

Lakeland

COMMUNITY COLLEGE

PROGRAM GUIDE

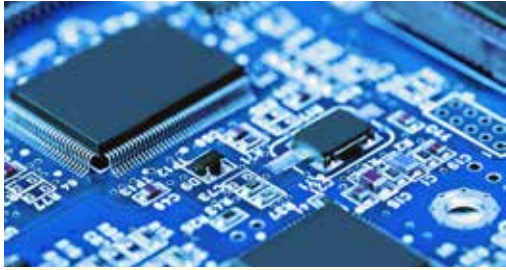
Applied Studies Division

Electronic Engineering Technology

- Associate of Applied Science Degree in Electronic Engineering Technology
- A+ Computer Maintenance and Repair Certificate
- Electronic Systems Fundamentals Certificate
- Advanced Electronics Technology Certificate
- Electro-Mechanical Engineering Technology Concentration
- Telecommunications Engineering Technology Concentration
- Computer Hardware Engineering Technology Concentration

 **Opportunity**
starts **HERE**
lakelandcc.edu

Electronic Engineering Technology



Electronics engineering technicians identify and resolve equipment malfunctions and then work with manufacturers to get replacement parts. They also calibrate and perform preventative maintenance on equipment and systems. Technicians do this by reading blueprints, schematic drawings, and engineering instructions for assembling electronic units. Depending on the project, they may also write reports and record data on testing techniques, laboratory equipment and specifications.

Electronic engineering technology program graduates typically help engineers design and develop computers, communications equipment, medical monitoring devices, navigational equipment, and other electrical and electronic equipment.

They often work in product evaluation and testing, using measuring and diagnostic devices to adjust, test and repair equipment or they may be involved in the manufacture and deployment of automation/manufacturing equipment.

Duties may include:

- Designing basic circuitry and draft sketches to clarify details of design documentation, under engineers' direction.
- Building prototypes from rough sketches or plans.
- Assembling, testing and maintaining circuitry or electronic components according to engineering instructions, technical manuals and knowledge of electronics.
- Adjusting and replacing defective circuitry and electronic components.
- Inspecting designs for quality control, reporting findings and making recommendations.
- Drawing diagrams and writing specifications to clarify design details of experimental electronics units.

Career Opportunities

\$64,290 in May 2018. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$37,420, and the highest 10 percent earned more than \$93,810 (Source: Bureau of Labor Statistics, U.S. Department of Labor).

The Lakeland Advantage

- Hands-on education is combined with state-of-the-art software and hardware applications.
- Multiple certificate programs are offered to help specialize and enhance your education.
- Electronic and electrical engineering technology positions comprise 43 percent of all engineering technician jobs nationwide.

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.

For more information















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lakelandcc.edu/web/about/electronic-engineering-technology-departments



Electronic Engineering Technology (9420)


Associate of Applied Science Degree

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




Course	Title	Credit Hours
First Semester		
ELEC 1120	Direct Current Circuit Analysis 	2
ENGL 1110 or ENGL 1111	English Composition I (A) ¹ or English Composition I (B)	3
ENGR 1000	Introduction to Engineering Technology	2
FYEX 1000	First Year Experience	1
MATH 1180	Technical Mathematics I ²	4
Select course(s) from the Arts and Humanities Electives list		3
	Credit Hours	15
Second Semester		
CPET 1120	C Programming for Engineering Technology 	3
ELEC 1220	Alternating Current Circuit Analysis 	2
ELEC 1260	Direct Current and Alternating Current Laboratory 	1
ELEC 1330	Digital Systems Fundamentals	2
MATH 1280	Technical Mathematics II ²	4
PHYS 1100	Applied Physics Mechanics	3
	Credit Hours	15
Third Semester		
ELEC 2120	Linear and Switch-Mode Power Supplies 	2
ELEC 2420	Microcontroller Applications 	2
ELEC 2460	Digital Systems and Microcontroller Laboratory 	1
ELEC 2821	Programmable Logic Controllers 	3
PHYS 1200	Applied Physics Heat and Thermodynamics	3
Select course(s) from the Social and Behavioral Sciences list		3
Select course(s) from the Technical Electives list 		2
	Credit Hours	16
Fourth Semester		
COMM 1000 or COMM 1100	Effective Public Speaking or Effective Interpersonal Communications	3
ELEC 2150	Operational Amplifiers and Linear Integrated Circuits 	2
ELEC 2170	Power Supply and Integrated Circuits Laboratory 	1
ELEC 2300	Sensors, Actuators, and Control 	3
ELEC 2610	Embedded Systems Project Lab 	3
ELEC 2700	Motor Control and Servo Systems 	3
	Credit Hours	15
	Total Credit Hours	61

¹ English course selection is based on placement test results (ENGL 1111 English Composition I (B) is 4 credits, only 3 credits apply to the degree).

