

**PENNSYLVANIA COLLEGE  
OF TECHNOLOGY  
ONE COLLEGE AVENUE  
WILLIAMSPORT, PA 17701**

\_\_\_\_\_  
Name  
\_\_\_\_\_  
School

\_\_\_\_\_  
Student ID Number  
\_\_\_\_\_  
Date

**COMPETENCY ASSESSMENT FOR**  
Computer- Aided Drafting Technology (CD)  
Computer-Aided Product Design (BCD)

The following validated competencies represent those included in the first year of the program. Please assess each applicable competency by circling the appropriate code letter, then sign, date and return the form to the College's Admissions office using the above address.

**RATING SCALE**

**H** = Highly skilled ----- able to work independently 90%> or A  
**M** = Moderately skilled -- requires minimum supervision 80%> or B  
**L** = Limited skills ----- requires full supervision 70%> or C \*  
**NA** = Not covered in instruction or work experience  
 \* Scores below 70% or **C** will not transfer for credit

(In addition to receiving a satisfactory rating of the competencies, the student will be required to pass a basic test in drafting and/or CAD skills for the CD and BCD majors. Test results and ratings on the competencies will be used to determine granting of advanced placement credit.)

**PART I COMPETENCY ASSESSMENT**

**1. Technical Sketching (CCD 101)**

- H M L N a. Understand types of sketches
- H M L N b. Draw lines
- H M L N c. Construct circles and arcs
- H M L N d. Construct ellipses
- H M L N e. Proportion sketch
- H M L N f. Prepare an isometric sketch
- H M L N g. Prepare an oblique sketch
- H M L N h. Prepare an orthographic sketch

**2. Shape Description (CCD 101/CCD 102)**

- H M L N a. Visualize three dimensional drawings
- H M L N b. Plan placement and number of required views
- H M L N c. Describe types of lines
- H M L N d. Understand principles of projection
- H M L N e. Construct required lines
- H M L N f. Show all types of features
- H M L N g. Intersections

**3. Sectioning: Layout and Construct Sectional Views (CCD 101/CCD 102)**

- H M L N a. Full
- H M L N b. Half
- H M L N c. Broken out

- |  |         |                        |
|--|---------|------------------------|
|  | H M L N | d. Revolved            |
|  | H M L N | e. Removed             |
|  | H M L N | f. Offset              |
|  | H M L N | g. Ribs                |
|  | H M L N | h. Aligned             |
|  | H M L N | i. Partial views       |
|  | H M L N | j. Intersections       |
|  | H M L N | k. Conventional breaks |
4.     **Auxiliary Views: Describe and/or Construct**     (CCD 101/CCD 102)
- |  |         |                                       |
|--|---------|---------------------------------------|
|  | H M L N | a. Function and purpose               |
|  | H M L N | b. Width, depth and height dimensions |
|  | H M L N | c. Direction of sight                 |
|  | H M L N | d. Reference planes                   |
|  | H M L N | e. Projection methods                 |
|  | H M L N | f. Angles and curved surfaces         |
|  | H M L N | g. Secondary views                    |
|  | H M L N | h. Selection of a reference plane     |
5.     **Revolutions**     (CCD 101/CCD 102)
- |  |         |  |
|--|---------|--|
|  | H M L N | a. Describe function and purpose               |
|  | H M L N | b. Describe and construct a primary revolution |
|  | H M L N | c. Determine lengths of lines                  |
|  | H M L N | d. Determine true shapes of plane surfaces     |
6.     **Size Description**     (CCD 101/CCD 102)
- |  |         |   |
|--|---------|---|
|  | H M L N | a. Understand the systems of dimensioning (lines, spacing, leaders, etc.) |
|  | H M L N | b. Understand the choice of dimensions                                    |
|  | H M L N | c. Understand the systems of dimensioning:                                |
|  |         | 1. Placement of dimensions  |
|  |         | 2. Types of dimensions  |
|  | H M L N | d. Dimension geometric shapes   |
|  | H M L N | e. Dimension the following features (circle items <u>not</u> covered):    |
|  |         | 1. Threads  |
|  |         | 2. Tapers   |
|  |         | 3. Chamfers   |
|  |         | 4. Centers  |
|  |         | 5. Keyways  |
|  |         | 6. Knurls   |
|  |         | 7. Curved surfaces and bends  |
7.     **Axonometric Projection**     (CCD 101/CCD 102)
- |  |         |   |
|--|---------|---|
|  | H M L N | a. Describe methods of projection             |
|  | H M L N | b. Prepare and dimension an isometric drawing |
|  | H M L N | c. Prepare and dimension and oblique drawing  |
8.     **Tolerance Dimensioning**     (CCD 101/CCD 102)
- |  |         |  |
|--|---------|--|
|  | H M L N | a. Understanding tolerancing                   |
|  | H M L N | b. Understanding terminology                   |
|  | H M L N | c. Understand the specifications of tolerances |
|  | H M L N | d. Understand symbols                          |

