Lane Community College SM

2016 – 2017
Career Technical Programs

Advanced Technology Division
541.463.5380

lanecc.edu

Manufacturing Technology

Associate of Applied Science Degree
Associate of Applied Science Degree Option: Computer Numerical Control Technician
Two-Year Certificate of Completion
One-Year Certificate of Completion, Basic Manufacturing/Machining Technician

Program Coordinator Tracy Rea, Bldg. 15, Rm. 201, 541.463.5151, *reat@lanecc.edu*

Purpose The Two Year Associate of Applied Science Degree in Manufacturing Technology provides fundamental training in Manufacturing (machine shop) and related work. A graduate qualifies for entry level positions as a Machinist or CNC Operator in manufacturing shops and related machine tool industries. Machining and CNC manufacturing jobs are some of the fastest growing career options in Oregon and Lane County. Employment opportunities include high tech machine shops, job shops, production machine shops, tool and die shops, machine repair and maintenance shops and other manufacturing industries.

Learning Outcomes The graduate will:

- have proficiency in the setup and operation of all standard machine tools employed by the modern machine shop.
- demonstrate and use industrial safety standards for safe operation of all machine tools.
- use basic math skills, formulas and right angle trigonometry to accomplish shop tasks.
- use the internet to access information pertaining to shop techniques and tool use.

The CNC Option graduate will also:

- setup, program and machine parts on 3-axis CNC milling machines and 2 axis CNC lathes.
- create and edit g-code programs both manually and with CAM software.

Admission Information See *lanecc.edu/advtech/mfg* or contact the Advanced Technology Division, *AdvTechPrograms@lanecc.edu*

Advising & Counseling *classes.lanecc.edu/course/view.php?id=31255*

Cooperative Education (Co-op) Co-op offers students college credit and a grade for on-the-job work experience related to their educational and career goals. Through Co-op, students connect theory and practice, develop skills, expand career knowledge, and make contacts for the future. Work schedules and work sites vary. Under the supervision of the Manufacturing Technology Co-op Coordinator and with instructor consent, a maximum of 18 Co-op credits may be earned in lieu of required Manufacturing Technology course credits. Contact Marv Clemons, Manufacturing Technology Co-op Coordinator, Bldg. 12, Rm. 120A, 541.463.3158, *clemonsm@lanecc.edu*

Job Openings Projected through 2020
Lane County openings 14 annually
Statewide openings 152 annually

Wages
Lane County average hourly $19.45; average annual $40,458
Oregon average hourly $22.75; average annual $47,329

Costs (Estimate based on 2015-16 tuition and fees. Consult Lane's website for updated tuition.)

Books	$1,664
Differential Fees*	$2,756
Instruments/Tools	$1,425
Program Specific Fees	$886
Resident Tuition and General Student Fees	$11,609
Total Estimated Cost	$18,340

*This is the total of all the differential fees attached to the courses in this program. These fees and other course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

1. Prerequisites are required for some courses. See course descriptions.
2. MFG 201 and 202 must be completed with a letter grade, not P/NP. All other MFG and MTH courses must be completed with a letter grade, not P/NP, and must be passed with a grade of "C-" or better to satisfy program requirements.
3. PE/Health courses must be completed with a Pass or "C-" or better to meet program requirements.
4. Arts and Letters, Human Relations, and Social Science course choices are listed on the Associate of Applied Science degree page.

Prerequisites Minimum placement score of 68 in Reading OR completion of RD 080 OR RD 087 AND EL115 OR prior college. A high school diploma or equivalent is recommended for all applicants to this program.

First Year	**Fall**
MFG 197 Manufacturing Technology	12
MTH 060 Beginning Algebra	4
WLD 151 Metallurgy: Fundamentals and Welding	3
	Winter
CS 120 Concepts of Computing: Information Processing	4
PE/Health Requirement	3
MFG 197 Manufacturing Technology	12
	Spring
MFG 197 Manufacturing Technology	12
WR 115W Introduction to College Writing: Workplace Emphasis	3
Second Year	**Fall**
DRF 167 CAD 1	4
MFG 197 Manufacturing Technology	12
MTH 085 Applied Geometry for Technicians	4
	Winter
Arts/Letters Requirement	3
MFG 197 Manufacturing Technology	6
Choice of:	6
MFG 201 CNC Mill	
MFG 202 CNC Lathe	
	Spring
MFG 197 Manufacturing Technology	12
WLD 121 Shielded Metal Arc Welding 1	4
Human Relations Requirement	3

Manufacturing Technology

Basic Manufacturing/Machining Technician

Offered by the Advanced Technology Division, 541.463.5380

One-Year Certificate of Completion

Program Coordinator Tracy Rea, Bldg. 15, Rm. 201, 541.463.5151, *reat@lanecc.edu*

Purpose To provide training in basic principles and fundamentals in manufacturing (machine shop) and related work. This is a basic training certificate in fundamentals, and should not be confused with the proficiency levels acquired through more rigorous outcomes of 2-year programs in Manufacturing or Welding.