² Students planning to transfer to a four-year university should consider taking MATH 1650 College Algebra and MATH 1700 Trigonometry

 This course is designated as a technical course in the program. Students must earn a 'C' grade or higher in the course to fulfill the college's graduation requirements policy.

Electives

Course	Title	Credit Hours
Technical Electives		
ELEC 1400	Stand-Alone Photovoltaic Systems 	2
ELEC 2000	Electronic Technology Field Experience 	2
ELEC 2850	Advanced Programmable Logic Controller Applications 	2
Arts and Humanities Electives		
ARTS 1120	Art Appreciation	3
ARTS 2220	Survey of Art I	3
ARTS 2230	Survey of Art II	3
ENGL 2250	Survey of American Literature I	3
ENGL 2260	Survey of American Literature II	3
ENGL 2280	Survey of British Literature I	3
ENGL 2290	Survey of British Literature II	3
HUMX 1100	Introduction to Humanities	3
HUMX 1200	The American Experience in the Arts	3
MUSC 1200	Music Appreciation	3
MUSC 1215	World Music	3
MUSC 1800	Popular Music: Rock, Jazz, Country, and Hip-Hop	3
MUSC 2200	Music History and Literature I	3
MUSC 2250	Music History and Literature II	3
PHIL 1500	Introduction to Philosophy	3
PHIL 2000	Comparative Religion	3
PHOT 1000	History of Photography	3
Social and Behavioral Sciences Electives		
ANTH 1160	Introduction to Cultural Anthropology	3
ECON 1150	Basic Economics	3
ECON 2500	Principles of Macroeconomics	3
ECON 2600	Principles of Microeconomics	3
GEOG 1500	Introduction to Geography	3
GEOG 1600	World Regional Geography	3
GEOG 2500	World Cultural Geography	3
HIST 1150	Western Civilization I: Antiquity Through the Reformation	3
HIST 1250	Western Civilization II: Age of Revolution Through the Present	3
HIST 2150	U.S. History: Colonization Through Reconstruction	3
HIST 2250	U.S. History: Reconstruction to the Present	3
POLS 1300	U.S. National Government	3
POLS 2500	Modern Political Ideologies	3
PSYC 1500	Introduction to Psychology	3
SOCY 1150	Principles of Sociology	3

Computer Hardware Engineering Technology Concentration (9418)

Associate of Applied Science Degree

Computer Hardware Engineering Technology graduates are prepared with the skills necessary to enter careers in the design, application, installation, operation, and/or maintenance of computer systems.

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

Course	Title	Credit Hours
First Semester		
ELEC 1120	Direct Current Circuit Analysis	2
ENGL 1110 or ENGL 1111	English Composition I (A) ¹ or English Composition I (B)	3
ENGR 1000	Introduction to Engineering Technology	2
FYEX 1000	First Year Experience	1
MATH 1180	Technical Mathematics I ²	4
Select course(s) from the Arts and Humanities Electives list		3
Credit Hours		15
Second Semester		
CPET 1120	C Programming for Engineering Technology	3
ELEC 1220	Alternating Current Circuit Analysis	2
ELEC 1260	Direct Current and Alternating Current Laboratory	1
ELEC 1330	Digital Systems Fundamentals	2
MATH 1280	Technical Mathematics II ²	4
PHYS 1100	Applied Physics Mechanics	3
Credit Hours		15
Third Semester		
CNET 1100	Cisco Networking Technology I	2
CNET 1200	Cisco Networking Technology II	2
ELEC 2120	Linear and Switch-Mode Power Supplies	2
ELEC 2420	Microcontroller Applications	2
ELEC 2460	Digital Systems and Microcontroller Laboratory	1
ITON 1011	Comparative Analysis of Microcomputer Operating Systems	2
PHYS 1200	Applied Physics Heat and Thermodynamics	3
Select course(s) from the Social and Behavioral Electives list		3
Credit Hours		17
Fourth Semester		
CNET 1300	Cisco Networking Technology III	2
COMM 1000 or COMM 1100	Effective Public Speaking or Effective Interpersonal Communications	3
CPET 1050	Assembling, Upgrading and Repairing Personal Computers	2
ELEC 2610	Embedded Systems Project Lab	3
ITIS 1025	Managing and Optimizing Personal Computers	3
ITON 1070	Operating Systems: Skills and Techniques	1
Credit Hours		14
Total Credit Hours		61

