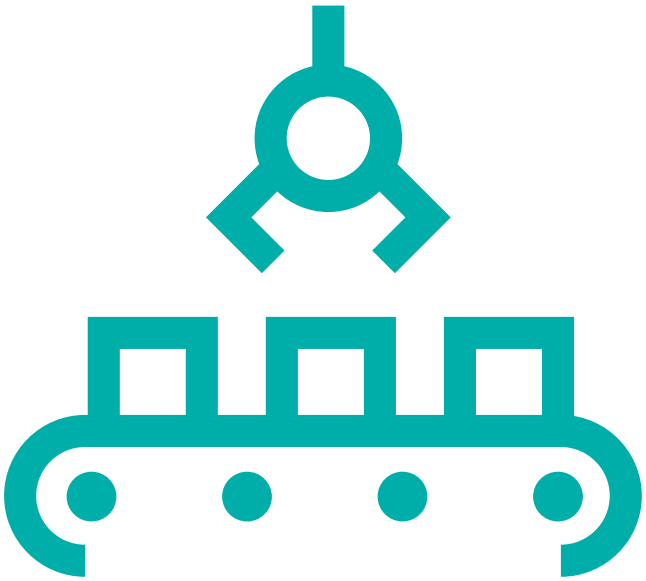
BCTE
Bureau of Career & Technical Education

NOCTI
State Customized
Credential Blueprint



Drafting and Design Technology (PA)

Code: 8294 / Version: 01

General Assessment Information

Blueprint Contents

Test Type: The Drafting and Design Technology PA assessment was developed based on a Pennsylvania statewide competency task list and contains a multiple-choice and performance component. This assessment is meant to measure technical skills at the occupational level and includes items which gauge factual and theoretical knowledge.

Revision Team: The assessment content is based on input from Pennsylvania educators who teach in approved career and technical education programs.

CIP Code

15.1301- Drafting & Design Technology/Technician, General

Learning that works for America CTE™

10 - Manufacturing

NATIONAL COLLEGE CREDIT RECOMMENDATION SERVICE
University of the State of New York - Regents Research Fund

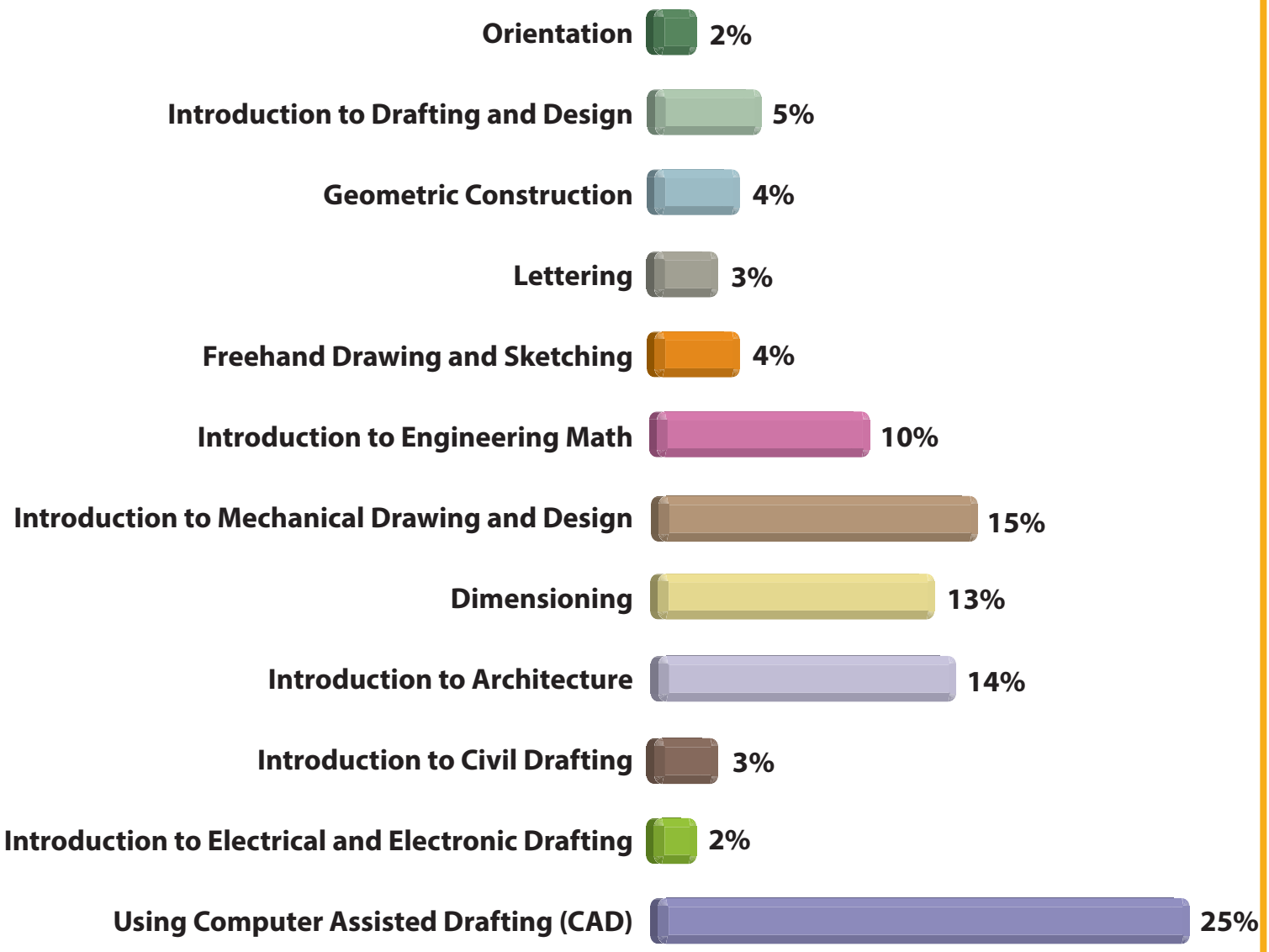
In the lower division baccalaureate/associate degree category, 3 semester hours in Drafting and Design Technology

