

# Lakeland

COMMUNITY COLLEGE

PROGRAM GUIDE

Applied Studies Division

## Computer Integrated Manufacturing Technology

• *Maintenance and Repair Concentration*

## Electronic Engineering Technology

• *Industrial Electronics Concentration*

Associate of Applied  
Science Degree in  
Computer Integrated  
Manufacturing Technology

Associate of Applied  
Science Degree in  
Electronic Engineering  
Technology



ArcelorMittal

Opportunity  
starts **HERE**  
lakelandcc.edu



# Computer Integrated Manufacturing Technology Electronic Engineering Technology



Ohio is one of the top states in the country for the creation of manufacturing jobs. The Lakeland Community College partnership with ArcelorMittal provides opportunities for many qualified workers to find jobs in this region.

## Partnership between Lakeland Community College and ArcelorMittal

ArcelorMittal, the largest steel company in the world, created the Steelworker for the Future program in partnership with educational institutions in order to meet the demand for technically skilled employees. Lakeland Community College offers two Steelworker for the Future programs:

1. Associate of Applied Science degree in computer integrated manufacturing with a maintenance and repair concentration
2. Associate of Applied Science degree in electronic engineering technology with an industrial electronic concentration.

Both areas of study provide students with specialized training coupled with internships. These internships provide both an income and the real-world work experience sought by employers.



## Requirements

To be considered for admission into the program, students must:

- Have a high school diploma (or equivalent).
- Apply for admission and be accepted.
- Pass a drug screening test for the internship.

Once admitted, students must enroll in either the electronic engineering technology department's industrial electronics program or enroll in the computer integrated manufacturing department's maintenance and repair program.

## Lakeland's Program

Both degreed programs require four semesters of classroom training at Lakeland Community College. There is also the opportunity for up to 16 weeks of on-site training at ArcelorMittal. During the on-site portion of the program, students apply what they learn in class and earn credit toward their degree. Students also encounter mentoring opportunities – not to mention earning enough wages to help pay for tuition.

### Associate of Applied Science Degree

#### Applied Studies - Computer, Design and Engineering Technologies

#### Computer Integrated Manufacturing Technology

Lakeland's computer integrated manufacturing technology degree program prepares students for employment in a variety of manufacturing industries. Students in this degree program are part of the maintenance and repair concentration (ArcelorMittal).

The maintenance and repair concentration offers an option for becoming a mechanical maintenance and repair technician at ArcelorMittal Cleveland.

#### Maintenance and Repair Concentration (9439)

The maintenance and repair concentration prepares graduates for repairing and maintaining equipment in an industrial environment.

The ArcelorMittal Endorsed Option for the maintenance and repair concentration (ArcelorMittal Steelworker for the Future program) is for students wanting a career as a maintenance technician mechanical at ArcelorMittal Cleveland. The Steelworker for the Future program is a partnership with Lakeland Community College, ArcelorMittal Cleveland, and the United Steelworkers Local 979 designed to prepare students for successful careers as mechanical maintenance or electrical maintenance technicians in the steel industry. Steelworker for the Future is an estimated 2.5-year program that includes four semesters of classroom training, plus up to 16 weeks of paid on-the-job (co-op) training at ArcelorMittal Cleveland for students who pass the company's hiring requirements. Students will earn an Associate of Applied Science (AAS) degree and can be eligible for hire at ArcelorMittal upon completion of the program. (Students are not required to work for ArcelorMittal, nor are they guaranteed employment at ArcelorMittal.) For more information about the program and to apply go to <http://steelworkerforthefuture.com/>

**NOTE:** Students without prior exposure to machining will find CIMN 0950 Introduction to Machine-Tool Technology helpful in gaining experience for CIMN 1110.

#### First Semester:

CADT 1100	..... Introduction to AutoCAD	..... 3
CIMN 1110	..... Machining Processes	..... 3
COMM 1050*	..... Fundamentals of Public Speaking	..... 2

OR



COMM 1150.....	Fundamentals of Interpersonal Communication	
ENGL 1110** .....	English Composition I (A).....	3
<b>OR</b>		
ENGL 1111 .....	English Composition I (B)	
ENGR 1000 .....	Introduction to Engineering Technology .....	2
FYEX 1000.....	First Year Experience.....	1
MATH 1001.....	Introduction to Technical Mathematics .....	4
		<b>18</b>

**Second Semester:**

CIMN 1160 .....	Applied Electricity.....	2
CIMN 1210 .....	Materials Processing.....	3
MATH 1101 .....	Technical Mathematics I.....	4
MECT 1150.....	Technical Communications .....	3
PHYS 1100 .....	Applied Physics I .....	3
Choose course(s) from the Technical Electives list .....		2
		<b>17</b>

