

Certificate of Proficiency (COP)

Computer Numerical Control

The Machine Trades certificate program is another route to employment as a machinist, millwright, tool and die maker, or other occupation related to manufacturing. Graduates may work as advanced apprentice machinists, machine operators, or programmers.

Certificate Requirements

- **Communications:**
5 credits - ENGL 110 Industrial Communications is recommended.
- **Quantitative Skills:**
5 credits – MATH 106 Industrial Mathematics.
- **Human Relations/ Social Science:**
5 credits – BUS 144 Management of Human Relations is recommended.

Program Requirements

BLPT 150	Machinists Blueprint Reading	5
HLTH 105	First Aid, CPR and Bloodborne Pathogens	1
MASP 107 <i>AND/OR</i> MASP 111	Machining for Related Occupations <i>AND/OR</i> Machine Shop I (2-10 cr variable) for a combined total of 10 credits	10
MASP 204	CNC Machining Center Fundamentals	3
MASP 205	CNC Turning Center Fundamentals	3
MASP 221	CNC Milling	10
MASP 222	CNC Turning	10
MFG 100	Foundational Skills for the Trades	3
MFG 105	Industrial Safety	3
MFG 115	Manufacturing Processes	5
MFG 230	Computer Integrated Manufacturing	4

Diversity and Distribution Lists are available in the Lower Columbia College Academic Catalog and at lowercolumbia.edu/catalog.

Total credits required to earn this certificate: 72.

Students completing this program should acquire the following skills and abilities:

- Communicate professionally in writing and speaking as appropriate to an industrial technology work environment (GS).
- Apply objective, valid methods of inquiry and problem solving to draw rational, ethical, and coherent conclusions (GS).
- Apply mathematical information to perform tasks in industrial technology (GS).
- Interact effectively with individuals and groups (GS).
- Apply industry standard safety and hazardous material handling guidelines.
- Display work appropriate behavior including positive attitude, timelines and teamwork.

- Apply knowledge of computer programs to create professional, academic, or business documents following current industry standards.
- Demonstrate competencies required for entry level machinist.
- Interpret industrial blueprints.
- Demonstrate competency in documenting and communicating work performed using trade specific language.
- Demonstrate competency in inspecting machined parts.
- Program computer numerical control (CNC) mill and CNC lathe to manufacture parts per specification.
- Demonstrate competency in set up and operation of a computer numerical control (CNC) mill and CNC lathe to manufacture parts per specification.
- Demonstrate competency in set up and operation of manual machine tools to manufacture parts per specification.
- Apply CAD/CAM software to design and manufacture parts per specification.

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Planner

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1st Quarter			2nd Quarter			3rd Quarter			4th Quarter		
√	Courses	Crs	√	Courses	Crs	√	Courses	Crs	√	Courses	Crs
	MASP 107 (A) AND/ OR MASP 111 (A)	10		BLPT 150 (W)	5		MFG 105 (A)	3		BUS 144 (A)	5
	MASP 204 (A)	3		MASP 221 (F,W,Sp)	10		MASP 222 (F,W,Sp)	10		ENGL 110 (A)	5
	MFG 115 (F)	5		MASP 205 (A)	3		MASP 230 (Sp)	4		MATH 106 (A)	5
	MFG 100 (A)	3		HLTH 105 (A)	1						
	Total:	21		Total:	19		Total:	17		Total:	15

Notes:

Program planning is based on information available at the time of preparation. It is the student's responsibility to meet with their LCC advisor. Consult the LCC catalog for LCC graduation requirements.

Legend:

- A - Course usually offered all quarters.
- F - Course usually offered Fall Quarter.
- W - Course usually offered Winter Quarter.
- Sp - Course usually offered Spring Quarter.
- S - Course usually offered Summer Quarter.