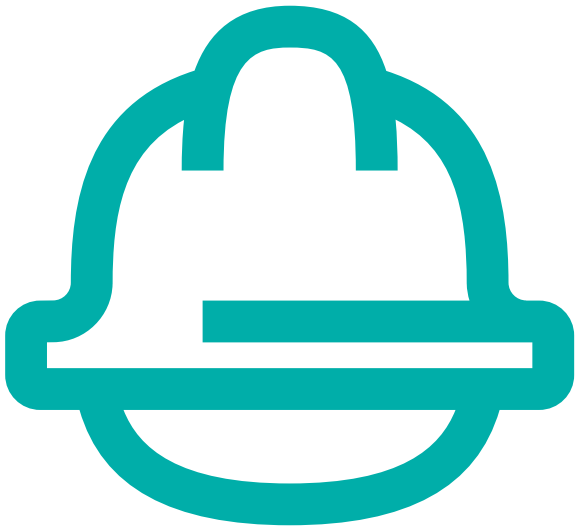
NOCTI

Job Ready Credential Blueprint



CAD

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General Assessment Information

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Test Type: The CAD 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 Missouri, New Jersey, New York, Pennsylvania, and South Carolina.

Content Review: A content review is an independent, comprehensive review by Subject Matter Experts to evaluate content accuracy, the currency of technical material, and relevance to current industry practices.

CIP Code

15.1302- CAD/CADD Drafting and/or Design Technology/Technician

Learning that works for America CTE

Career Cluster - Architecture and Construction

O*net in*it

17-3013.00- Mechanical Drafters

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 Computer Aided Drafting, or Design Technology

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General Assessment Information (continued)

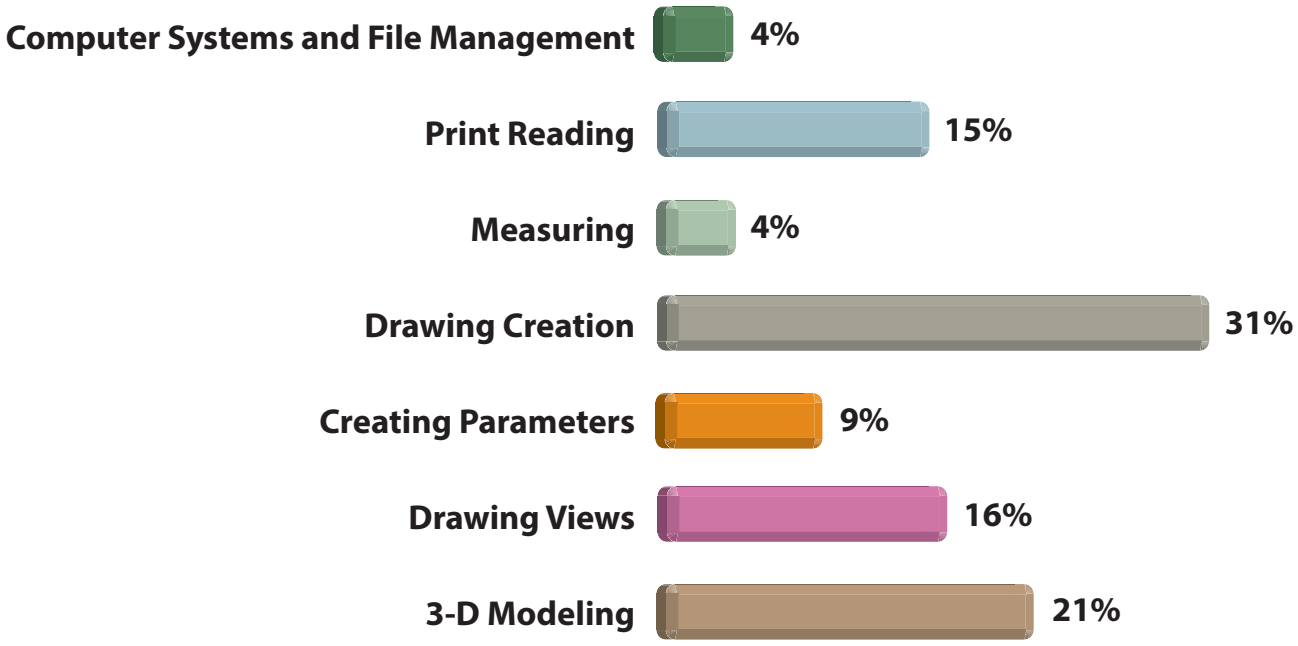
The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. 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!

