



*Powered by Lorain County JVS and
Lorain County Community College*

Program Offered at Lorain County JVS!

Maintenance Technician Short-Term Technical Certificate

PROGRAM



Maintenance Technician

Short-Term Technical Certificate

PROGRAM OVERVIEW

The Maintenance Technician Certificate trains individuals to repair, troubleshoot, and maintain automated equipment commonly used in industry.

Within this field, there are a wide range of functions related to the control and maintenance of production, distribution and/or manufacturing conducted by automated processes. Individuals working in companies may develop and test industrial process control systems, conduct the installation and operation of such systems. They may calibrate operating systems and components and troubleshoot for improvement and functionality of these systems. Others work with programmable logic controllers involving work with special-purpose computers to synchronize all of the technologies used for a manufacturing process.

Mass production is the basis for most every business, from car companies to computer giants. The automation industry is one of the fastest growing areas of our national and international high-technology economy. It combines the fields of electronics, electrical, and mechanics and includes the interaction and control of motors, computers, pneumatics, hydraulics and other processes used in manufacturing.

Program Content

Robotics and Automated Manufacturing
Programmable Logic Controllers
Electrical Circuits I
College 101
Fluid Power

Requirements

High School Diploma or equivalent
Must be college level in English and Math

What jobs are available at the end?

Maintenance Technician
Maintenance Mechanic
Maintenance Electrician
Maintenance Supervisor
Process Technician
Industrial Machining Mechanic
Equipment Engineering Technician

Earnings/Job Outlook

In Ohio, occupations are projected to increase by 16.7% percent from 2012-2022. In 2014, annual salaries in Ohio ranged from \$40,108.00 to \$51,688.00.

(Source: Ohio Labor Market Information)

Key Principles for Students

- **Coursework leads to a degree pathway**
- **Financial Aid available to those that qualify**
- **Dedicated Academic Advisor to work with you every step of the way!**

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THE RECRUITMENT AND ENROLLMENT PROCESS INCLUDES:



CURRICULUM GUIDE:

Credit Course Number	Credit Course Title	Credit Hours
Semester One		
AETC 111	Robotics and Automated Manufacturing	3
AETC 121	Programmable Logic Controllers	3
* ELCT 111	Electrical Circuits I	3
★ SDEV 101	College 101	1
* TECN 121	Fluid Power	3
		13
Semester Two		
> AETC 223	Programmable Logic Controllers II	3
> AETC 241	Instrumentation and Control	3
> ELCT 211	Electrical Power and Devices	4
* TECN 133	Mechanical Systems	3
> TECN 211	Fluid Power Control Systems	2
		15
Total Semester Credit Hours		28

Notes:

- > Indicates that this course requires a prerequisite.
- * Indicates that this course requires a prerequisite or may be taken concurrently.
- ★ A student must register for the orientation course when enrolling for more than six credit hours per semester or any course that would result in an accumulation of thirteen or more credit hours.
- Students must have completed either MTHM 033 or MTHM 058 with a C or higher or have satisfactory placement assessment score in mathematics prior to entering into program*

PROGRAM COST:

Lorain County Resident: \$ 118.34 per credit hour Out-of-County Resident: \$ 141.49 per credit hour

LOCATION:

Lorain County Community College, Nord Advanced Technologies Building 1005 North Abbe Road, Elyria, Ohio 44035

CONTACT-ADVISOR:

Chrissy Cooney
Phone: (440) 366-4325
Email: ccooney1@lorainccc.edu

Maintenance Technician

Short-Term Technical Certificate

COURSE DESCRIPTIONS

SDEV 101, College 101

This course introduces strategies for creating success in college. Topics focus on personal responsibility, motivation, goal setting, learning styles, emotional intelligence, study skills, life-long learning, career and academic planning and completion.

AETC 111, Robotics/Automated Manufacturing

Study of automated manufacturing and the computer-based technologies that are available for this task. Topics covered will include computer aided design (CAD), computer numerical control (CNC), programmable logic controllers (PLC), and computer integrated manufacturing (CIM). Emphasis will be placed on programming of industrial robots for the purpose of automated manufacturing. Laboratory required.

AETC 121, Programmable Logic Controllers

Study of programming and application of programmable logic controllers (PLC). Theory and practice of hardware selection, setup, configuration, and troubleshooting. Students will apply their skills towards the programming of PLC hardware for industry related situations. Laboratory required.

ELCT 111, Electrical Circuits I

This course provides a detailed study of dc electrical circuits and related bilateral components. This course also contains a laboratory section that emphasizes the practical aspects of circuit construction and electrical measurement devices. Laboratory required.

