UTAH SYSTEM OF HIGHER EDUCATION

Utah System of Higher Education
CNC Machine Operator
FY2027 / 6 Credits (180 Clock-Hours)

Foundational Courses

CNC Machine Operator

TEMT 1003 CNC Technician Fundamentals **2 Credits / 60 Clock-Hours**

An introductory course to basic procedures and machining operations encountered in the machine shop manufacturing industry. Topics include essential safety practices, SDS, basic measuring tools, and alphabet of lines, title block data, dimensions, tolerances, surface finish, and multiple-view drawings, with sectional, auxiliary and projected views.

Objectives:
• Identify safe practices in a machine shop.
• Identify correct clean-up procedures.
• Interpret a Material Safety Data Sheet (SDS).
• Demonstrate accurate use and reading of steel rules, micrometers, and calipers.
• Perform basic layout procedures.
• Add, subtract, multiply, and divide to solve a problem following the correct order of operations.
• Add, subtract, multiply, and divide fractions and decimals, as well as how to convert these numbers to percentages.
• Interpret blueprint title block and revision information.
• Visualize a three-dimensional part from a blueprint drawing.
• Calculate dimensions and tolerances from views shown on a blueprint.
• Identify surface finish requirements.
• Determine threading data from blueprint specifications.
• Inspect and document finish dimension using various metrology.
• Calculate taper dimensions from blueprint specifications.

TEMT 1015 Machining Concepts **1 Credit / 30 Clock-Hours**

This course instructs basic machining concepts. It gives students a working overview of machining practices. This course is designed to provide students with basic measuring equipment, basic Inspection, and documentation of machined parts.

Objectives:
• Demonstrate safe work habits and be conscious of safety when working with machinery.
• Describe basic blueprints, drawings, and establish tolerances.
• Apply basic mathematics in the machine tool technology.
• Demonstrate proper machine tool usage.
• Describe 5’s concepts.
• Select and plan machining operations on equipment.
• Demonstrate beginning skills in quality control, inspection, gauging methods, and production control as they relate to manufacturing production.

TEMT 1120 CNC Mill Basic Operation **1 Credit / 30 Clock-Hours**

This course introduces CNC vertical milling. Students will be taught safe setup and operation of CNC vertical mill, CNC terminology, preparatory steps to run a CNC program.

Objectives:
• Demonstrate proper work holding for CNC mill machine.
• Demonstrate basic CNC mill machine setup.
• Demonstrate setting program zero for CNC mill machines.
• Use motion commands of rapid positioning, linear interpolation, and circular interpolation.
• Demonstrate interpersonal skills.
• Inspect and document finish dimension using various metrology.

TEMT 1220 CNC Lathe Basic Operation **1 Credit / 30 Clock-Hours**

This course introduces CNC lathe operation. Students will be taught safe setup and operation of CNC lathe, CNC terminology, preparatory steps to run a CNC program.

Objectives:
• Demonstrate proper work holding for CNC lathe machine.
• Demonstrate basic CNC lathe machine setup.
• Demonstrate setting program zero for CNC lathe machines.
• Inspect and document finish dimension.
• Demonstrate interpersonal skills.

TEMT 1510 Geometric Dimensioning and Tolerancing Basic **1 Credit / 30 Clock-Hours**

This course teaches students to interpret Geometric Dimensioning and Tolerancing (GD&T) on blueprints used in manufacturing. Topics include symbols, terms, datum, material condition modifiers, and tolerance zones.

Objectives:
• Solve problems of location and positional tolerances using GD&T symbols.
• Solve problems of linear tolerances using GD&T symbols.
• Solve tolerance problems of feature form, profile, and function using GD&T symbols.