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# **Technical Drafting**

## General Assessment Information

### Blueprint Contents

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**Test Type:** The Technical Drafting industry-based credential is included in NOCTI's Job Ready assessment battery. Job Ready assessments measure technical skills at the occupational level and include items which gauge factual and theoretical knowledge. Job Ready assessments typically offer both a written and performance component and can be used at the secondary and post-secondary levels. Job Ready assessments can be delivered in an online or paper/pencil format.

**Revision Team:** The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of Illinois, Kentucky, Maine, Ohio, Pennsylvania, and South Carolina.



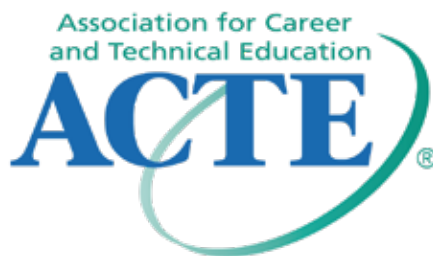
15.1301- Drafting and Design  
Technology/Technician, General



Career Cluster 2- Architecture  
and Construction



17-3013.00- Mechanical Drafters



The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!

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## General Assessment Information (continued)



INTERNATIONAL SIGN ASSOCIATION

[www.signs.org](http://www.signs.org)

The International Sign Association (ISA) represents manufacturers, suppliers and users of on-premise signs and sign products from all 50 states and around the globe. The sign and visual communications industry is a \$37.5 billion business that employs more than 200,000 individuals. One of ISA's long term goals is to showcase and promote the many exciting and diverse career opportunities that exist within the sign and visual communications industry and to apprise students of the abundant employment opportunities that are present to skilled and qualified candidates. ISA strongly encourages and supports students that work to enhance their educational achievements by completing NOCTI assessments.



**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  
Technical Drafting

## Written Assessment

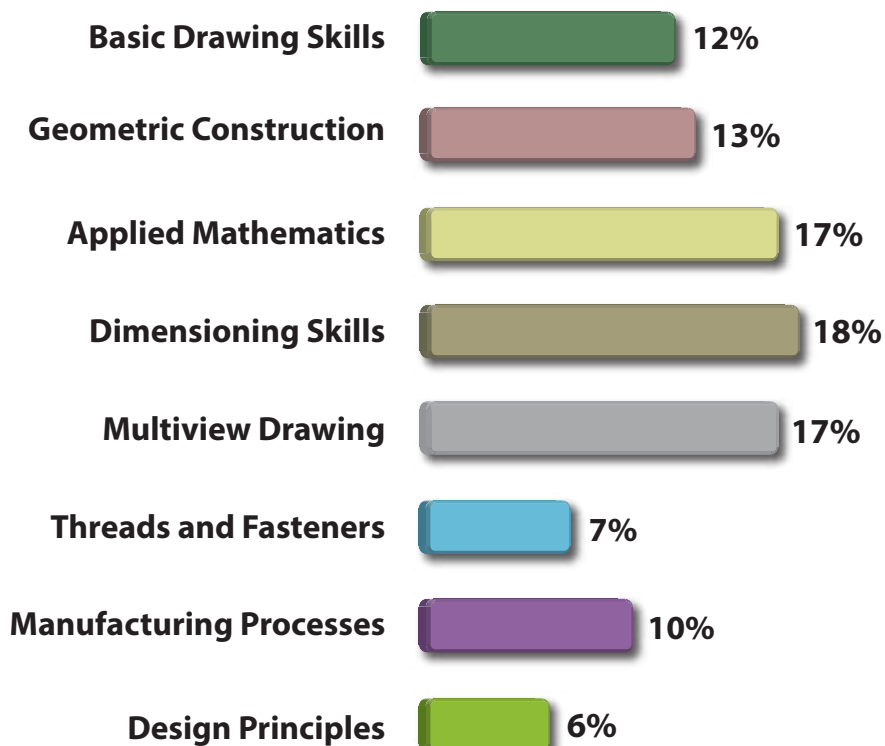
NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