TECN 121, Fluid Power

This course is designed for Applied Science majors and focuses on the principles of hydraulics and pneumatics. Includes fluid mechanics/dynamics, conventional fluid circuits and fluid power components. Emphasis on applications, component selection and related mathematics computations. Laboratory required.

AETC 223, Programmable Logic Controllers II

This course covers advanced programmable logic controller (PLC) concepts. Topics include motion control, PLC related networking, and human machine interfaces (HMI). Laboratory exercises will involve developing systems based upon these topics. Automatic identification, positional sensors, and automation related mechanisms will also be discussed. Laboratory required.

AETC 241, Instrumentation and Control

An application oriented course to include the terminology, symbols, process variables and typical control methods used in process control, measuring techniques of variables, and the methods employed to control these variables. Feedback control methods covered include proportional, integral, derivative, PID, tuning methods, as well as cascade and ratio control. Students install, calibrate, tune, and operate feedback control systems in the laboratory, including flow, temperature, level, and cascade control systems. Laboratory required.

ELCT 211, Electrical Power and Devices

This course is an introduction to electrical power and motor control devices, applications and related circuitry. Topics include AC and DC motors with industrial control applications as well as the installation and programming of variable frequency drives. The laboratory includes hands-on construction and troubleshooting of practical motor control circuits. Laboratory required.

TECN 133, Mechanical Systems

This course, designed for the Applied Science majors, examines the different mechanical systems and tooling used in an industrial environment. Included are discussion of safety, precision measurement, blueprints, hand and power tools, fasteners, torque and tension, mechanical drives, shaft alignment, bearings lubrication, rigging and ladder safety. Laboratory required.

TECN 211, Fluid Power Control Systems

This course covers the basic design, construction and operation of electric and electronic controls of hydraulic and pneumatic systems. Topics discussed include sensors, programmable controllers, servo valves, and proportional solenoid valves in fluid circuits. The laboratory exercises are directly related to industrial applications. Laboratory required.



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ADMISSIONS CHECKLIST

☐ 1.) **Attend an Information Session**

Obtain Application Packet for the Maintenance Technician Program

☐ 2.) **Apply to Lorain County Community College**

- Application can be found in this packet or at www.lorainccc.edu/admissions (**There is no fee**)
- Sign Release of Information Waiver
- Sign Participant Agreement and Contract

☐ 3.) **Create a MyCampus Account upon receiving your Student ID number in the mail/email**

- Go to www.lorainccc.edu/mycampus, click on "Create Password", and enter requested information
- Complete New Student Online Orientation and College Student Inventory (see links in MyCampus)

☐ 4.) **Arrange to have transcripts sent to LCCC**

Have official high school or GED transcript sent to:

LCCC Attn: Chrissy Cooney, 151 Innovation Drive-Room DEC 240, Elyria, OH 44035

Have ALL official college transcripts sent to:

LCCC Attn: Chrissy Cooney, 151 Innovation Drive-Room DEC 240, Elyria, OH 44035

If you have previous college experience, sign a **Transcript Evaluation Request Form** that can be found in in this packet.

☐ 5.) **Are you unemployed or under-employed? Contact OhioMeansJobs Lorain County (Optional)**

Contact the OhioMeansJobs Lorain County office at 440-284-4227 to express interest in the Maintenance Technician program; a Workforce Development Specialist will work with you to review if you may be eligible for services and potential funding.

☐ 6.) **Apply for Financial Aid (FAFSA) – Federal School Code: 003068 (Unless you are self-pay)**

- Go to www.fafsa.ed.gov to file your 2016-17 Free Application for Federal Student Aid, there is NO Cost to file your FAFSA
- If you wish to take out a loan, you may go to <http://www.lorainccc.edu/Financial+Aid/Financial+Aid+and+Loans/Federal+Direct.htm> for directions

☐ 7.) **Complete the Placement Assessment at one of Lorain County Community Colleges Learning Centers**

The placement assessment is a tool to determine where you are in terms of reading, writing and mathematics. There is no perfect score or failing score. It simply tells us which class you place into in each of the respective areas. The assessment is computerized and each section takes about 45 minutes to complete. It can be taken at any Lorain County Community College Learning Center. To find a location visit, <http://www.lorainccc.edu/Admissions+and+Registration/compass.htm>

- If you have taken the ACT or SAT; please have scores sent to Lorain County Community College or provide a copy of your scores to your Advisor to determine placement.

☐ 8.) **Register for the Maintenance Technician Program courses with Chrissy Cooney - Advisor (440-366-4325)**



This workforce solution was funded by a grant awarded by the U.S Department of Labor's Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.



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