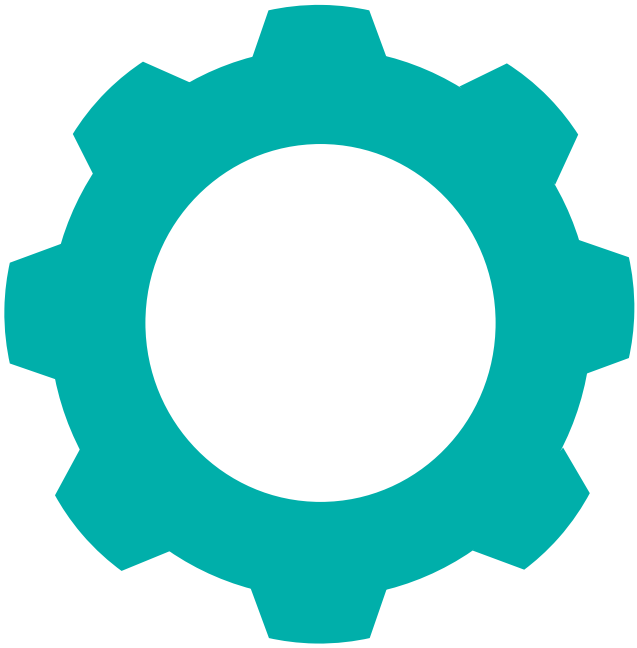
NOCTI

Partner Credential Blueprint

Blue Ridge Community College



# Basic Machining Certification (Endorsed by FANUC)

Code: 9597 Version: 01

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## 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

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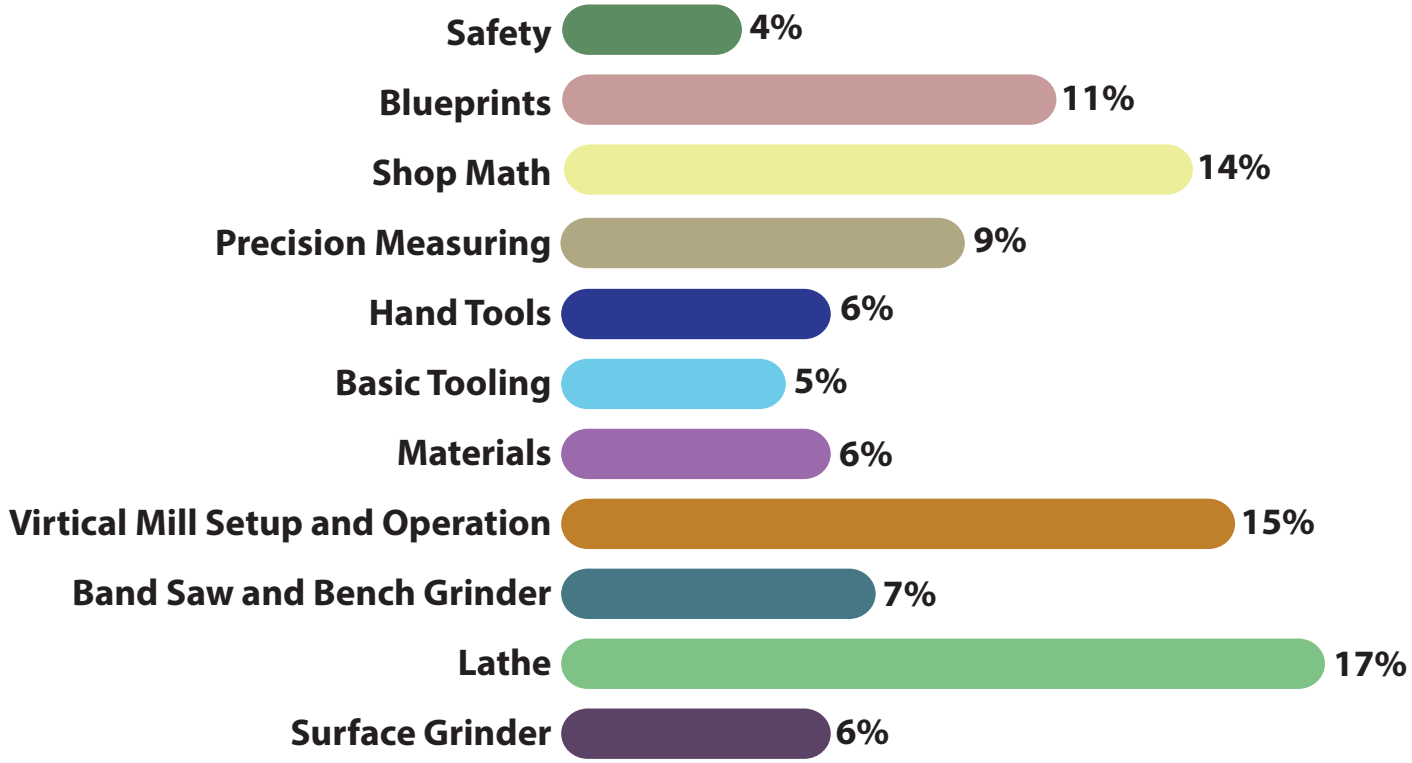
51-4011.00 Computer-Controlled Machine Tool Operators, Metal and Plastic

# 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

**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
- 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

**Store oily rags in fireproof containers with self-sealing lids to prevent**

A. odors from escaping
B. oil from leaking on the floor
C. a combustion hazard
D. slips and falls

**What is the difference of 8-3/16 inches - 0.4375 inches?**

A. 6-7/8 inches
B. 7.375 inches
C. 7-5/8 inches
D. 7.75 inches

**A safety consideration when operating a mill is to**

A. blow chips with compressed air
B. never reach around rotating tools or clear chips by hand
C. never lubricate the machine before operation
D. wear hard hat and reflective vest

**On a lathe, the half-nut lever is primarily used to**

A. cut threads
B. engage the cross-feed slide
C. face the part
D. move the tail stock

**If a grinding wheel becomes glazed, the operator should**

A. true the wheel
B. apply less pressure
C. dress the wheel
D. apply more pressure