¹ English course selection is based on placement test results (ENGL 1111 English Composition I (B) is 4 credits, only 3 credits apply to the degree).

² Students planning to transfer to a four-year university should consider taking MATH 1650 College Algebra and MATH 1700 Trigonometry

This course is designated as a technical course in the program. Students must earn a 'C' grade or higher in the course to fulfill the college's graduation requirements policy.

Electives

Course	Title	Credit Hours
Arts and Humanities Electives		
ARTS 1120	Art Appreciation	3
ARTS 2220	Survey of Art I	3
ARTS 2230	Survey of Art II	3
ENGL 2250	Survey of American Literature I	3
ENGL 2260	Survey of American Literature II	3
ENGL 2280	Survey of British Literature I	3
ENGL 2290	Survey of British Literature II	3
HUMX 1100	Introduction to Humanities	3
HUMX 1200	The American Experience in the Arts	3
MUSC 1200	Music Appreciation	3
MUSC 1215	World Music	3
MUSC 1800	Popular Music: Rock, Jazz, Country, and Hip-Hop	3
MUSC 2200	Music History and Literature I	3
MUSC 2250	Music History and Literature II	3
PHIL 1500	Introduction to Philosophy	3
PHIL 2000	Comparative Religion	3
PHOT 1000	History of Photography	3
Social and Behavioral Sciences Electives		
ANTH 1160	Introduction to Cultural Anthropology	3
ECON 1150	Basic Economics	3
ECON 2500	Principles of Macroeconomics	3
ECON 2600	Principles of Microeconomics	3
GEOG 1500	Introduction to Geography	3
GEOG 1600	World Regional Geography	3
GEOG 2500	World Cultural Geography	3
HIST 1150	Western Civilization I: Antiquity Through the Reformation	3
HIST 1250	Western Civilization II: Age of Revolution Through the Present	3
HIST 2150	U.S. History: Colonization Through Reconstruction	3
HIST 2250	U.S. History: Reconstruction to the Present	3
POLS 1300	U.S. National Government	3
POLS 2500	Modern Political Ideologies	3
PSYC 1500	Introduction to Psychology	3
SOCY 1150	Principles of Sociology	3

Electro-Mechanical Engineering Technology Concentration (9417)

Associate of Applied Science Degree

Electro-Mechanical Engineering Technology graduates are prepared with the technical skills necessary to enter careers in the building, installation, application, and operation and/or maintenance of electro-mechanical hardware and software systems.

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



Course	Title	Credit Hours
First Semester		
CIMN 1110	Machining Processes	3
ELEC 1120	Direct Current Circuit Analysis	2
ENGL 1110 or ENGL 1111	English Composition I (A) ¹ or English Composition I (B)	3
ENGR 1000	Introduction to Engineering Technology	2
FYEX 1000	First Year Experience	1
MATH 1180	Technical Mathematics I ²	4
Credit Hours		15
Second Semester		
CIMN 1210	Materials Processing	3
ELEC 1220	Alternating Current Circuit Analysis	2
ELEC 1260	Direct Current and Alternating Current Laboratory	1
ELEC 1330	Digital Systems Fundamentals	2
MATH 1280	Technical Mathematics II ²	4
MECT 2110	Engineering Mechanics I	3
PHYS 1100	Applied Physics Mechanics	3
Credit Hours		18
Third Semester		
ELEC 2821	Programmable Logic Controllers	3
MECT 2210	Engineering Mechanics II	3
MECT 2230	Strength of Materials	3
PHYS 1200	Applied Physics Heat and Thermodynamics	3
Select course(s) from the Arts and Humanities Electives list		3
Credit Hours		15
Fourth Semester		
COMM 1000 or COMM 1100	Effective Public Speaking or Effective Interpersonal Communications	3
ELEC 2300	Sensors, Actuators, and Control	3
ELEC 2700	Motor Control and Servo Systems	3
ELEC 2850	Advanced Programmable Logic Controller Applications	2
Select course(s) from the Social and Behavioral Electives list		3
Select course(s) from the Technical Electives list		2
Credit Hours		16
Total Credit Hours		64

¹ English course selection is based on placement test results (ENGL 1111 English Composition I (B) is 4 credits, only 3 credits apply to the degree).