**Administration Time:** 3 hours

**Number of Questions:** 201

**Number of Sessions:** This assessment may be administered in one, two, or three sessions.

### Areas Covered



## Specific Standards and Competencies Included in this Assessment

### Basic Drawing Skills

- Identify and demonstrate appropriate use of drafting tools, materials, and equipment
- Demonstrate knowledge of the use of CAD as a drafting tool
- Drawing standards and conventions
- Utilize appropriate drawing layout and scale
- Complete annotation on drawings
- Complete a title block
- Demonstrate sketching skills and techniques

### Geometric Construction

- Identify geometric terms and constructions
- Produce basic geometric constructions
- Construct lines at any given angle
- Construct irregular curved lines
- Construct geometric shapes and plane figures
- Draw lines
- Draw curved elements



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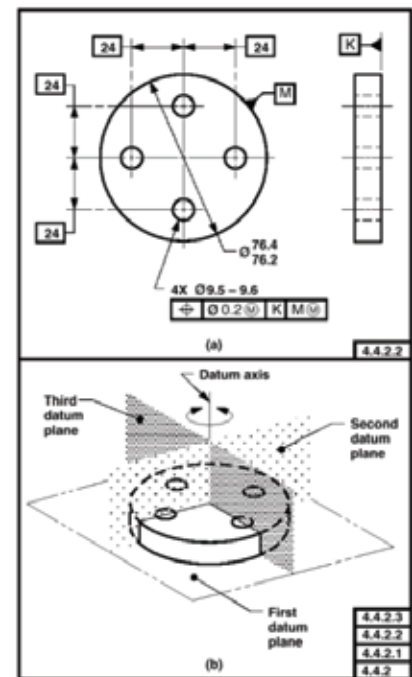
## Specific Standards and Competencies (continued)

### Applied Mathematics

- Basic mathematic operations
- Apply methods of measurement
- Calculate distance, area, and volume
- Calculate fractions and decimals
- Demonstrate conversion skills
- Calculate taper/slope
- Demonstrate knowledge of algebraic equations
- Demonstrate knowledge of geometry
- Demonstrate knowledge of trigonometry

### Dimensioning Skills

- Dimension basic features
- Apply local and general notes
- Interpret abbreviations and symbols
- Demonstrate metric dimensioning
- Demonstrate dual dimensioning
- Demonstrate tabular/charted dimensioning
- Demonstrate baseline dimensioning
- Demonstrate tolerancing practices
- Identify finished surfaces
- Demonstrate geometric dimension and tolerancing (GD&T)



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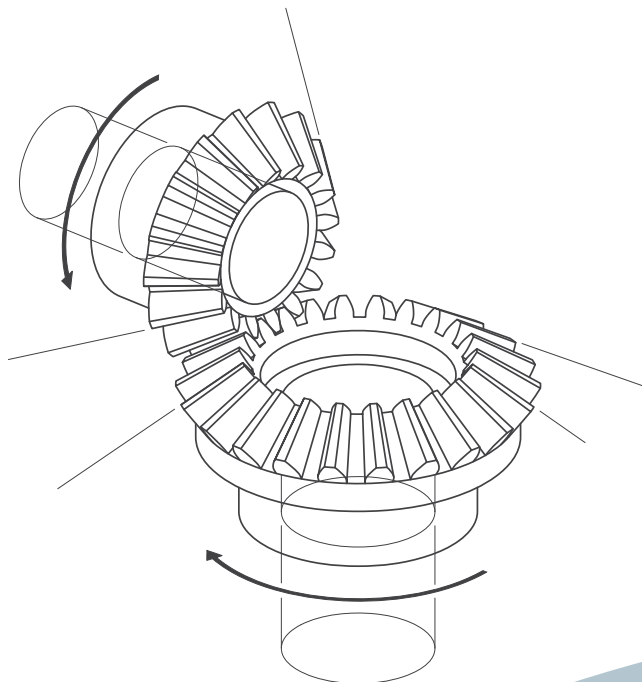
## Specific Standards and Competencies (continued)

