

# MFG - MACHINE TOOL TECHNOLOGY

**MFG212 CAM (Computer-Assisted Machining) Concepts I**  
Credits 4 Spring

**Registration Requirement:** MFG216 with a grade of "C" or better, machine shop experience, Mechanical Engineering Technology major or instructor consent.

An introduction to computer-assisted CNC programming using MasterCam software. The student will learn the organization of software and how to create and edit tool application data files; create and edit part geometry elements; and create CNC machine code from database.

**Additional Course Fee:** \$75.00

**MFG213 Integrated Machine Shop I Theory**  
Credits 2 Fall

**Registration Requirement:** IMTL153 with a grade of "C" or better; or instructor consent.

This is an advanced theory course in machine tool operations. Topics covered relate to both manual and CNC machine tools. Concepts covered include use of soft jaws in turning; milling; multiple operation set-ups on both CNC and manual machines. This includes use of multiple part set-ups. This course will also develop use of the "Machinery's Handbook."

**Additional Course Fee:** \$5.00

**MFG214 Integrated Machine Shop I Lab**  
Credits 3 Fall

**Registration Requirement:** IMTL153 with a grade of "C" or better; or instructor consent.

This is an advanced lab course where the student develops skills in CNC and manual machining. Students use soft jaws for turning and milling production style parts. Skill development focuses on internal boring and special milling setups. Data from the "Machinery's Handbook" continues to be applied.

**Additional Course Fee:** \$80.00

**MFG216 CNC/CAM (Computer Numerical Control/Computer Assisted Machining)**  
Credits 4 Fall

**Registration Requirement:** IMTL153 with a grade of "C" or better, machine shop experience or instructor consent.

This course continues the introduction of the student to CNC machine tools. The student studies process planning, setup and programming of CNC machine tools for milling and turning applications. This includes the basic application of CNC coordinate systems for milling and turning and how CNC programs are organized and developed. Students continue in the application of cutting tools and tooling systems for CNC operations and are also introduced to CAM programming software with industry standard CAM software.

**Additional Course Fee:** \$15.00

**MFG217 Modern Manufacturing Concepts**  
Credits 3 Fall

**Registration Requirement:** IMTL150 and IMTL151; or instructor consent. This is an advanced theory course that explores current trends in 21st-century manufacturing. Topics related to Lean manufacturing concepts and total quality improvement, as well as process improvement are explored in-depth.

**Additional Course Fee:** \$5.00

**MFG232 Integrated Machine Shop II Lab**  
Credits 3 Winter

**Registration Requirement:** MFG214 and second-year Machine Tool Technology student; or instructor consent.

This is a continuation of an advanced lab course where students continue to develop skills in CNC and manual machining. Students continue skill development in turning and milling production style parts. Skill development focuses on special milling setups, turning operations and tooling applications. Data from the "Machinery's Handbook" continues to be applied.

**Additional Course Fee:** \$80.00

**MFG234 Advanced Manufacturing Processes**  
Credits 3 Winter

**Registration Requirement:** IMTL150 and IMTL151; or instructor consent.

This is an advanced theory course in machine tool operations. The topics explored include non-traditional and special processes that are an important part of the 21st-century production environment. This includes exploration in EDM (Electromagnetic Discharge Machining), stamping, cold forming, forging, casting, injection mold, deep-drilling operations, jig and fixture design and applications and an exploration into hydraulic and pneumatic systems.

**Additional Course Fee:** \$5.00

**MFG251 Applied Machine Shop Lab**  
Credits 3 Spring

**Registration Requirement:** MFG232 or instructor consent.

This is a lab course in which students develop through group planning and discussion a manufacturing project utilizing the knowledge and skills acquired. Special emphasis is placed on the application of all machining processes learned through the program.

**Additional Course Fee:** \$80.00

**MFG254 Manufacturing Economics and Job Prep**  
Credits 3 Spring

**Registration Requirement:** IMTL150 and IMTL151; or instructor consent.

This course prepares students for entry into the workforce. The topics covered relate to the economic factors that go into the manufacturing process. Students explore the direct and indirect costs of doing business and the tools used to estimate manufacturing costs. Students also receive instruction in resume development and job search techniques.

**Additional Course Fee:** \$5.00