

Advanced Manufacturing

Degree Type

Associate in Science

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

The Advanced Manufacturing Degree at Lakes Region Community College consists of 11 major core courses 5 of which are the core courses of our Advanced Manufacturing Certificate program. Successful students should have the necessary skills to enter the manufacturing workforce, or excel in current manufacturing employment, into positions a step higher than entry level. Students will have an understanding of manufacturing operations and processes. In addition, students will have acquired skills for decision making in the manufacturing environment using quantitative and qualitative data. Students will have knowledge in materials, processes, quality control, machine operations, machine set-up and tool section, employee empowerment skills, critical thinking skills, oral and technical communication skills, and operation management skills.

Students who complete the program will:

- Demonstrate athematic 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.
- Read and interpret blueprints and engineering drawings.
- 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.
- Demonstrate operational Management skills in strategic decision-making using tools such as forecasting, basic inventory models, aggregate planning, master scheduling, materials requirements, and scheduling of operations.
- Understand procurement, inventory movement, storage of materials, and production flows.
- Understand lean manufacturing principles such as line balancing, standard work, waste elimination, 5-S programs, employee empowerment, quality, lean production flow and inventory control, as well as facilitation techniques.

First Year

Fall Semester

Item #	Title	Class Hours	Lab Hours	Credits
ENGL100L	English Composition	4	0	4
MANF142L	Machine Processes	2	3	3
MANF131L	Blueprint Reading	3	0	3
MANF145L	Manufacturing Processes	3	0	3
INDL100L	College Essentials	1	0	1
	Social Science Elective	3	0	3
	Sub-Total Credits	16	3	17

Spring Semester

Item #	Title	Class Hours	Lab Hours	Credits
MANF132L	Solid Modeling	2	3	3
MANF151L	CNC Machines I	2	0	2
MANF152L	CNC Machines I Lab	0	6	2
MATH137L	Technical Algebra & Geometry	4	0	4
	Humanities/Fine Arts/Foreign Language Elective	3	0	3
Sub-Total Credits		11	9	14

Second Year

Fall Semester

Item #	Title	Class Hours	Lab Hours	Credits
MANF211L	CNC Machines II	1	0	1
MANF212L	CNC Machines II Lab	0	6	2
MANF230L	CAD/CAM	2	3	3
MANF240L	Lean Manufacturing	3	0	3
PHYS125L	Technical Physics	2	2	3
	Liberal Arts Elective	3	0	3
Sub-Total Credits		11	11	15

Spring Semester

Item #	Title	Class Hours	Lab Hours	Credits
MANF250L	Advanced CNC Machine Processes	2	6	4
BUS232L	Operations Management	3	0	3
MANF220L	Properties of Materials	3	2	4
	MANF270L or MANF280L			3
Sub-Total Credits		8	8	14
Total Credits				60