**Third Semester:**

MECT 2150.....	Power Transmission .....	2
PHYS 1200 .....	Applied Physics II.....	3
Choose courses(s) from the Arts and Humanities Electives list .....		3
Choose course(s) from the Technical Electives list .....		4
		<b>12</b>

**Fourth Semester:**

CIMN 2390 .....	Fluid Power Technology .....	3
CIMN 2840 .....	Repair and Maintenance Capstone.....	2
QENT 1200 .....	Quality Concepts and Techniques.....	2
Choose course(s) from the Social and Behavioral Sciences Electives list .....		3
Choose course(s) from the Technical Electives list*** .....		6
		<b>16</b>

**Program Total: 63**

\*Students may substitute either COMM 1000 or COMM 1100. One of these 3 credit courses may be required for students transferring to a four-year college.

\*\*English course selection is based on placement test results (ENGL 1111 is 4 credits, only 3 credits apply to the degree).

**Technical Electives: minimum 12 credits**

Students are required to develop an area of emphasis in the program through the selection of technical electives.

The **ArcelorMittal Endorsed Option** requires all of the following elective courses:

WELD 1220.....	Oxyfuel Gas Welding .....	2
WELD 1240.....	Stick Welding .....	2
WELD 1255.....	FCAW and GMAW (MIG/MAG) Welding .....	3
WELD 1265.....	GTAW (TIG) Welding .....	3
ENGR 2800* .....	Engineering Co-Op Experience .....	1
ENGR 2800* .....	Engineering Co-Op Experience .....	1

\*There are two co-op experiences, each with ArcelorMittal, for a maximum of 2 credits.

**Associate of Applied Science Degree**

**Applied Studies - Computer, Design and Engineering Technologies**

**Electronic Engineering Technology**

The department of electronic engineering technology's mission is to provide a quality learning environment within the electronic engineering technology discipline. Its purpose is to prepare students to further their education at a four-year institution and/or gain employment within the field of engineering technology.

Program Educational Objectives: Graduates will be able to: (1) solve technical problems typical of those encountered in the electronic engineering technology discipline by using critical thinking skills, current technology, and principles of mathematics and applied science; (2) work and communicate effectively in multidisciplinary teams in both industrial and academic settings; and (3) understand current professional issues and the need to pursue lifelong learning.

Program Requirements: Students must have placed into MATH 1101 and ENGL 1110 prior to registering for any ELEC courses. A minimum grade of "C" or higher is required for every ELEC, MATH, and PHYS course listed within the program schedule.

The electronic engineering technology program (9420) is accredited by the Engineering Technology Accreditation Commission (ETAC) of the Accreditation Board for Engineering and Technology, Inc. ETAC/ABET, 415 N. Charles St., Baltimore, MD 21201, phone: 410.347.7700, [abet.org](http://abet.org).

The industrial electronics concentration program (9419) is not ABET accredited.

NOTE: Students transferring to a four-year college are encouraged to take ENGL 1120 English Composition II in addition to the following requirements.

**Industrial Electronics Concentration (9419)**

NOTE: Students transferring to a four-year college are encouraged to take ENGL 1120 English Composition II in addition to the following requirements.

**First Semester:**

ELEC 1120.....	Direct Current Circuit Analysis .....	2
ENGL 1110* .....	English Composition I (A) .....	3
<b>OR</b>		
ENGL 1111 .....	English Composition I (B)	
ENGR 1000 .....	Introduction to Engineering Technology .....	2
FYEX 1000.....	First Year Experience.....	1
MATH 1101.....	Technical Mathematics I.....	4
PHYS 1100 .....	Applied Physics I .....	3
		<b>15</b>

**Second Semester:**

COMM 1100.....	Effective Interpersonal Communication.....	3
<b>OR</b>		
COMM 1000.....	Effective Public Speaking	
ELEC 1220.....	Alternating Current Circuit Analysis .....	2
ELEC 1260.....	Direct Current and Alternating Current Laboratory .....	1
ELEC 1330.....	Digital Systems Fundamentals .....	2
MATH 1201.....	Technical Mathematics II.....	4
NUET 1200 .....	Plant Drawings.....	3
Choose course(s) from the Technical Electives list .....		2
		<b>17</b>

**Third Semester:**

ELEC 2120.....	Linear and Switch-Mode Power Supplies .....	2
ELEC 2125.....	Industrial Electricity and Electronics.....	3
ELEC 2650.....	Industrial Power Systems and Apparatus .....	3
ELEC 2821.....	Programmable Logic Controllers.....	3
MECT 2150.....	Power Transmission .....	2
PHYS 1200 .....	Applied Physics II.....	3
		<b>16</b>

