MACHINE TOOL TECHNOLOGY, AAS

Program Code: AAS.MACHTECH

Course work in machine tool technology prepares students for careers in high-tech manufacturing by producing products to exacting industrial standards utilizing current manual and computer-aided machine tool technology. Many classes are taught in a flexible, open-lab format and students may enter the program any term.

Individualized daytime and evening instruction is provided in the operation of machine tools such as: lathes, mills, surface and cylindrical grinders and common machine shop equipment. Included in the degree program is the study of computer numerical control (CNC) programming and machining for milling, turning and electrical discharge machining (EDM), as well as courses in computer-aided manufacturing (CAM) utilizing current industrial CAD/CAM software. Quality control is stressed while students are taught a wide range of measuring and inspection techniques. Other topics include courses offered in welding, materials science and basic electricity. Many students enroll in these courses to upgrade existing job skills and several of our courses satisfy the continuing education unit (CEU) requirements of local apprenticeships and trade organizations.

SHORT TERM TRAINING

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information. A short-term training certificate is available.

For information contact the Industrial Technology Department, 503-594-3318.

Outcomes

Related Instruction Outcomes

Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

Communication

- 1 course - WR-101 Workplace Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations

- 3 credits - See Related Instruction for course list
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing.

Program Outcomes

Upon successful completion of this program, students should be able to:

- set-up and operate manual machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- set-up and operate CNC machine tools to produce machined products to required specifications by applying appropriate skills, processes, and technologies;
- apply computer software applications to produce manufacturing related documents, create CAD models, and generate CAM programs for machining processes;
- apply knowledge of materials, physics and mathematics to effectively machine industrial materials;
- apply critical thinking skills to solve common machining and manufacturing problems;
- work safely in an industrial environment around machinery, power tools, electricity and chemicals.

Requirements

First Year		
Fall Term		**Credits**
MFG-104	Print Reading	3
MFG-107	Industrial Safety & First Aid	3
MTH-050	Technical Mathematics I [1]	4
MTT-111	Manual Machining I	4
MTT-121	CNC I: Set-Up and Operation	4
	Credits	**18**
Winter Term		
MFG-109	Computer Literacy for Technicians	3
MTH-080	Technical Mathematics II	3
MTT-112	Manual Machining II	4
MTT-122	CNC II: Programming and Operation	4
Human Relations requirement		3
	Credits	**17**
Spring Term		
MTT-113	Manual Machining III	4
MTT-123	CNC III: Applied Programming and Operation	4
MTT-141	CAD/CAM I	4
WR-101	Workplace Writing [1]	4
	Credits	**16**
Second Year		
Fall Term		
MFG-106	Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing	3
MFG-218	Lean Manufacturing and Quality Systems	3
MTT-241	CAD/CAM II	4
MTT-252	Macro Programming and Machine Probing	3
Electives (p. 2)		3-4
	Credits	**16-17**
Winter Term		
MFG-264	CMM Set-Up and Operation	2
MTT-242	CAD/CAM III	4

MTT-253	5-Axis Machining	3
MTT-268	Capstone Machining I	3
Electives (p. 2)		3-4
	Credits	**15-16**
Spring Term		
HD-209 or MFG-280	Job Search Skills or Manufacturing Technology/CWE	3
MFG-221	Materials Science	3
MTT-254	Mill/Turn Machining	3
MTT-269	Capstone Machining II	3
Electives (p. 2)		3-4
	Credits	**15-16**
	Total Credits	**97-100**

[1] Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

Electives

Any MFG or MTT course not included in the program, or any of the following:

Code	Title	Credits
CDT-102	Sketching & Problem Solving	3
CDT-103	Computer-Aided Drafting I	3
CDT-108A	Introduction to SolidWorks	3
CDT-223	Inventor Fundamentals	3
CDT-225	Advanced SolidWorks	3
MET-170	Introduction to Manufacturing Processes	3
MFG-103	Machining for Fabrication & Maintenance	3
MFG-130	Basic Electricity I	3
MFG-219	Robotics	3
WLD-150	Welding Processes	4
Other technical courses with department approval		4

Careers

Career opportunities include:

- machinist
- tool maker
- CNC programmer/operator
- CAD/CAM technicians