² Students planning to transfer to a four-year university should consider taking MATH 1650 College Algebra and MATH 1700 Trigonometry

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Electives















Course	Title	Credit Hours
Technical Electives		
CIMN 2390	Fluid Power Technology 	3
MECT 2600	Design of Machine Elements 	2
Arts and Humanities Electives		
ARTS 1120	Art Appreciation	3
ARTS 2220	Survey of Art I	3
ARTS 2230	Survey of Art II	3
ENGL 2250	Survey of American Literature I	3
ENGL 2260	Survey of American Literature II	3
ENGL 2280	Survey of British Literature I	3
ENGL 2290	Survey of British Literature II	3
HUMX 1100	Introduction to Humanities	3
HUMX 1200	The American Experience in the Arts	3
MUSC 1200	Music Appreciation	3
MUSC 1215	World Music	3
MUSC 1800	Popular Music: Rock, Jazz, Country, and Hip-Hop	3
MUSC 2200	Music History and Literature I	3
MUSC 2250	Music History and Literature II	3
PHIL 1500	Introduction to Philosophy	3
PHIL 2000	Comparative Religion	3
PHOT 1000	History of Photography	3
Social and Behavioral Sciences Electives		
ANTH 1160	Introduction to Cultural Anthropology	3
ECON 1150	Basic Economics	3
ECON 2500	Principles of Macroeconomics	3
ECON 2600	Principles of Microeconomics	3
GEOG 1500	Introduction to Geography	3
GEOG 1600	World Regional Geography	3
GEOG 2500	World Cultural Geography	3
HIST 1150	Western Civilization I: Antiquity Through the Reformation	3
HIST 1250	Western Civilization II: Age of Revolution Through the Present	3
HIST 2150	U.S. History: Colonization Through Reconstruction	3
HIST 2250	U.S. History: Reconstruction to the Present	3
POLS 1300	U.S. National Government	3
POLS 2500	Modern Political Ideologies	3
PSYC 1500	Introduction to Psychology	3
SOCY 1150	Principles of Sociology	3

Telecommunications Engineering Technology Concentration (9401)

Associate of Applied Science Degree


Telecommunications Engineering Technology graduates are prepared with the skills necessary to enter careers in the design, application, installation, operation, and/or maintenance of telecommunication systems.

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

Course	Title	Credit Hours
First Semester		
ELEC 1120	Direct Current Circuit Analysis 	2
ENGL 1110 or ENGL 1111	English Composition I (A) ¹ or English Composition I (B)	3
ENGR 1000	Introduction to Engineering Technology 	2
FYEX 1000	First Year Experience	1
MATH 1180	Technical Mathematics I ²	4
Select course(s) from the Arts and Humanities Electives list		3
	Credit Hours	15
Second Semester		
CPET 1120	C Programming for Engineering Technology	3
ELEC 1220	Alternating Current Circuit Analysis 	2
ELEC 1260	Direct Current and Alternating Current Laboratory 	1
ELEC 1330	Digital Systems Fundamentals 	2
MATH 1280	Technical Mathematics II ²	4
PHYS 1100	Applied Physics Mechanics	3
	Credit Hours	15
Third Semester		
CNET 1050	Voice and Data Cabling 	2
ELEC 2120	Linear and Switch-Mode Power Supplies 	2
ELEC 2420	Microcontroller Applications 	2
ELEC 2460	Digital Systems and Microcontroller Laboratory 	1
ITON 1205	Network+ and Networking Essentials 	2
PHYS 1200	Applied Physics Heat and Thermodynamics	3
Select course(s) from the Social and Behavioral Electives list		3
	Credit Hours	15
Fourth Semester		
COMM 1000 or COMM 1100	Effective Public Speaking or Effective Interpersonal Communications	3
CPET 2560	Introduction to Telecommunications Principles 	2
ELEC 2150	Operational Amplifiers and Linear Integrated Circuits 	2
ELEC 2170	Power Supply and Integrated Circuits Laboratory 	1
ELEC 2610	Embedded Systems Project Lab 	3
ITIS 1030	Security Awareness	1
ITIS 1355	Security+ and Security Essentials	3
	Credit Hours	15
	Total Credit Hours	60

¹ English course selection is based on placement test results (ENGL 1111 English Composition I (B) is 4 credits, only 3 credits apply to the degree).