Learning Outcomes The graduate will:

demonstrate the use of setups and operation of all standard machine tools employed by the modern machine shop.

- demonstrate and use industrial safety standards for safe operation of all machine tools.
- use basic math skills, formulas and right angle trigonometry.

Admission Information *lanecc.edu/advtech/mfg* or contact the Advanced Technology Division, *AdvTechPrograms@lanecc.edu*

Advising & Counseling *classes.lanecc.edu/course/view.php?id=31255*

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Job Openings Projected through 2020
Lane County: 22 positions
Statewide: 313 positions
Wages
Lane County average hourly $13.71; average annual $28,524
Oregon average hourly $15.23; average annual $31,680

Costs (Estimates based on 2015-16 data for full-time students. Students attending part-time will incur additional term fees. Consult Lane's website for updated tuition and fees.)

Books	$390
Program Specific Fees	$436
Resident Tuition and General Student Fees	$1,764
Total Estimated Cost	$2,590

Course fees may change during the year. See the online credit class schedule for fees assigned to courses.

Course Requirements

1. Prerequisites are required for some courses. See course descriptions.
2. Minimum placement score of 68 in Reading OR completion of RD080 OR RD087 AND EL115 OR prior college. A high school diploma or equivalent is recommended for all applicants to this program.

MFG 197 Manufacturing Technology Machine Tool Fundamentals	3
MTH 060 Beginning Algebra or higher mathematics	4
WLD 111 Blueprint Reading for Welders	3
MFG 197 Manufacturing Technology Inspection	2
MFG 197 Manufacturing Technology Industrial Safety	2
Focus Elective	2-4

Focus Electives

WLD 121 Shielded Metal Arc Welding	4
WLD 111 Blueprint Reading for Welders	3
MFG 201 CNC Mill	1-6
MFG 197 Manufacturing Technology	1-12

Manufacturing Technology

Offered by the Advanced Technology Division, 541.463.5380

Two-Year Certificate of Completion

Program Coordinator Tracy Rea, Bldg. 15, Rm. 201, 541.463.5151, *reat@lanecc.edu*

Purpose To provide training in basic principles and fundamentals in manufacturing (machine shop) and related work. A graduate qualifies for entrance occupations as a machinist in manufacturing shops or related machine tool industries. Employment opportunities include machine repair and maintenance shops, tool and die shops, manufacturing industries, metalworking plants, repair and maintenance shops for mill and construction contractors, high tech and specialty machine shops, and production machine shops.

Learning Outcomes The graduate will:

- have proficiency in the setup and operation of all standard machine tools employed by the modern machine shop.
- demonstrate and use industrial safety standards for safe operation of all machine tools.
- use basic math skills, formulas and right angle trigonometry to accomplish shop tasks.
- use the internet to access information pertaining to shop techniques and tool use.

Admission Information See *lanecc.edu/advtech/mfg* or contact the Advanced Technology Division, *AdvTechPrograms@lanecc.edu*

Advising & Counseling *classes.lanecc.edu/course/view.php?id=31255*

See a Counselor or Advisor to learn what entry-level skills are suggested for successful completion of this program.

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Costs (Estimates based on 2015-16 data for full-time students. Students attending part-time will incur additional term fees. Consult Lane's website for updated tuition and fees.)

Books	$2,813
Differential Fees*	$2,756

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Program Specific Fees	$1,319
Resident Tuition and General Student Fees	$9,582
Total Estimated Cost	$16,470

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Gainful Employment Disclosure

Standard Occupational Classification: 17-3026.00

Go to the Department of Labor's O*Net website for a profile of this occupation:

Industrial Engineering Technicians *onetonline.org/link/summary/17-3026.00*

Or check on these O*Net Related Occupations:

Materials Engineers *onetonline.org.link/summary/17-2131.00*

Inspectors, Testers, Sorters, Samplers, and Weighters *onetonline.org/link/summary/51-9061.00*

In academic year 2014-15, 1 student completed this certificate.

