NICOLET COLLEGE

INDUSTRIAL ELECTRONICS TECHNICIAN

Technical Diploma

About the Industrial Electronics Technician Program

Industrial electronics technicians work closely with engineers and electromechanical technicians to perform basic installation, maintenance, and repair activities for industrial electronic and mechanical equipment. This technical diploma will teach students industrial safety practices to include lockout/tag out, isolate faults, test fuses, wire motors, understand, and apply electrical principles to solve failures in the field. Students integrate these concepts with hydraulic, pneumatic, and mechanical systems. An introduction of programmable logic controllers help students develop entry-level skills in manufacturing.

PROGRAM OUTLINE

SEMESTER: 1

Course #	Course Title	Credits
1010311500	MS Word Beginning Provides practice in using basic word processing functions and features of MS Word.	1.00
1010312600	MS Excel Beginning Develops skills in using basic spreadsheet functions of MS Excel for business users.	1.00
1044910000	Industrial Safety Fundamentals Introduces general safety for a manufacturing environment while raising the awareness of the worker to the hazards around them, and how to best protect themselves while working safely. Students will earn an OSHA 30 card and confined space certificate upon completion.	2.00
1046212600	Industrial Electronic Concepts Introduces the student to basics of electricity needs by the industrial mechanic. Included are basic electrical theory, operation and use of the Volt-Ohm meter, AC and DC electric motors, motor controls and wiring, and applications as needed to install, operate, and control industrial machines.	3.00
1062010500	Hydraulics and Pneumatics for Electromech Overview of basic components, applications, and circuitry involved in hydraulics and pneumatics systems. Lecture and lab experiences involving pumps, valves, cylinders, fluids, and conditioners; basic theory and circuitry.	2.00
1062011500	PLC Systems I Principles of programmable logic controllers (PLCs) including programming the PLCs, creating basic ladder logic circuits containing basic logic functions, timers, counters, and sequencers. Emphasis is on basic PLC functions to assist one in servicing and troubleshooting PLC controlled equipment.	3.00
1080119500	Written Communication Develops writing skills which include prewriting, drafting, revising, and editing. A variety of writing assignments is designed to help the learner analyze audience and purpose, research and organize ideas, and format and design documents based on subject matter and content. Also develops critical reading and thinking skills through the analysis of a variety of written documents.	3.00

SEMESTER: 2

Course #	Course Title	Credits

Course #	Course Title	Credits
1046211000	Mechanical Concepts 1 This course is designed to give the student a basic understanding of the mechanical concepts that are found on industrial equipment. Since all industrial machinery is equipped with some type of mechanical drive, a firm understanding of these drives is necessary for both the industrial mechanical technician and the electro-mechanical technician.	2.00
1062010700	Electronic Devices and Digital Concepts Electronic circuits and digital electronics from an electromechanical perspective. Topics covered include electronic switching devices, operational amplifiers, D-A and A-D conversions and basic digital circuits and systems. Emphasis will be placed on installation considerations, compatibility with other devices and troubleshooting. Prerequisite(s): 1046212600 Industrial Electronic Concepts (C or better).	3.00
1062012200	Industrial Motor Control This course will lead you through the fundamentals of electric motor control and power circuits. You will learn to recognize and draw the basic symbols, the language of motor control, and how to apply these symbols, into current industrial format. Forward and reversing motor starters, contractors and frequency drives. 3-phase AC motors, single-phase, split-phase AC motors, and DC motors, motor starters and motor controls. Mounting and wiring of control systems for easy maintenance. You will also learn to draw and read ladder and wiring diagrams. You will be introduced to the logic used in motor control and be required to apply this logic in order to correctly interpret, design, and wire control circuits. Prerequisite(s): 1046212600 Industrial Electronic Concepts (C or better).	3.00
1062013000	PLC Systems II Design and add documentation to ladder logic programs to solve application problems. PLC applications examples as used in industry will be programmed on real industry equipment utilizing a wide variety of various sensors, photoelectric, proximity, motor drives, and control devices creating working automated systems. Prerequisite(s): 1062011500 PLC Systems I (C or better).	2.00
1080413400	Mathematical Reasoning An activity based approach is used to explore numerical relationships, graphs, proportional relationships, algebraic reasoning, and problem solving using linear, exponential and other mathematical models. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of contexts. This course is not designed for Science, Technology, Engineering, or Math (STEM) students and/or others who require calculus. Prerequisite(s): 7785478000 Principles of College Math (C or better) or Accuplacer Algebra score >= 35 or UW Math Placement Basic Math score >= 250 or ACT Math score >= 18 or Tailwind Math CMath Fund score >= 16.	3.00

Total Credits: 28.00

Talk with an Academic Advisor about the program outline. Together, you will determine if credits you've already earned satisfy any requirements, discuss possible alternative courses, and choose the best classes if you're thinking of transferring.

AT A GLANCE

Flexible Options

ON CAMPUS

Term Start Dates

Fall 2019: September 4	**Spring 2020:** January 8	**Summer 2020:** May 8

Approximate Cost

$3,757*

Financial Aid Eligible

*Based on 10-level courses - materials, books, and fees may be additional

What You'll Learn

- Practice industry recognized safety practices and guidelines, including the use of personal protective equipment in an industrial operating environment.
- Work as part of a maintenance team to assemble/disassemble, troubleshoot, diagnose and repair industrial equipment and systems using appropriate tools, materials, and methods.
- Interpret drawings, schematics, and specifications for industrial equipment.
- Document technical information through descriptive writing, sketches/diagrams, mathematical expression, computation, and graphs.
- Use precision measuring equipment.
- Apply knowledge of electricity, electronics, hydraulics, and electric motors and mechanics.
- Perform electrical, mechanical, and fluid measurements by properly selecting tools and test equipment.
- Apply electrical skills to troubleshoot control and operator panels.

Your Potential Careers

- Electrical or Electronic Maintenance Technician
- Field Service Technician

Get Started

Your application can be submitted online, it takes just a few minutes to complete.

APPLY NOW