Mechanical Engineering Technology

The Mechanical Engineering Technology program is designed to prepare students for immediate employment as a technician. The curriculum includes a strong emphasis on the generation of production-level computer-based documentation, analysis of form, fit and function, and design verification through testing. Graduates will be able to:

1. solve technical problems typical of those encountered in mechanical engineering technology careers using creativity, current technology, and the principles of mathematics and applied science;
2. perform and evaluate laboratory experiments, interpret and report on the results, and make recommendations for improvements;
3. work and communicate effectively in a diverse multi-disciplinary team in an industrial and academic setting; and
4. understand modern quality principles, professional issues, and the need to pursue lifelong learning.

Students must be "College Ready" (placement into MATH 1180 Technical Mathematics I and ENGL 1110 English Composition I (A) or ENGL 1111 English Composition I (B)) prior to registering for any MECT course. A minimum GPA of 2.0 and a "C" grade or higher is required in all MECT, MATH, PHYS, CADT, CIMN, QENT and program-specific courses for graduation.

There are two choices available to students in this degree program. Both degrees are designed to prepare students for immediate employment as a technician.

- Mechanical Engineering Technology (9440): This degree is the best choice for students wanting to pursue a four-year technology degree, or have additional analysis skills as a technician.
- Computer Assisted Product Design Concentration (9444): This degree prepares the graduate to work as a technician with skills in CAD and product design. Additional courses are necessary to pursue a four-year mechanical engineering technology degree.

Certificates are also available.

Mechanical Engineering Technology Certificates

- AutoCAD Operator Certificate
- CAD Design Certificate
- Engineering Technology Foundations Certificate
- Mechanical and Manufacturing Technology Specialist Certificate

Gainful Employment	Program Name	Program Type	Area of Study
	Computer Aided Design Concentration (9444) , AAS (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/9444/)	Degree	MECT
	Mechanical Engineering Technology (9440) , AAS (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/9440/)	Degree	MECT
	AutoCAD Operator Certificate (4443) (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/4443/)	Certificate	MECT
	CAD Design Certificate (4442) (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/4442/)	Certificate	MECT
	Engineering Technology Foundations Certificate (4444) (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/4444/)	Certificate	MECT
	Mechanical and Manufacturing Technology Specialist Certificate (4445) (https://catalog.lakelandcc.edu/degree-certificate-programs/mect/4445/)	Certificate	MECT

MECT 1050 Contemporary Technology **2 Credits**

This general education course provides students with an overview of technology innovations and issues that affect society. It presents developments in genetic technology, artificial intelligence, communications, and the technologies of space, medicine, and manufacturing; and discusses technology transfer, global energy resources, and environmental issues.
(2 contact hours)

MECT 1150 Technical Communications **3 Credits**

Prerequisite: ENGR 1000 or permission of instructor.

Through a unique multi-disciplinary approach, this course, a continuation of ENGR 1000 Introduction to Engineering Technology, introduces students to the combined use of technical writing (with an emphasis on standard usage), current hardware and software technology, and oral communications in the production of text, computer-generated documents, and oral presentations. The laboratory experience includes electronic and traditional research, application of the basic principles of technical writing, preparation and importation of text and graphics, and development of specification sheets, brochures, proposals, manuals, reports, and oral presentations. It also includes demonstration of the latest developments in hardware, software, advanced graphics, video, audio, and computer discs (CDs) relating to technical communications.

(5 contact hours: 2 lecture, 3 lab)

MECT 1600 Geometric Dimensioning and Tolerancing **2 Credits**

Prerequisite: CADT 2100 or permission of instructor.

This is a specialized course in which students will study the presentation of complex geometry according to the American National Standards Institute (ANSI) as written by the American Society of Mechanical Engineers (ASME), document ASME Y14.5. Topics include surface characterization, fits, cumulative and non-cumulative dimensions, maximum material condition, coordinate tolerancing, use of datums, as well as tolerance of common geometric forms and positions. The course also introduces students to a coordinate measuring machine (CMM) as a means of applied measurement and part conformance.