The program is designed to take 8 terms, or about 24 months of study to complete.

Lane Community College is committed to protecting student privacy and does not publish this rate for fewer than 10 graduates.

For privacy reasons under FERPA, loan information is not disclosed for programs with fewer than 10 graduates in the reported year.

Explanation of costs: *lanecc.edu/esfs/credit-fees-and-expenses*

Course Requirements

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3. Human Relations and PE/Health course choices are listed on the Associate of Applied Science degree page.
4. Prerequisites Minimum placement score of 68 in Reading OR completion of RD 080 OR RD 087 AND EL115 OR prior college. A high school diploma or equivalent is recommended for all applicants to this program.

First Year	**Fall**
MFG 197 Manufacturing Technology	12
MTH 060 Beginning Algebra or MTH 085 Applied Geometry for Technicians or higher mathematics	4
	Winter
MFG 197 Manufacturing Technology	12
PE/Health Elective	3
	Spring
MFG 197 Manufacturing Technology	12
WLD 111 Blueprint Reading for Welders	4
Second Year	**Fall**
MFG 197 Manufacturing Technology	12
WLD 121 Shielded Metal Arc Welding 1	4
	Winter
MFG 197 Manufacturing Technology	7
WR 115W Introduction to College Writing: Workplace Emphasis	3
Choice of:	6
MFG 201 CNC Mill	
MFG 202 CNC Lathe	
	Spring
MFG 197 Manufacturing Technology	12
Human Relations Requirement	3

Manufacturing Technology Computer Numerical Control Technician Option

Offered by the Advanced Technology Division, 541.463.5380

Associate of Applied Science Degree Option

Program Coordinator Tracy Rea, Bldg. 15, Rm. 201, 541.463.5151, *reat@lanecc.edu*

Purpose The Two Year Associate of Applied Science Degree in Manufacturing Technology provides fundamental training in Manufacturing (machine shop) and related work. A graduate qualifies for entry level positions as a Machinist or CNC Operator in manufacturing shops and related machine tool industries. Machining and CNC manufacturing jobs are some of the fastest growing career options in Oregon and Lane County. Employment opportunities include high tech machine shops, job shops, production machine shops, tool and die shops, machine repair and maintenance shops and other manufacturing industries.

Learning Outcomes The graduate will:

- have proficiency in the setup and operation of all standard machine tools employed by the modern machine shop.
- setup, program and machine parts on 3-axis CNC milling machines and 2 axis CNC lathes.
- demonstrate and use industrial safety standards for safe operation of all machine tools.
- use basic math skills, formulas and right angle trigonometry to accomplish tasks.
- use the internet to access information pertaining to shop techniques and tool use.
- create and edit g-code programs both manually and with CAM software.

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Costs (Estimate based on 2015-16 tuition and fees. Consult Lane's website for updated tuition.)

Books	$1,664
Differential Fees*	$3,496
Instruments/Tools	$1,425
Program Specific Fees	$886
Resident Tuition and General Student Fees	$11,609
Total Estimated Cost	$19,080

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Manufacturing Technology

program. These fees and other course fees may change during the year. See the online credit class schedule for fees assigned to courses.

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MTH 060 Beginning Algebra	4
WLD 151 Metallurgy: Fundamentals and Welding	3
	Winter
MFG 197 Manufacturing Technology	12
CS 120 Concepts of Computing: Information Processing	4
PE/Health Requirement	3
	Spring
MFG 197 Manufacturing Technology	6
MFG 210 CAM 1	3
MFG 211 CAM 2	3
WR 115W Introduction to College Writing: Workplace Emphasis	3
Second Year	**Fall**
DRF 167 CAD 1	4
MFG 201 CNC Mill	6
MFG 197 Manufacturing Technology	6
MTH 085 Applied Geometry for Technicians	4
	Winter
MFG 197 Manufacturing Technology	6
MFG 202 CNC Lathe	6
Choice of: DRF 121 Mechanical Drafting DRF 168 CAD 2	4
	Spring
MFG 197 Manufacturing Technology	3
MFG 208 CNC: Special Project	9
Arts and Letters Requirement	3
Human Relations Requirement	3

Elective

ENRG 280M Co-op Ed: Manufacturing (optional)