WESTERN DAKOTA TECHNICAL COLLEGE

MACHINING AND ENGINEERING TECHNOLOGY

Associate of Applied Science, 68 Credit Hours, 18-Month Program

This program equips graduates with a comprehensive skill set in machining, engineering technology, and computer-aided design, preparing them to meet the evolving needs of industry. Graduates will gain practical experience and technical expertise that enable them to contribute across multiple areas of manufacturing, design, and engineering processes.

Precision Machining
Graduates will be trained to set up and operate a wide range of machine tools, including both conventional and computer numerically controlled (CNC) equipment. Students will develop expertise in producing precision metal parts and custom tools. Machinists trained in this program will be capable of performing machining operations in high-volume production runs as well as producing unique, one-of-a-kind pieces, Their skill set will equip them for machining careers in a wide variety of industries such as aerospace, medical, automotive, and consumer products manufacturing. The curriculum emphasizes foundational machining techniques, machine setup, operation, and part inspection to ensure quality and accuracy in manufacturing.

Engineering Technology
Students will gain the skills and knowledge required to collaborate with engineers in developing solutions for the manufacturing industry. They will learn to create 3D models that are used to generate detail and assembly drawings for a wide range of machinery and mechanical components. Using industry-standard software, students will gain expertise in creating, modifying, and interpreting technical drawings, while also understanding the mechanical principles behind these designs. This expertise is critical in both precision manufacturing and engineering environments.

Graduates will leave the program ready to excel in positions across industries such as aerospace, automotive, medical device manufacturing, and more, with a skill set that reflects the latest technological advancements and industry demands.

Course	No.	Course Title	Credits
		General Education Requirements	
CSC	105	MICROCOMPUTER SOFTWARE APPLICATIONS I	3
ENGL	106	WORKPLACE COMMUNICATIONS I*	3
MATH	100	ELEMENTARY ALGEBRA** ***or higher***	3
MATH	101	INTERMEDIATE ALGEBRA*** ***or higher***	3
MATH	120	TRIGONOMETRY****	3
PSYC	103	HUMAN RELATIONS IN THE WORKPLACE	3
		Total	**18**
		Technical Requirements	
AE	101	INTRODUCTION TO ARCHITECTURE AND ENGINEERING	3
AE	139	2D CAD	3
AE	142	MECHANICAL CAD	3
AE	232	MECHANICAL DESIGN I	3
AE	234	MECHANICAL PRINT READING	2
AE	244	MECHANICAL DESIGN III	3
AE	247	CAM AND CNC TECHNOLOGIES	3
MACH	110	MACHINE SHOP OPERATIONS	3
MACH	113	TURNING THEORY AND OPERATIONS	3
MACH	123	MILLING THEORY AND OPERATIONS	3
MACH	125	MECHANICAL BLUEPRINT READING	3
MACH	130	MATERIALS APPLICATIONS	3
MACH	136	TURNING THEORY AND CNC OPERATIONS	3
MACH	141	MILLING THEORY AND CNC OPERATIONS	3
MACH	146	APPLIED COMPUTER AIDED DRAFTING FUNDAMENTALS	3
MACH	199	INTERNSHIP	6
		Total	**50**

*Prerequisite: Acceptable ACCUPLACER score or Basic Writing.
**Prerequisite: Acceptable ACCUPLACER score or Basic Math.
***Prerequisite: Acceptable ACCUPLACER score or Elementary Algebra.
****Prerequisite: Acceptable ACCUPLACER score, Intermediate Algebra, or College Algebra.

Semester breakdown on next page

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Semester Breakdown AAS

First Semester		CR	Second Semester		CR
CSC 105	Microcomputer Software Applications I	3	ENGL 106	Workplace Communications I	3
MACH 110	Machine Shop Operations	3	MACH 130	Materials Applications	3
MACH 113	Turning Theory & Operations	3	MACH 136	Turning Theory & CNC Operations	3
MACH 123	Milling Theory & Operations	3	MACH 141	Milling Theory & CNC Operations	3
MACH 125	Mechanical Blueprint Reading	3	MACH 146	Applied Computer Aided Drafting Fundamentals	3
MATH 100	Elementary Algebra ***or higher***	3	PSYC 103	Human Relations in the Workplace	3
	Total Credit Hours	**18**		**Total Credit Hours**	**18**

Third Semester (summer)		CR
MACH 199	Internship	6

Fourth Semester		CR	Fifth Semester		CR
AE 101	Introduction to Architecture	3	AE 232	Mechanical Design I	3
AE 139	and Engineering	3	AE 234	Mechanical Print Reading	2
AE 142	2D CAD	3	AE 244	Mechanical Design III	3
MATH 101	Mechanical CAD Intermediate Algebra ***or higher***	3	AE 247	CAM and CNC Technologies	3
			MATH 120	Trigonometry	3
	Total Credit Hours	**12**		**Total Credit Hours**	**14**