MACHINE TOOL TECHNOLOGY - ASSOCIATE OF APPLIED SCIENCE DEGREE (AAS)

Explore More About This Program: https://cwi.edu/program/machine-tool-technology

Degree Quick Facts

- **Instructional School:** Industry, Engineering, and Trades
- **Department:** Manufacturing and Welding
- **Program Code:** MACH.AAS
- **Program Type:** Career and Technical Education
- **Available Fully Online:** No
- **Eligible for Federal Financial Aid:** Yes

NOTE: Courses required for this program *may* have an additional fee; more information can be found on the Special Course Fees web page.

Degree Requirements

Course	Course Title	Min Credits
General Education Requirements		
GEM 1 - Written Communication course		3
GEM 2 - Oral Communication course		3
GEM 3 - Mathematical Ways of Knowing course		3
GEM 6 - Social & Behavioral Ways of Knowing course		3
GE Elective course		3
Major Requirements		
MACH 103	Machine Shop Laboratory I	3
MACH 104	Machine Shop Laboratory II	3
MACH 105	Machine Shop Laboratory III	6
MACH 126	Related Blueprint Reading I	2
MACH 127	Related Blueprint Reading II	2
MACH 153	Machine Shop Theory I	2
MACH 154	Machine Shop Theory II	2
MACH 155	Machine Shop Theory III	2
MACH 203	Advanced Machine Shop Laboratory I	6
MACH 204	Advanced Machine Shop Laboratory II	6
MACH 210	Fundamentals of Computer-Aided Drafting and Design	3
MACH 212	Computer-Aided Manufacturing	3
MACH 224	Tool Design for Manufacturing	2
MACH 253	Advanced Machine Shop Theory I	3
MACH 254	Advanced Machine Shop Theory II	3
Minimum Credit Hours Required		**63**

Degree Plan: Fall Start

The course sequence listed below is strongly recommended in order to complete your program requirements. Many Career and Technical Education (CTE) courses have prerequisites and/or corequisites that have been accounted for within this course sequence plan. Please register for your major requirements each semester as shown below using the Student Planning tool in myCWI. Consult your advisor for any questions regarding this plan.

NOTE: The required general education courses may be completed during any semester the student prefers, including summer semesters.

First Year

Fall		Credit Hours
First 8-Week Course Session		
MACH 103	Machine Shop Laboratory I	3
MACH 153	Machine Shop Theory I	2
Second 8-Week Course Session		
MACH 104	Machine Shop Laboratory II	3

MACH 154	Machine Shop Theory II	2
Full 16-Week Course Session		
MACH 126	Related Blueprint Reading I	2
GEM 2 - Oral Communication course		3
	Total Semester Credit Hours	**15**
Spring		
Full 16-Week Course Session		
MACH 105	Machine Shop Laboratory III	6
MACH 127	Related Blueprint Reading II	2
MACH 155	Machine Shop Theory III	2
MACH 224	Tool Design for Manufacturing	2
GEM 3 - Mathematical Ways of Knowing course		3
	Total Semester Credit Hours	**15**
Summer		
Full 8-Week Course Session		
GEM 6 - Social & Behavioral Ways of Knowing course		3
GE Elective course		3
	Total Semester Credit Hours	**6**
Second Year		
Fall		
Full 16-Week Course Session		
MACH 203	Advanced Machine Shop Laboratory I	6
MACH 212	Computer-Aided Manufacturing	3
MACH 253	Advanced Machine Shop Theory I	3
GEM 1 - Written Communication course		3
	Total Semester Credit Hours	**15**
Spring		
Full 16-Week Course Session		
MACH 204	Advanced Machine Shop Laboratory II	6
MACH 210	Fundamentals of Computer-Aided Drafting and Design	3
MACH 254	Advanced Machine Shop Theory II	3
	Total Semester Credit Hours	**12**
	Minimum Credit Hours Required	**63**

Program Learning Outcomes

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

- Demonstrate knowledge and application of safe work habits in all phases of machine shop operation.
- Demonstrate knowledge and application of advanced setup, operation, and maintenance of manual milling machines.
- Demonstrate knowledge and application of advanced manual engine lathe set-up techniques and operations, as well as precision surface grinding and measuring techniques.
- Perform and utilize advanced setup techniques, tool and hardware selection, and process planning for manufacturing, as well as jig and fixture design for production machining.
- Apply advanced interpretation of machine shop specific detail and assembly drawings emphasizing machining operations and materials; apply the Machinery's Handbook in interpreting blueprint specifications and associated machining processes.
- Program and operate computer numerical control (CNC) machining and turning centers. Emphasis on manually writing (G&M compatible) programs, debugging programs, setups and fixturing, tooling selection, and offset calculations.
- Operate basic computer-aided drafting and design systems using keyboarding, system operation, and applying computer graphics to machine standards. Operate interactive computer graphics system to prepare drawings on a CRT.
- Write computer numerical control (CNC) machine tool programs using computer-assisted techniques to generate G-Code and M-Function programs. Apply tooling concepts, machining methods, definition of part geometry, writing of tool motion statements, use of the computer to process program inputs, analysis, and debugging of computer outputs to develop a functional program.

- Apply, explain, and use geometric dimensioning and tolerancing (GD&T) methods as interpreted in ASME Y14.5M. Read and use geometric tolerancing symbolism and terms.
- Work professionally and productively with others through collaboration and teamwork in a shop or lab environment.