### Multiview Drawing

- Produce basic orthographic views
- Produce auxiliary views
- Produce section views
- Produce intersections and developments
- Produce schematic drawings
- Produce pictorial drawings
- Produce detail working drawings
- Produce assembly drawings
- Demonstrate drawing revisions
- Produce modified part drawings

### Threads and Fasteners

- Identify and apply fastener terminology and symbols
- Identify and apply screw thread terminology and symbols
- Produce threaded fastener drawings
- Produce common fasteners and applications



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## Specific Standards and Competencies (continued)

### Manufacturing Processes

- Demonstrate knowledge of machining operations
- Demonstrate knowledge of welding
- Demonstrate knowledge of various manufacturing processes
- Demonstrate knowledge of various materials
- Identify standard shop tools and equipment
- Demonstrate knowledge of mechanical components

### Design Principles

- Explain design guidelines (form, function, repetition, etc.)
- Identify steps of the design process/cycle
- Research and design a project
- Use reference materials





## Sample Questions

**Which of the following is a coordinate system?**

- A. Baseline
- B. Cartesian
- C. Trigonometric
- D. Datum

**A smooth curve created through a set of points is called a**

- A. straight line
- B. perpendicular bisector
- C. spline
- D. polygon

**Use \_\_\_\_\_ as metric units of measurements for dimensioning a working drawing.**

- A. centimeters
- B. millimeters
- C. meters
- D. kilometers

**Which type of screw thread is the most common in the United States?**

- A. Whitworth
- B. Unified
- C. Sharp
- D. Worm

**A part that is formed by pressing thin material down into a die block is called a**

- A. stamping
- B. forging
- C. machine part
- D. weldment

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## Sample Questions (continued)

**The best reason to enlarge the scale is to**

- A. efficiently use media space
- B. fit more parts on a drawing
- C. better visualize the part
- D. use all space on the paper

**What is the minimum number of points needed to define a datum plane?**

- A. 2 points
- B. 3 points
- C. 4 points
- D. 6 points

**As the number of decimal places on a dimension increases, the**

- A. size increases
- B. precision increases
- C. size decreases
- D. precision decreases

**In manufacturing parts, jigs are used to \_\_\_\_\_ the machining tool.**

- A. locate the part and limit
- B. hold the part and guide
- C. clamp the part and hold
- D. secure the part and remove it from

**The purpose of sketching in the design process is to**

- A. create scaled drawings
- B. present ideas
- C. develop a prototype
- D. estimate cost

## 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:** 3 hours and 15 minutes

**Number of Jobs:** 4

### Areas Covered:

#### **30% Visualization**

Participants will sketch isometric sketches, missing top view, and missing right side view sketches.

#### **50% Orthographic Drawing**

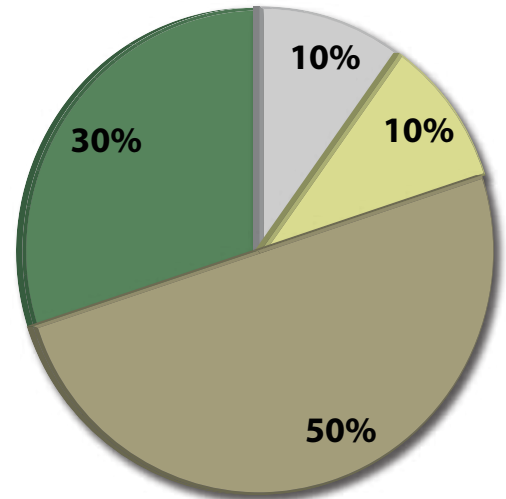
Participants will correctly dimension, scale, represent line type, cut plane line, orientation and location, hatch appropriate areas, place views, present features, use lines types and geometric dimensioning, and present drawing information.

#### **10% Development**

Participants will accurately develop the pattern in a timely manner.

#### **10% Assembly- Bill of Material**

Participants will develop a bill of material correctly and in a timely manner.



## Sample Job

## Assembly

**Maximum Time:** 15 minutes

**Participant Activity:** The participant will examine the pictorial drawing and develop a bill of material with all appropriate information from the supplied assembly drawing.

