CUSTOMIZED TEACHER ASSESSMENT BLUEPRINT

DRAFTING AND DESIGN TECHNOLOGY PA

Test Code: 5935
Version: 01

Specific competencies and skills tested 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

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

Drafting and Design Technology PA (continued)

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

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

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

Written Assessment:

Administration Time: 3 hours
Number of Questions: 195

Areas Covered:

2%	Orientation
5%	Introduction to Drafting and Design
4%	Geometric Construction
3%	Lettering
4%	Freehand Drawing and Sketching
10%	Introduction to Engineering Math
15%	Introduction to Mechanical Drawing and Design
13%	Dimensioning
14%	Introduction to Architecture
3%	Introduction to Civil Drafting
2%	Introduction to Electrical and Electronic Drafting
25%	Using Computer Assisted Drafting (CAD)

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

Performance Assessment:

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 bath 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.

Sample Job: Part Dimensioning

Maximum Job 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 three 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.