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 This course is designated as a technical course in the program. Students must earn a 'C' grade or higher in the course to fulfill the college's graduation requirements policy.

Electives

Course	Title	Credit Hours
Arts and Humanities Electives		
ARTS 1120	Art Appreciation	3
ARTS 2220	Survey of Art I	3
ARTS 2230	Survey of Art II	3
ENGL 2250	Survey of American Literature I	3
ENGL 2260	Survey of American Literature II	3
ENGL 2280	Survey of British Literature I	3
ENGL 2290	Survey of British Literature II	3
HUMX 1100	Introduction to Humanities	3
HUMX 1200	The American Experience in the Arts	3
MUSC 1200	Music Appreciation	3
MUSC 1215	World Music	3
MUSC 1800	Popular Music: Rock, Jazz, Country, and Hip-Hop	3
MUSC 2200	Music History and Literature I	3
MUSC 2250	Music History and Literature II	3
PHIL 1500	Introduction to Philosophy	3
PHIL 2000	Comparative Religion	3
PHOT 1000	History of Photography	3
Social and Behavioral Sciences Electives		
ANTH 1160	Introduction to Cultural Anthropology	3
ECON 1150	Basic Economics	3
ECON 2500	Principles of Macroeconomics	3
ECON 2600	Principles of Microeconomics	3
GEOG 1500	Introduction to Geography	3
GEOG 1600	World Regional Geography	3
GEOG 2500	World Cultural Geography	3
HIST 1150	Western Civilization I: Antiquity Through the Reformation	3
HIST 1250	Western Civilization II: Age of Revolution Through the Present	3
HIST 2150	U.S. History: Colonization Through Reconstruction	3
HIST 2250	U.S. History: Reconstruction to the Present	3
POLS 1300	U.S. National Government	3
POLS 2500	Modern Political Ideologies	3
PSYC 1500	Introduction to Psychology	3
SOCY 1150	Principles of Sociology	3

A+ Computer Maintenance and Repair Certificate (4252)

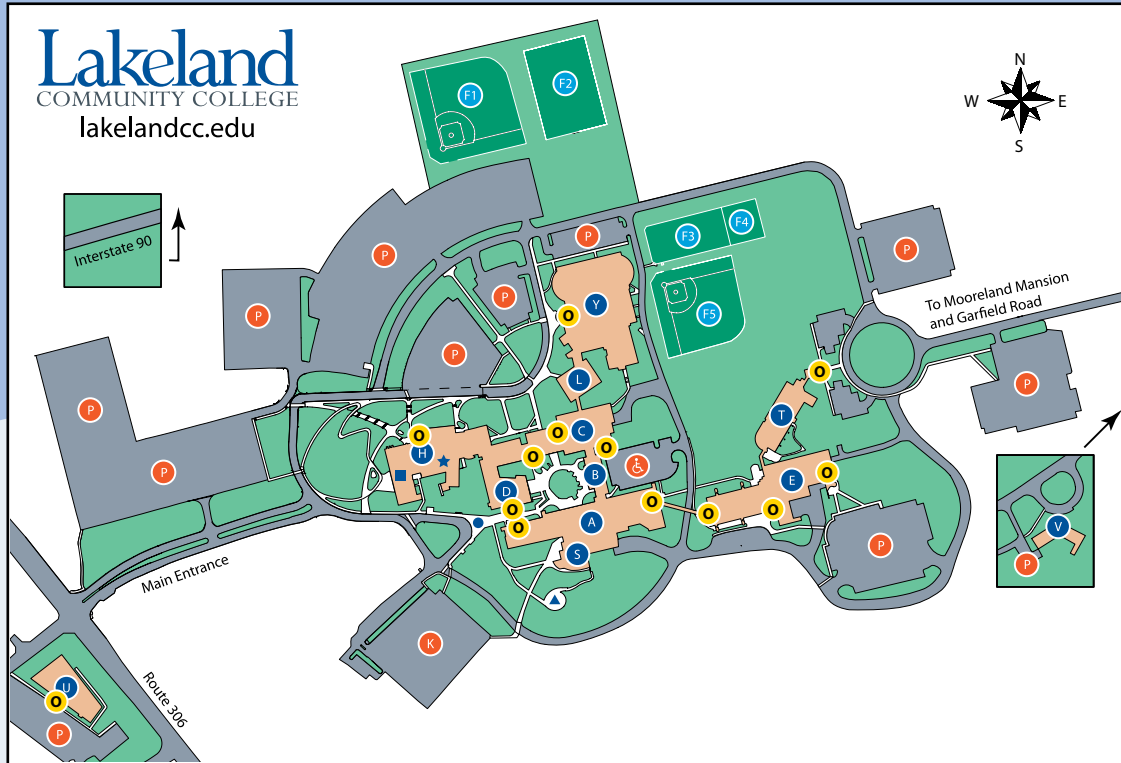
Course	Title	Credit Hours
CPET 1050	Assembling, Upgrading and Repairing Personal Computers	2
CPET 2050	Advanced Assembly and Repair of Personal Computers	2
CPET 2060	Preparation for A+ Certification	2
Total Credit Hours		6

