

Electro-Mechanical Technologies

Degree Type

Associate in Science

Currently in a Teach-Out Phase, Not Accepting New Applications

The Electro-Mechanical Technologies Degree at Lakes Region Community College consists of 11 core courses. Three of the core courses are part of the Advanced Manufacturing Degree and four of the core courses are part of the Electrical Power and Controls Technologies Degree. Successful students should have the necessary skills to enter the manufacturing work force, or excel in current employment, into machine technician positions. Students will have an understanding of electrical and mechanical theory and principals. Students will have acquired skills in troubleshooting electrical, hydraulic, and pneumatic control systems. Students will also have acquired skills in Computer Numeric Controlled (CNC) machine operations, electrical controls programmable controllers, principles of electrical motors, critical thinking skills, oral and technical communication skills.

Students who complete the program will

- demonstrate mathematic skills necessary to solve manufacturing problems through the understanding of fractions and decimals, algebra, geometry, trigonometry, linear equations, roots, geometric figures, usage of tolerances, interpretation and usage of formulas and proportions, and practical applications of geometry and trigonometry.
- understand machine tools and machine tool operations such as milling, turning, drilling, cutting, grinding, and chamfering.
- demonstrate advanced CNC machine operations skills including offsets, work offsets, G-code programming, machine zeroing, and circular interpolation, set-up, tool selection, material selection, and operator maintenance.
- demonstrate computer Aided Manufacturing (CAM) and CAM-Mill skills in processes such as contouring, cycle time estimating, tool selection, material specification, cutter compensation, parameter changes, contour applications, roughing, finishing, and tool paths.
- understand AC/DC Electrical Theory and the application to CNC Machine diagnostics.
- interpret electrical control diagram, prints, and logic.
- understand electrical controls and programmable controllers.
- understand motors including drive motors and drive systems.
- troubleshoot skills for programmable controllers, motor drive units, and electrical controls.
- demonstrate an understanding of hydraulic and pneumatic fluid power systems' theories, operation, and troubleshooting.

First Year

Fall Semester

Item #	Title	Class Hours	Lab Hours	Credits
ENGL100L	English Composition	4	0	4
ETEC124L	AC/DC Theory	4	3	5
ELMT120L	Fluid Power Systems	2	6	4
INDL100L	College Essentials	1	0	1
	Humanities/Fine Arts/Foreign Language Elective	3	0	3
Sub-Total Credits		14	9	17

Spring Semester

Item #	Title	Class Hours	Lab Hours	Credits
ETEC128L	Fundamentals of Electrical Controls	2	6	4
ETEC130L	Rotating Machinery	2	6	4
MANF151L	CNC Machines I	2	0	2
MANF152L	CNC Machines I Lab	0	6	2
MATH137L	Technical Algebra & Geometry	4	0	4
Sub-Total Credits		10	18	16

Second Year

Fall Semester

Item #	Title	Class Hours	Lab Hours	Credits
PHYS125L	Technical Physics	2	2	3
MANF230L	CAD/CAM	2	3	3
MANF211L	CNC Machines II	1	0	1
MANF212L	CNC Machines II Lab	0	6	2
	Social Science Elective	3	0	3
Sub-Total Credits		8	11	12

Spring Semester

Item #	Title	Class Hours	Lab Hours	Credits
ETEC235L	Programmable Controllers	3	4	4
ELMT210L	Mechanical Drive Systems	2	4	4
	ELMT270L OR ELMT280L	0	0	3
	Liberal Arts Elective	3	0	3
	Open Elective	3	0	3
Sub-Total Credits		11-14	8-17	17
Total Credits				62