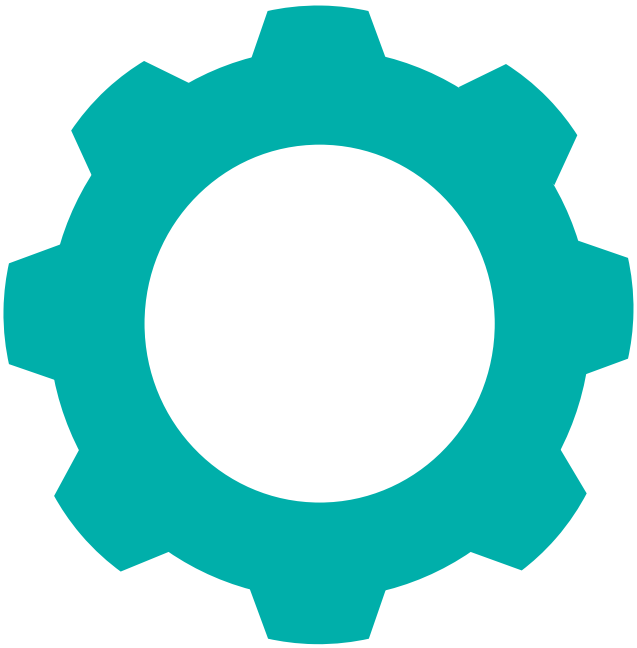
NOCTI

Partner Credential Blueprint

Blue Ridge Community College



Basic Machining Instructor Certification (Endorsed by FANUC)

Code: 9598 Version: 01

General Assessment Information

Blueprint Contents

Test Type: This assessment measures general knowledge of the machining industry, and the common processes, terminology, and careers in the industry. This assessment offers a written (multiple-choice) assessment and separate performance tests for milling and turning and can be used at the secondary level, post-secondary level, workforce development centers and businesses. This written (multiple-choice) assessment is delivered online. The performance assessments must be evaluated in a lab or shop.

CIP Code

48.0501 Machine Tool Technology/Machinist

Learning that works for America CTE™

Science, Technology, Engineering, and Mathematics

O*NET™ in*it

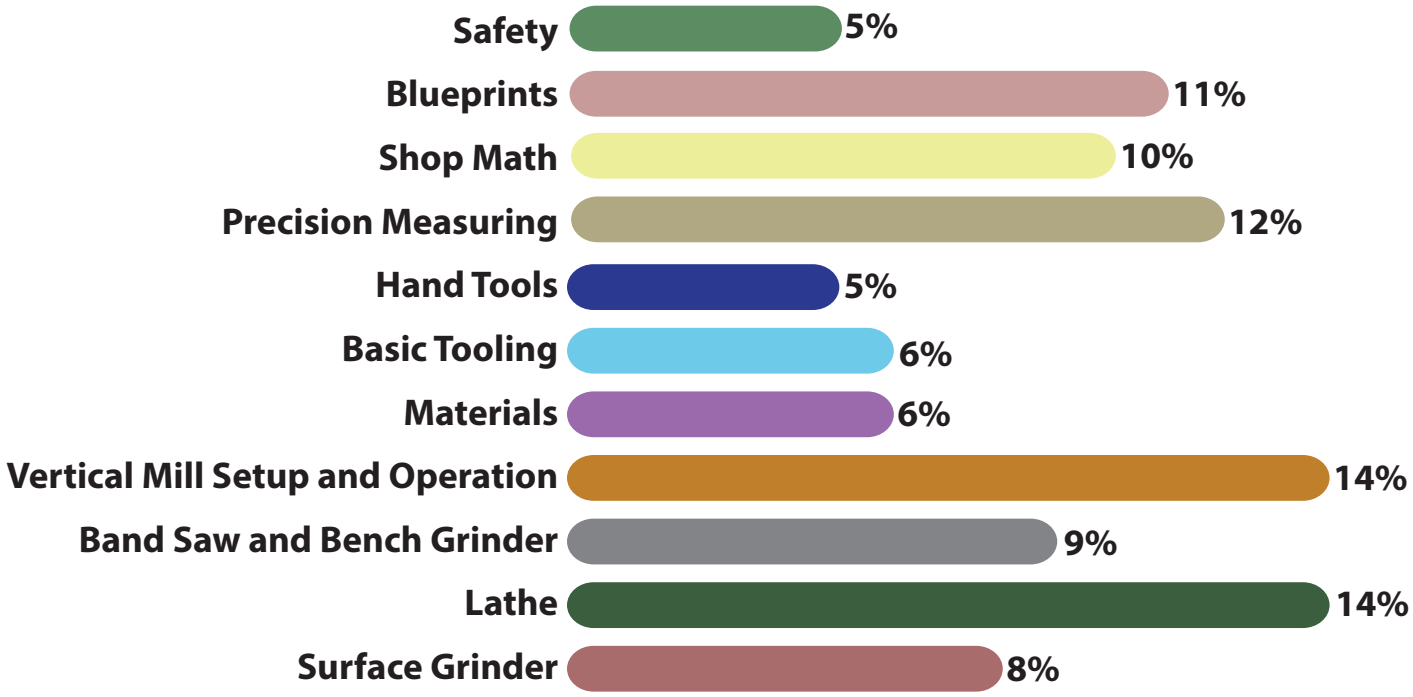
51-4011.00 Computer-Controlled Machine Tool Operators, Metal and Plastic