Advanced Electronics Technology Certificate (4201)

Course	Title	Credit Hours
Completion of the Electronic Systems Fundamentals Certificate		20
ELEC 1400	Stand-Alone Photovoltaic Systems	2
ELEC 2150	Operational Amplifiers and Linear Integrated Circuits	2
ELEC 2170	Power Supply and Integrated Circuits Laboratory	1
ELEC 2420	Microcontroller Applications	2
ELEC 2460	Digital Systems and Microcontroller Laboratory	1
ELEC 2610	Embedded Systems Project Lab	3
Total Credit Hours		31

Electronic Systems Fundamentals Certificate (4220)

Course	Title	Credit Hours
CPET 1120	C Programming for Engineering Technology	3
ELEC 1120	Direct Current Circuit Analysis	2
ELEC 1220	Alternating Current Circuit Analysis	2
ELEC 1260	Direct Current and Alternating Current Laboratory	1
ELEC 1330	Digital Systems Fundamentals	2
ELEC 2120	Linear and Switch-Mode Power Supplies	2
MATH 1180	Technical Mathematics I	4
MATH 1280	Technical Mathematics II	4
Total Credit Hours		20



CAMPUS MAP

- | | | |
|--|-------------------------------------|--|
| A A-Building/
Student Service Center | F4 Multi-Purpose Court | V Mooreland Mansion |
| B B-Building | F5 Softball Field | Y Athletic & Fitness Center |
| C C-Building | H H-Building | ● Clocktower |
| D D-Building | K Faculty Staff Lot | ★ Dental Hygiene Clinic |
| E E-Building | L Teaching Learning Center | ♿ Handicap Parking |
| F1 Baseball Field | P Parking | ■ HIVE |
| F2 Soccer Field | S S-Building/Breakers Dining | ▲ Mind Ladders |
| F3 Tennis Courts | T T-Building | ○ Open Entrances and Temperature
Check Station during COVID-19 |
| | U Holden University Center | |

Quality Education

Professors at Lakeland are experts in their fields with real-world experience. Lakeland prepares you for a high-demand career or for transfer to a four-year college or university. Access to bachelor's and graduate degrees is available on campus from partner institutions through Lakeland's Holden University Center (lakelandcc.edu/uc).

Affordable Tuition

Lakeland's tuition is about one-third the cost of most four-year schools. More than 50 percent of Lakeland students receive some form of financial assistance (lakelandcc.edu/tuition).

Convenience

Lakeland offers convenient day, evening, weekend and online courses (lakelandcc.edu/schedule).

Focus on Students

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

Opportunity starts HERE

Visit us on campus or online. Call 440.525.7900, email recruitmentcenter@lakelandcc.edu or visit lakelandcc.edu/visit for a campus tour.

Apply online: lakelandcc.edu/apply

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.