**Fourth Semester:**

ECON 1150.....	Basic Economics.....	3
<b>OR</b>		
ECON 2500.....	Principles of Macroeconomics	
<b>OR</b>		
ECON 2600 .....	Principles of Microeconomics	
ELEC 2550.....	Industrial Control Systems and Instrumentation.....	3
ELEC 2700.....	Motor Control and Servo Systems.....	3
ELEC 2750.....	Industrial Problem Solving and Teamwork Capstone.....	2
ELEC 2850.....	Advanced Programmable Controller Applications .....	2
HUMX 1100 .....	Introduction to Humanities.....	3
		<b>16</b>

**Program Total: 64**

\*English course selection is based on placement test results (ENGL 1111 is 4 credits, only 3 credits apply to the degree).

**Technical Electives: minimum 2 credits**

NOTE: Students selecting the ArcelorMittal program must take two separate ENGR 2800 co-op experiences, each for 1 credit. The co-op experiences are to be taken during the Summer semesters as arranged with ArcelorMittal.

CPET 1200.....	Visual Basic for Engineering Technology I.....	2
ELEC 1400.....	Stand-Alone Photovoltaic Systems.....	2
ELEC 2000.....	Electronic Technology Field Experience .....	2
ENGR 2800 .....	Engineering Co-Op Experience .....	1-2

## Benefits

As a graduate of the Steelworker of the Future partnership, students receive an Associate of Applied Science degree and acquire the valuable tools needed to shape their own future. In fact, graduates could start at ArcelorMittal earning nearly \$20 per hour with attractive vacation time, medical benefits, a 401(k) plan and profit sharing. By the third year of employment, they could join the average graduate earning \$90,000 annually.

## For more information

1.800.589.8520 • lakelandcc.edu

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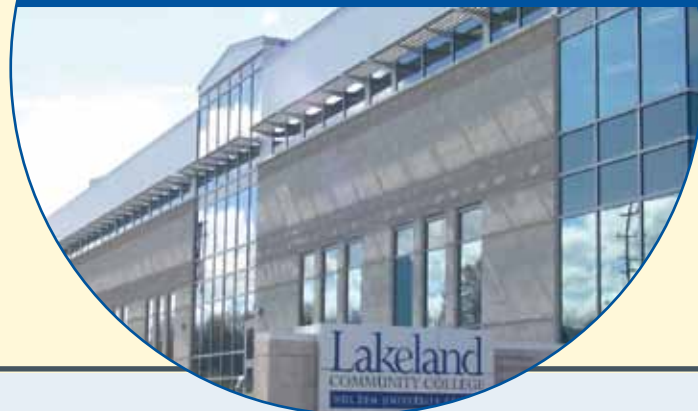
### **For careers and programs visit:**

- lakelandcc.edu/steel
- steelworkerforthefuture.com

## Lakeland Community College Admission Requirements

For admission into Lakeland, students must be a high school graduate or have obtained a high school diploma equivalency. Please consult Lakeland Community College's Enrollment Guide (available on Lakeland's website at lakelandcc.edu/enrollment) for specific admissions requirements and procedures.

To further your education, Lakeland's Holden University Center offers a variety of bachelor's degree programs from a number of four-year colleges and universities offering you the opportunity to *stay here and go far!* Visit lakelandcc.edu/uc to explore your options.



### **Quality Education**

Lakeland prepares you for a high-demand career or for transfer to a four-year college or university. Professors at Lakeland are experts in their fields with real-world experience. Small class sizes allow for personalized attention.



### **Affordable Tuition**

Save thousands on your college education. Lakeland's tuition is about one-third the cost of most four-year schools. Financial assistance is available, including federal and state grants, scholarships, loans, and work study employment.



### **Convenience**

Lakeland offers convenient day, evening and weekend class times, and a growing number of online courses. The main campus in Kirtland is only 20 miles northeast of Cleveland. Classes are also offered in Madison.



### **Focus on Students**

Lakeland offers a variety of student services to help you succeed, such as counseling, tutoring, wireless computer labs, career services, free parking, and affordable child care.



### **Accreditation**

Lakeland Community College is accredited through the Higher Learning Commission (HLC) and participates in the Academic Quality Improvement Program (AQIP). The Higher Learning Commission, 230 South LaSalle Street, Suite 7-500, Chicago, IL 60604-1413, phone: 800.621.7440, hlcommission.org.