Written Assessment

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

Administration Time: 3 hours
Number of Questions: 160
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Computer Systems and File Management

- Identify hardware and operating systems
- Describe file management and sharing

Print Reading

- Interpret views in engineering drawings
- Interpret bilateral, unilateral, and limit dimensions
- Interpret drawings, pictures, and drafting symbols
- Interpret GD&T symbols
- Interpret hole dimensioning

Measuring

- Identify proper measurement principles
- Interpret micrometer measurements

Drawing Creation

- Determine and create appropriate drawing views and scales
- Organize required drawings and sheet coordination
- Insert and modify appropriate dimensions into drawings
- Create, insert, and modify notes and labels into drawings
- Create or insert symbols into drawings with legends
- Construct and modify drawing geometries
- Assign and coordinate line types and levels
- Construct and modify block geometries
- Construct and detail an assembly view
- Identify key components in a title block
- Locate points using the Cartesian Coordinate System
- Create single and multiple auxiliary views of surfaces and objects
- Construct schedules (e.g., Bill of Materials, parts list)

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Specific Standards and Competencies (continued)

Creating Parameters

- Set up text and fonts
- Create and modify dimension styles
- Differentiate plot styles and scales
- Identify and interpret industry standards related to engineering drawings (e.g., ISO, ANSI, JIS)

Drawing Views

- Identify various types of pictorial views
- Select and manipulate the correct orthographic views
- Identify and interpret various section views
- Define and apply auxiliary views
- Summarize the applications of rendered views
- Describe the application of detail views
- Organize and generate exploded assemblies

3-D Modeling

- Generate and modify construction entities (e.g., planes, axes, points)
- Create and detail 2-D drawings from a 3-D model
- Create and modify a feature geometry-based 3-D model
- Create and constrain 3-D assemblies
- Create, modify, and apply material properties (e.g., types, volume, mass)
- Importation and application of standard parts to 3-D assemblies
- Produce alternative output (e.g., rapid prototype, CNC)

Sample Questions

Equipment and devices in a Computer Aided Drafting system are known as

A. software
B. hardware
C. modules
D. systems

Unlike other types of section views, _____ sections show hidden lines if they exist.

A. full
B. removed
C. offset
D. half

A drawing scale of half size should be labeled

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

When using GD&T, positional tolerances should refer to a

A. centerline
B. datum
C. object
D. coordinate

CAD blocks are used to

A. insert model data without recreating it
B. create the orthographic view cube
C. define the proper proportion of a part
D. clearly define any cubic shape

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Sample Questions (continued)

A construction plane on a CAD system

A. allows for creation of geometry
B. adjusts the drawing scale
C. produces mass quantities of objects
D. adjusts the dimension scale properties

To accurately measure the depth of a .5 diameter hole, use a

A. ruler
B. caliper
C. micrometer
D. height gauge

When dimensions are chained, the tolerances are

A. Cartesian
B. absolute
C. incremental
D. cumulative

Hatch patterns on a view represent a/an _____ view.

A. end
B. auxiliary
C. section
D. isometric

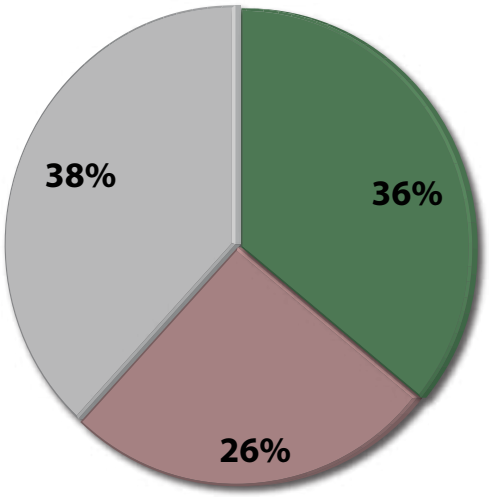
The _____ file type is commonly used to export geometry used in 3-D printing.

A. .dxf
B. .pdf
C. .stl
D. .dwg

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
Number of Jobs: 3



Areas Covered:

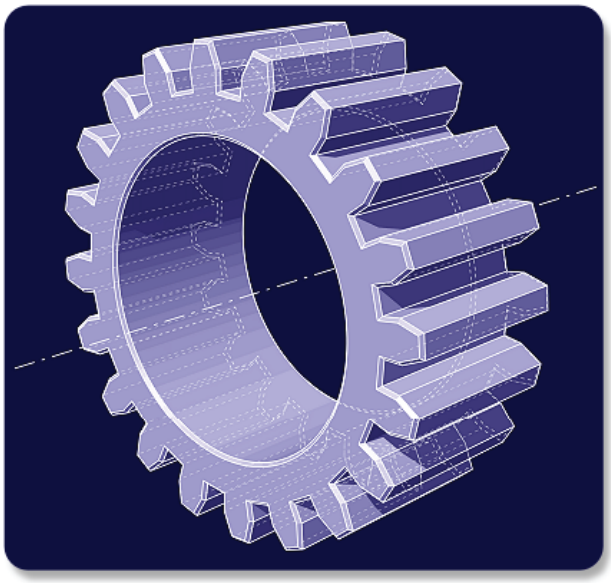
36% Create a 2-D Orthographic Drawing with a Section View
Participants will print and plot to scale, write the correct title block, draw the hatch, views, dimensions and placement correctly, and save the file.

26% Create a 3-D Solid Model
Participants will build correct radius corners and holes with the correct mass properties and save the file.

38% Create Two Parts to be Mated and Mate the Parts
Participants will create two parts with the correct feature geometry and volume properties, mate the two parts and save the file.

Sample Job

Create Two Parts to be Mated and Mate the Parts

Maximum Time: 1 hour

Participant Activity: The participant, using the CAD system provided, will create complete 3-D solid models of the parts as shown, determine and print out the volume of Part A and Part B, mate Part A and Part B, and save the file to an appropriate storage media device.