Written Assessment

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

Administration Time: 3 hours
Number of Questions: 200
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Orientation

- Demonstrate safety in the drafting room
- Demonstrate professionalism

Introduction to Drafting and Design

- Demonstrate use of basic board drafting tools and equipment
- Demonstrate the use of tools, scales, and equipment to produce a drawing
- Demonstrate basic uses of scales
- Demonstrate skill in using English and Metric system of measurement

Geometric Construction

- Draw to scale
- Draw geometric figures using basic manual drafting principles
- Create drawings using geometric construction principles

Lettering

- Identify and select a letter style appropriate for architectural drawings
- Create letters and numbers in single stroke capital letters (Gothic)

Freehand Drawing and Sketching

- Identify and sketch the alphabet of lines
- Sketch orthographic views
- Sketch an isometric drawing
- Explain the importance of freehand sketching
- Create neat freehand notes and dimensions on a technical sketch
- Express an idea using the sketching process

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Specific Standards and Competencies (continued)

Introduction to Engineering Math

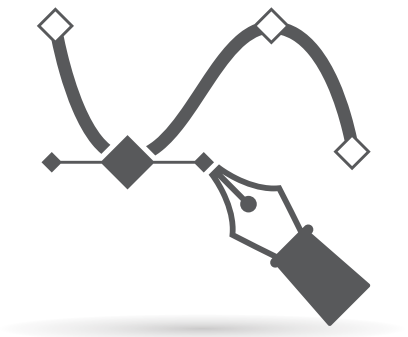
- Use basic math operations to demonstrate scaling techniques
- Use basic applied mathematics to solve engineering problems
- Construct lines on a CAD system using relative, absolute, and polar coordinate systems
- Establish the relationship among points, lines, and planes in 3-D space

Introduction to Mechanical Drawing and Design

- Identify and draw necessary orthographic views
- Explain the relationship of orthographic projection to multiview drawing
- Demonstrate knowledge of third angle projection
- Identify and draw auxiliary views
- Identify and draw section views
- Identify and draw threads and fasteners
- Identify and produce a BOM (parts list) for an assembly
- Create a title block on a mechanical drawing

Dimensioning

- Apply measurements, notes, and symbols to a technical drawing
- Apply ANSI Standards for dimensions, tolerances, and notes
- Apply ISO Standards for dimensions and notes
- Specify dimension tolerances using symbols and notes



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Specific Standards and Competencies (continued)

Introduction to Architecture

- Read and interpret blueprints
- Construct a floor plan
- Construct an elevation
- Construct a typical wall section
- Draw a pictorial view
- Prepare an architectural drawing to include foundation, framing, concrete, roofing, utility, etc.