9. **Reproduction and Control of Drawings** (CCD 101/CCD 102)

- H M L N a. Describe methods of drawing reproduction
- H M L N b. Understand methods of storage and retrieve

10. **Threads and Fasteners:** (CCD 101/CCD 102)

- H M L N a. Understand standards of specification and symbols
- H M L N b. Describe bolts and screws
- H M L N c. Describe types of threads
- H M L N d. Describe classes of fits
- H M L N e. Describe classes of finishes

**Rivets:**

- H M L N a. Understand terminology and specifications
- H M L N b. Describe types
- H M L N c. Describe markings
- H M L N d. Describe material utilized
- H M L N e. Prepare typical notes

**Keys:**

- H M L N a. Describe types
- H M L N b. Understand uses
- H M L N c. Perform basic calculations

11. **Detail and Assembly Drawings** (CCD 101/CCD 102)

- H M L N a. Determine the required views to be drawn
- H M L N b. Prepare detail drawings
- H M L N c. Calculate fits and allowances
- H M L N d. Utilize tolerance dimensioning
- H M L N e. Prepare assembly type drawings (working, general)

12. **Computer-Aided Drafting** (CAD 118) **AutoCAD Based**

- H M L N a. Identify the major components of a CAD workstation and identify and work within the CAD interface.
- H M L N b. Apply WINDOWS™ commands and AutoCAD commands to accomplish file management.
- H M L N c. Demonstrate basic and advanced skills in the use of DRAW commands to construct accurate geometry.
- H M L N d. Demonstrate basic and advanced editing skills to modify geometry.
- H M L N e. Apply UNITS, LIMITS, LAYOUT and LAYER functions to setup, manage and organize a drawing.
- H M L N f. Apply view options and related viewing commands to manage the display of the drawing environment.
- H M L N g. Demonstrate the use of the INQUIRY commands to obtain drawing information.
- H M L N h. Apply and create symbols from existing geometry using the WBLOCK and BLOCK Command.
- H M L N i. Demonstrate the use of plotters and printers in obtaining hard copy of a CAD drawing.

- H M L N j. Demonstrate knowledge in the application of commands and functions specifically designed to improve drawing productivity such as: command aliases, system variables, filters, templates, grips, geometric calculator, selection sets, align and basic customization.
- H M L N k. Demonstrate basic and advanced dimensioning skills in: tolerancing, ordinate dimensioning, dimensioning styles, dimensioning variables, dual dimensioning, paper/model space scaling.
- H M L N l. Demonstrate the ability to attach information to BLOCKS and WBLOCKS using the attributes function and to generate a bill of materials with extraction to spread sheet software.
- H M L N m. Demonstrate knowledge in the use of external referenced files.
- H M L N n. Apply paper and model space for layout of drawing.
- H M L N o. Apply viewport functions to develop multiview and multi-scaled drawings.

13. **Identify CAD software used:** \_\_\_\_\_  
**and release:** \_\_\_\_\_

**PART II**      **HIGH SCHOOL PROGRAM INFORMATION**

Name of program: \_\_\_\_\_

Industrial Arts or  Vocational / Career Technology Center

Length of program: \_\_\_\_\_ (years)

Total instructional hours: \_\_\_\_\_

This student completed \_\_\_\_\_ hours or \_\_\_\_\_ years

Final grade for program \_\_\_\_\_

**PART III**      **RELATED WORK EXPERIENCE**

1. The student has participated in a planned and approved program of:

- Community Exploration
- Cooperative Education
- Work Experience

2. The student was evaluated by the employer as being:

- Above Average
- Average
- Below Average

Employer: \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Job Supervisor)

\_\_\_\_\_  
(Title)

**PART IV**      **COMMENTS AND/OR CLARIFICATIONS**

(include any pertinent information or qualifications regarding skills, attitudes, etc.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PART V**      **CERTIFICATION AND RECOMMENDATION**

I have reviewed the above competencies and believe , to the best of my knowledge, my assessment is fair and accurate. I recommend \_\_\_\_, recommend with qualifications \_\_\_\_, do not recommend \_\_\_\_, this student for advance placement.

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)