(3 contact hours: 1 lecture, 2 lab)

MECT 2110 Engineering Mechanics I **(TAG) 3 Credits**

Prerequisite: MATH 1180 or MATH 1650, PHYS 1100 or PHYS 1610.

This intermediate level course emphasizes the systematic application of equilibrium principles, commonly called statics, to parts and structures, including analysis of external forces as vectors, multi-force members, two dimensional trusses, three dimensional equilibrium, friction, and properties of cross sectional geometry.

(3 contact hours)

MECT 2150 Power Transmission **2 Credits**

Prerequisite: MATH 1101 or MATH 1180, PHYS 1100.

This course introduces students to mechanical, hydraulic, pneumatic, and electrical systems that transmit industrial power. The course will include concepts of work and power, common forms of energy, and types of motion. Students will study commonly used components and systems used for industrial power transmission.

(2 contact hours)

MECT 2210 Engineering Mechanics II **3 Credits**

Prerequisite: MECT 2110.

This specialized course applies the principles of Newtonian mechanics to the study of motion and resulting forces. Students will apply these principles in solving applied problems involving velocity, acceleration, force, momentum, and energy.

(3 contact hours)

MECT 2230 Strength of Materials **(TAG) 3 Credits**

Prerequisite: MATH 1280 or MATH 2400 or MATH 2500, MECT 2110.

This course introduces students to the study of internal forces, with associated material limits, of structures and machine parts necessary to maintain equilibrium. Students will study effects of direct and shear loads in relation to material strength and deformation for simple structures, beams, and pressure vessels.

(5 contact hours: 2 lecture, 3 lab)

MECT 2250 Mechanism Design **3 Credits**

Prerequisite: CADT 2500, PHYS 1550, MECT 2370.

This is an advanced course in which students will study analytical methods and synthesis of mechanisms through the use of application software. Students will learn to analyze position, velocity, acceleration, and force in order to design simple and complex linkages.

(5 contact hours: 1 lecture, 4 lab)

MECT 2370 Materials Technology **(TAG) 3 Credits**

Prerequisite: MATH 1180 or MATH 1400 or MATH 1650.

This course provides an introduction to metals, plastics, and ceramics commonly used in engineering technology. The course includes materials processing and fabrication, crystal and amorphous structures, relation of processing and heat treatment to internal structure, alloys and solid solutions, use of phase diagrams, prominent properties, and test methods.

(4 contact hours: 2 lecture, 2 lab)

MECT 2420 Heat Transfer **2 Credits**

Prerequisite: PHYS 1200.

This course explores the basic modes of conduction, convection, and radiation, applying cursory analysis to correct problems of heat dissipation and buildup in machines and processes. The course includes applications such as design of heat exchangers, cooling of electronic apparatus, solar energy, and thermal system design.

(3 contact hours: 1 lecture, 2 lab)

MECT 2500 Electromechanics **2 Credits**

Prerequisite: MATH 1101 or MATH 1180, PHYS 1100, CIMN 1210.

This course presents the interrelationship of electrical and mechanical machine elements and their underlying principles of operation.

(4 contact hours: 1 lecture, 3 lab)

MECT 2600 Design of Machine Elements **2 Credits**

Prerequisite: CADT 2100, MECT 2230.

This advanced course provides students the experience of applying the disciplines of dynamics and strength of materials F4306 to the design of machine elements. Students will study various types of bearings, gears, power shafts, couplings, springs, and fasteners.

(4 contact hours: 1 lecture, 3 lab)

MECT 2700 Mechanical Technology Design Capstone **4 Credits**

Prerequisite: CADT 2500, MECT 2110, MECT 2230 may be taken concurrently.

This capstone course integrates prior learning in product and machine design and manufacturing. Students will utilize their skills in a team environment to design, analyze, manufacture, and evaluate one or more functional products. Students will use concepts of the experience of applying the disciplines of statics, dynamics, and strength of materials to the design of machine elements. Students will study various types of bearings, gears, power shafts, couplings, springs, and fasteners.

(7 contact hours: 1 lecture, 6 lab)