Introduction to Civil Drafting

- Construct a site plan
- Demonstrate knowledge of a landscaping plan
- Read and interpret a deed

Introduction to Electrical and Electronic Drafting

- Identify and describe various symbols
- Create a schematic wiring diagram

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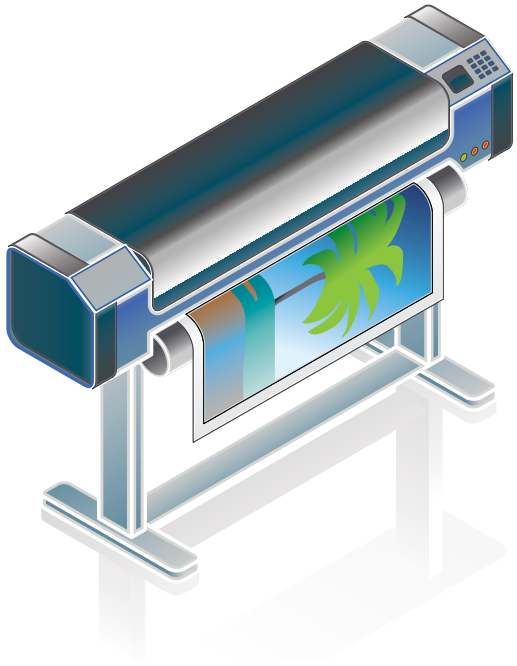
Specific Standards and Competencies (continued)

Using Computer Assisted Drafting (CAD)

- Utilize input and output devices such as printers, plotters, etc.
- Use drawing aids and controls
- Use drawing and editing tools
- Use viewing tools
- Utilize a commercially built drafting library
- Produce a custom built drafting library
- Make a revision to an existing drawing
- Configure and use dimensions and tolerances
- Create 3-dimensional drawings and models
- Create surface models
- Create parametric solid models
- Demonstrate rendering
- Demonstrate importing, exporting, and linking of drawings
- Understand management and storage of files
- Demonstrate knowledge of rapid prototyping



Sample Questions

How many millimeters are in an inch?

A. 25.4
B. 39.4
C. 46.5
D. 83.3

A 2-inch diameter circle with an origin fixed at 0,0,0 will have a point on the arc located at

A. -1,2
B. 0,1
C. 0,3
D. 2,3

On a 3/4-10 UNC-2B hexagonal nut, the 3/4 represents the

A. width across the flats
B. nominal size of the thread
C. height of the head
D. distance across the corners

A detail on a drawing labeled with the abbreviation NTS indicates

A. not tolerance specific
B. not to scale
C. national thread segments
D. no treated surfaces

Standard paper roll sizes for common large format plotters include

A. 8-1/2 inch and 7 inch
B. 17 inch and 11 inch
C. 24 inch and 18 inch
D. 36 inch and 22 inch

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Sample Questions (continued)

Chair height and size, monitor location, break schedule, and keyboard size are _____ characteristics of the workplace.

A. ergonomic
B. aesthetic
C. medical
D. psychological

A quarter scale is represented as

A. 1:2
B. 1:24
C. 1:4
D. 1:48

When placing a local note, the proper font face is

A. underlined and italics
B. all upper case lettering
C. all lower case lettering
D. lower case and bold

The most common principle views used in multiview drawings are

A. bottom, left side, and top
B. left side, right side, and top
C. front, right side, and top
D. front, right side, and bottom

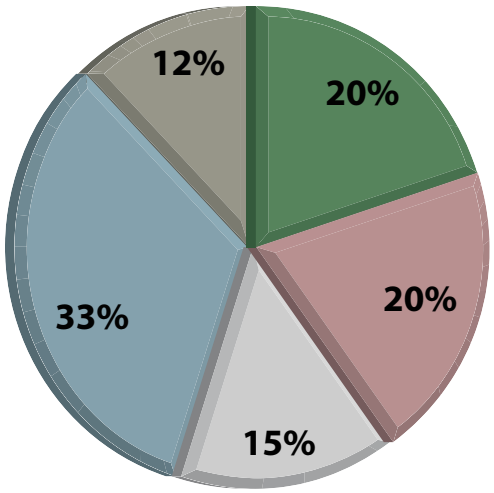
A _____ is used to indicate that a surface is to be machined.

A. fillet
B. finish mark
C. chamfer
D. cutting dimension

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 2 hours and 55 minutes
Number of Jobs: 5



Areas Covered:

20% Part Dimensioning
Was the GD&T leader created correctly, placement of dimensions, dimension style, and title block is correct and drawing is plotted.

20% Section View
Solution, section pattern, line quality, and title block is correct and drawing is plotted.

15% Auxiliary View
Ellipse, inclined surface, line quality, and title block is correct and drawing is plotted.

33% Kitchen/Bath Floor Plan
Sheet size setup, building structure, kitchen and lath layout, line work, dimension, notes, and title block is included and drawing is plotted.

12% Create a 3-D Solid Model
Model, mass properties, and isometric view.

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Sample Job

Part Dimensioning

Maximum Time: 20 minutes

Participant Activity: Participant will open a .dxf file with drawing, dimension part according to ANSI standards, dimensions should be at a precision of two decimal places, add participant ID to title block, save work, plot the file at 1:1 on a size A sheet, and submit completed job to evaluator.