



Industrial Technology/Industrial Maintenance

Electrical Specialist Certificate CIIM-5050

This short-term, noncredit program helps students acquire the essential skills and knowledge of an electrical specialist. Receive instruction in AC/DC electrical circuits, motor controls, and programmable logic controllers. Although this program does not lead to an industry certification, it establishes key foundations of electrical system principles, assembly, performance, and troubleshooting.

Ready to learn more? Complete our information form at www.kirkwood.edu/ce_certificatesform or contact a student advisor today at ceadvising@kirkwood.edu or 319-398-5529.

Course List:

AC/DC Electrical Circuits; Motor Controls; Programmable Logic Controllers (PLC)

Delivery Method:

Classroom

Length of Program and CEU Credits:

144 hours, 17.28 CEUs

Entrance Requirements/Prerequisites:

None

Other Items to Know About this Course:

Students are required to purchase the following textbooks: "Electrical Motor Controls for Integrated Systems" (5th edition, with CD, by Rockis, ISBN 9780826912268) and "Technician's Guide to Programmable Controllers" (6th edition, ISBN 9781111544096).

Program Completion Requirements:

This is a pass/fail certificate. Students must attend at least 70 percent of the class in order to successfully complete the program.

Industry Credentials Earned:

None. This program does not award any nationally recognized certification upon completion.

Pathway to Credit Program:

None

Tuition Assistance:

Yes

Course Objectives:

- Demonstrate proper safety practices in the laboratory.
- Understand basic principles of electricity.
- Understand Ohm's Law as applied to series and parallel circuits.
- Calculate values of voltage, current, resistance, and power for series and parallel circuits.
- Demonstrate the use of electrical measuring devices.
- Calculate values of voltage, current, and power for three-phase wye and delta circuits.
- Understand how transformers change voltage and current values.
- Describe methods of generating electricity.
- Describe the operating principles of DC motors, single-phase AC motors, and three-phase AC motors.
- Identify commonly used electrical symbols to read and draw electrical circuit diagrams.
- Properly size a motor starter and select overload units for a given motor nameplate.
- Describe and program the operation of DC and AC motor drives.
- Understand uses for control devices, timers, and sensors and properly connect them into an electrical circuit.
- Explain the purpose of reduced voltage starting.
- Describe common methods for starting and stopping motors, troubleshooting as necessary.
- Describe the four major components of a PLC.
- Describe how input and output modules function.
- Write, test, and run basic PLC programs, performing online and offline programming.
- Connect and configure a PLC network.
- Describe considerations for installing and wiring a PLC.
- Troubleshoot PLC programs, input devices, and output devices.

Learning Outcomes:

The skills and knowledge in this program should prepare students to pursue a career in electronic assembly and/or troubleshooting.

Careers:

Source: Career Coach 2018, Kirkwood Community College region.

Installation, Maintenance, and Repair Workers, All Other

Average hourly earnings: \$17.62

Starting hourly earnings: \$9.77

Projected job openings (2018 – 2023): 158

Related Information:

NA

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Continuing Education

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