure and source voltages, currents and frequencies using power supplies, function generators, and oscilloscope
10. Solve a problem using digital logic and Karnaugh mapping
11. Identify common transistor circuits and prove their operation in a lab setting
12. Identify common amplifier circuits and prove their operation in a lab setting
13. Use microcontrollers and variable frequency drives to regulate the speed of an AC motor
14. Specify a motor type to solve a specific problem
15. Connect single and three-phase motors to sources and successfully energize
16. Program and interface a microcontroller to discrete hardware to obtain desired functionality

Industrial Electronics and Robotics Technician AAS (119 credits)

Required Courses

Quarter 1	IERT110	Electricity & Magnetism	2
	IERT115	DC Circuit Analysis	5
	IERT118	Fluid Power	5

2020-2021 Addendum

Quarter 2	IERT120	Alternating Current	2
	IERT125	AC Circuit Analysis	5
	IERT128	Polyphase AC Power Generation & Distribution	5
	IERT135	Mechanics	3
Quarter 3	IERT104	Blue Print Reading	3
	IERT126	Analog Electronics	5
	IERT140	Motors & Control Systems	5
	IERT145	Construction Practices, the NEC, and UL Guides	5
Quarter 4	IERT106	Introduction to Numeric Controls	3
	IERT108	Basic Precision Measuring Tools	3 Should be 1 credit
	IERT225	Sensors and Transducers	3
	IERT255	Instrumentation	5
Quarter 5	IERT215	Programmable Logic Controllers (PLCs)	5
	IERT230	Programming Methodologies	2
	IERT238	Embedded Controllers	5
Quarter 6	IERT101	Introductory Industrial Robotics	5
	IERT231	PLC Programming Projects	5
	IERT212	Digital Electronics	3 should be 5 credits
	IERT292	Independent Projects	5
	IERT293	Independent Projects	5
Quarter 7	IERT220	Allen Bradley SLC 500 PLCs	5
	IERT240	Industrial Robots- Fanuc Robotics 200iC	5

Electives

IERT250	Independent Study	5
IERT251	Independent Study	5
IERT298	Work based Learning	

General Education Requirements

2020-2021 Addendum

Communications

5 credits required

ENGL175
ENGL&101 ENGLISH COMPOSITION I

Humanities/Social Sciences/Natural Sciences/Other 5 credits required

BIOL&160 GENERAL BIOLOGY
BIOL&175 HUMAN BIOLOGY WITH LAB
BIOL&241 ANATOMY & PHYSIOLOGY I
BIOL&242 HUMAN A&P II
BIOL&260 MICROBIOLOGY
CHEM&121 INTRODUCTION CHEMISTRY
CHEM&131 INTRODUCTION TO ORGANIC/BIOCHEMISTRY
CMST&102 INTRO TO MASS MEDIA
CMST&152 INTERCULTURAL COMMUNICATION
CMST&210 INTERPERSONAL COMMUNICATION
CMST&220 PUBLIC SPEAKING
ECON&201 MICROECONOMICS
NUTR&101 INTRO TO NUTRITION
POLS&101 INTRO TO POLITICAL SCIENCE
PSYC&100 GENERAL PSYCHOLOGY
PSYC&200 LIFESPAN PSYCHOLOGY
SOC&101 INTRO TO SOCIOLOGY

Quantitative

5 credits required

MATH172 APPLIED BUSINESS MATH
MATH&141 PRECALCULUS I
MATH&142 PRECALCULUS II
MATH&146 INTRODUCTION TO STATISTICS
MATH&151 CALCULUS I
MATH&152 CALCULUS II

Note: See a Career Advisor prior to choosing courses that meet general education requirements.

2020-2021 Addendum

Electrical Technician Certificate of Competency (57 credits)

Required Courses

IERT110	Electricity & Magnetism	2
IERT115	DC Circuit Analysis	5
IERT118	Fluid Power	5
IERT120	Alternating Current	2
IERT125	AC Circuit Analysis	5
IERT128	Polyphase AC Power Gen & Distribution	5
IERT135	Mechanics	3
IERT126	Analog Electronics	5
IERT140	Motors & Control Systems	5
IERT145	Const Practices, the NEC, and UL Guides	5

General Education Requirements

Communications 5 credits required

ENGL175

ENGL&101 ENGLISH COMPOSITION I

Humanities/Social Sciences/Natural Sciences/Other 5 credits required

BIOL&160 GENERAL BIOLOGY

BIOL&175 HUMAN BIOLOGY WITH LAB

BIOL&241 ANATOMY & PHYSIOLOGY I

BIOL&242 HUMAN A&P II

BIOL&260 MICROBIOLOGY

CHEM&121 INTRODUCTION CHEMISTRY

CHEM&131 INTRODUCTION TO ORGANIC/BIOCHEMISTRY

CMST&102 INTRO TO MASS MEDIA

CMST&152 INTERCULTURAL COMMUNICATION

CMST&210 INTERPERSONAL COMMUNICATION

CMST&220 PUBLIC SPEAKING

ECON&201 MICROECONOMICS

2020-2021 Addendum

NUTR&101	INTRO TO NUTRITION
POLS&101	INTRO TO POLITICAL SCIENCE
PSYC&100	GENERAL PSYCHOLOGY
PSYC&200	LIFESPAN PSYCHOLOGY
SOC&101	INTRO TO SOCIOLOGY

Quantitative

5 credits required

MATH172	APPLIED BUSINESS MATH
MATH&141	PRECALCULUS I
MATH&142	PRECALCULUS II
MATH&146	INTRODUCTION TO STATISTICS
MATH&151	CALUCLUS I
MATH&152	CALCULUS II

Note: See a Career Advisor prior to choosing courses that meet general education requirements.

Electronics Technician Certificate of Training (30 credits)

Required Courses

ECS101	Introduction to Electronics	2
ECS102	DC Circuits	5
ECS104	Analog Circuits I	2
ETECH103	AC Circuits	5
ECS105	Analog Circuits II	3
ECS108	CET Certification Preparation	3
ETECH105	Digital Circuits	5
ETECH106	Microcontrollers	5