UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
Manual Machining Technology
FY2025 / 15 Credits (450 Clock-Hours)

Foundational Courses

TEMT 1000 Manufacturing Fundamentals — 3 Credits / 90 Clock-Hours

The Manufacturing Fundamentals course introduces students to basic procedures and operations encountered in the machine shop and various manufacturing industries. Topics include essential safety practices, use of basic measuring and hand tools, applications of pedestal grinding, and basic knowledge of sawing operations.

Objectives:
- Identify safe practices in a machine shop.
- Identify appropriate PPE.
- Demonstrate environmental awareness.
- Identify correct clean-up procedures.
- Interpret a Safety Data sheet (SDS).
- Perform basic measurement with calipers and micrometers.
- Perform basic layout procedures.
- Identify basic hand tools and their usage.
- Perform basic mathematical calculations.

TEMT 1200 Lathe Concepts — 3 Credits / 90 Clock-Hours

The Lathe Concepts course introduces students to essential material cutting concepts using a precision lathe machine. Topics include holding and locating work pieces; selecting cutting tools and holders; turning speeds and feeds; applying cutting depth, width, and direction; part production; and inspection.

Objectives:
- Demonstrate safe operation of a precision lathe machine.
- Demonstrate proper machine maintenance and workstation cleanup.
- Demonstrate proper tool selection and application.
- Demonstrate proper work holding device selection and setup.
- Demonstrate efficient speeds and feeds for lathe tooling.
- Perform accurate facing operations.
- Perform accurate turning operations.
- Perform accurate chamfer/taper turning operations.
- Perform accurate hole-forming operations for size and location.
- Perform accurate threading operations.
- Perform accurate knurling operations.
- Perform calculations needed to operate precision machine.
- Inspect and document finish dimension using various metrology.

TEMT 1100 Mill Concepts — 3 Credits / 90 Clock-Hours

The Mill Concepts course introduces students to essential material cutting concepts using a milling machine. Topics include clamping and locating work pieces; selecting cutting tools and holders; milling speeds and feeds; applying cutting depth, width, and direction; part production; and inspection.

Objectives:
- Demonstrate safe operation of a milling machine.
- Demonstrate use of indicators relating to aligning work holding and figuring.
- Demonstrate proper machine maintenance and workstation cleanup.
- Demonstrate proper work holding device selection and setup.
- Demonstrate efficient speeds and feeds for mill tooling.
- Perform accurate milling of pockets, windows, and slots.
- Perform accurate hole-forming, mill operations for size and location.
- Perform accurate angle milling.
- Create and evaluate milled surface finishes.
- Perform calculations needed to operate precision machine.
- Inspect and document finish dimension using various metrology.

TEMT 2000 Process Control — 3 Credits / 90 Clock-Hours

Process Control provides practice reading blueprints and technical drawings to create and inspect a part or assembly. This class will teach practical theory and provide hands-on experience in the proper use of common and advanced measuring tools found in the inspection room.

Objectives:
- Interpret basic blueprint symbols, line types, and views.
- Analyze title blocks and apply the data found there to the inspection process.
- Describe the basic Geometric Dimensioning and Tolerance (GD&T) symbols.
- Perform calculations needed in regards to process control.
- Demonstrate the proper use of micrometers, calipers, and other gaging tools required for part inspection.

TEMT 1030 Grinding Concepts — 3 Credits / 90 Clock-Hours

Grinding Concepts familiarizes students with the safe and proper operation of pedestal, surface and cylindrical grinders.

Objectives:
- Analyze and properly select, balance, and dress grinding wheels.
- Demonstrate proper grinding techniques of cutting tools.
- Demonstrate proper clamping and holding techniques when grinding parallel and perpendicular surfaces using surface grinders.
- Demonstrate proper grinding techniques using the cylindrical grinder.
- Demonstrate proper adjusting, oiling, and lubricating grinding machines for preventative maintenance.