

Industrial Automation Post Baccalaureate Certificate

Program Number: 90-462-3

Certificate

Manufacturing Program Cluster

School of Applied Technology

Program offered at Madison Campuses

For information call: (608) 246-6102 or
(800) 322-6282 Ext. 6102

About the Certificate

The certificate curriculum includes five courses from the Industrial Maintenance Technician program. The curriculum may be completed in two semesters or longer.

Students completing this certificate will have practical skills and knowledge needed for employment in Automation and Process Control industries, including manufacturing automation and renewable energy infrastructure in public sectors.

This certificate is perfect for individuals who have a theoretical basis for, but lack the practical skills for automation and Process Control.

Unique Admissions Requirements

1. A bachelor's degree in Engineering and consent of faculty director;
2. One semester of college level AC/DC;
3. One semester of college level Controls (Motors/Transformer) with laboratory component;
4. Good computer skills (Excel, Networking).

Applicants with missing prerequisites may complete those courses at Madison College.

Certificate Application Process

To apply, see: [Apply Online](#) (on the Madison College website).
[Create an ApplyWeb account](#) and follow the [instructions](#) to complete the [Online Certificate Application](#) before the [application deadline](#).
 Submit the \$15 non-refundable fee (payable by credit card, debit card or electronic check) with your application. Applicants may submit more than one certificate application per term using the Online Certificate Application; the same fees apply for each additional application.

Unique Requirements for Completion

The certificate will be awarded upon completion of the requirements with a minimum of a 2.0 grade average. The certificate will be awarded when completion of all requirements is verified after the semester the last course has been completed.

Curriculum

Courses	Credits	Hrs/week
32-414-318 Electronic Circuits for Maintenance ^o	3	3-3
32-414-319 Programmable Logic Controllers ^o	3	3-3
32-414-320 Programmable Logic Controllers 2 [♦]	3	3-3
32-414-321 Interfacing Sensors with Computer Controls [♦]	3	3-3
32-462-314 Manufacturing Systems, Application and Control [♦]	3	4-2
Total	15	

- ^o Fall course offering
- [♦] Spring course offering

Note:
 Courses are listed in suggested sequence. Enrollment for courses adhere to course pre-requisites and co-requisites as indicated at the end of each course description.



Courses

32-414-318 Electronic Circuits for Maintenance 3 credits
Presents semiconductor devices with an emphasis on their practical use. Students construct and troubleshoot power supplies, amplifiers, electronic switches, relay drivers, photo-optical isolators and power control electronics. Students learn to identify and troubleshoot diodes, bipolar transistors (BJTs), field-effect transistors (FETs), silicon controlled rectifiers (SCRs and Triacs), light-emitting diodes (LEDs) and other components found in industrial electronics. *Pre-reqs: DC/AC Circuits (23-414-316); Drawing Interp (32-421-392); Safety Compliance (32-462-318); and Code Compliance (32-463-318).*

32-414-319 Programmable Logic Controllers 1 3 credits
Fundamentals of programmable logic controller (PLC) installation, interfacing, operation, and programming. Students learn about PLCs connected to Windows-based PCs running state-of-the-art programming tools. Students study discrete and analog input and output; hardware sensor interfacing and troubleshooting techniques; fundamentals of digital systems and will program PLCs using timer, counter, latch, data movement, sequencing, integer arithmetic and other instructions. *Pre-reqs: DC/AC Circuits (23-414-316); Drawing Interp (32-421-392); Safety Compliance (32-462-318); and Code Compliance (32-463-318).*

32-414-320 Programmable Logic Controllers 2 3 credits
Advanced programmable logic controller (PLC) installation, interfacing, operation, and programming. Students learn how to connect advanced PLCs in a typical industrial PLC network utilizing Ethernet, DH+, RS232 and RIO communication paths. Data sharing and distributed PLC programming techniques along with fundamentals of touch panel programming and operation are studied. *Pre-req: Program Logic Controllers 1 (32-414-320).*

32-414-321 Interfacing Sensors with Computer Controls 3 credits
Applies various sensors to analog input modules of programmable controllers and to A/D converters for computer systems. *Pre-reqs: DC/AC Circuits (23-414-316); Drawing Interp (32-421-392); Safety Compliance (32-462-318); and Code Compliance (32-463-318).*

32-462-314 Manufacturing Systems, Application and Control 3 credits
Introduces computer control systems and fundamentals of motion control. Presents programmable logic controllers (PLCs) along with design, integration and troubleshooting techniques. *Pre-req: Program Logic Controllers 1 (32-414-320).*

Career Potential:

- Automation Engineer
- Maintenance Supervisor
- Systems Integrator
- Industrial Controls Technician
- Automation Support Engineer
- Controls Engineer
- SCADA Engineer
- Energy Infrastructure Engineering
- Bio Fuels Processing
- Plant Engineering

More detailed and updated information on this program may be available at: madisoncollege.org. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.

Rev. 03/12