Written Assessment

Written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours
Number of Questions: 125
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Safety
- Identify and appropriately use Personal Protective Equipment (PPE)
- Identify environmental and safety considerations established by the EPA, OSHA, and listed in SDS

Blueprints
- Describe basic print layout
- Identify blueprint lines
- Demonstrate knowledge of dimensioning
- Describe first and third angle projections
- Identify Geometric Dimensioning and Tolerancing (GD&T) symbols
- Develop an order of operations (process plan) based on blueprint specifications

Shop Math
- Calculate math related to blueprint dimensions and tolerances
- Calculate basic math (e.g., adding, subtracting, fractions, decimals)
- Calculate shop formulas (e.g., speeds, feeds, conversions)

Precision Measuring
- Describe applications and interpret readings of micrometers and calipers
- Demonstrate knowledge of Vernier scale/height gage
- Identify and interpret dial indicator readings
- Describe surface plates/gage blocks and know application

Hand Tools
- Identify deburring tools and their applications
- Describe basic tools used for machining (e.g., wrenches, ratchet)

Basic Tooling
- Identify types of machining tools
- Describe cutting geometry (angles) and insert tools
- Identify types of tool materials (e.g., high speed steel, carbide)

(Continued on the following page)

Specific Standards and Competencies (continued)

Materials
- Describe ferrous and non-ferrous materials
- Identify characteristics of stainless steel
- Describe material properties of carbon steel and alloys

Vertical Mill Setup and Operation
- Explain safe principles of mill operation
- Identify parts and mill operation
- Select and maintain appropriate tools
- Explain various workholding methods (e.g., mill vise, table set-ups, angle plates)
- Set up milling machines (e.g., head alignment, vise alignment, tool holder selection)
- Perform milling operations (e.g., pocketing, slotting, hole-making, peripheral and face milling)

Band Saw and Bench Grinder
- Describe saw and grinder safety practices
- Determine blade selection and cutting speed
- Describe proper grinder wheel selection

Lathe
- Explain safe principles of lathe operation
- Identify parts and lathe operation
- Select and maintain appropriate lathe tools
- Set up lathe machines (e.g., tail stock, rest, and chuck selection)
- Perform lathe operations (e.g., turning, facing, threading, boring, grooving)

Surface Grinder
- Describe surface grinder operation
- Identify wheel selection and dressing (surface finish)
- Determine proper use of magnetic chuck and workholding

Sample Questions

The purpose of OSHA is to

A. enforce employee benefits
B. establish right-to-know programs
C. publish machining standards
D. regulate safety in the workplace

The total allowable variation in part size when dimensioned as 2.150±.005 is

A. five thousandths
B. ten thousandths
C. fifteen thousandths
D. twenty thousandths

What is the proper way to use a file for deburring?

A. move in one direction
B. back and forth motion
C. in circular motion
D. with lubricant

The speed rating of the grinding wheel must be below the <u>maximum</u>

A. horsepower of the grinder
B. width of the wheel
C. diameter of the wheel
D. RPM of the grinder

The cross-feed hand wheel on a surface grinder is used to

A. lower the wheel to set depth of cut
B. move the table in a reciprocating motion across the workpiece
C. set a step-over distance between reciprocating passes
D. position a workpiece on a magnetic chuck