

Course Title – Drafting and Design 2	
Implement start year – 2018-2019	
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Unit # 1 – Computer Aided Drafting Terminology and Skills	
Transfer Goal – Students will be able to independently select and create accurate drawings using Computer Aided Drawing (CAD) software based on the application.	
Stage 1 – Desired Results	
<p style="text-align: center;"><u>Established Goals</u></p> <p style="text-align: center;"><u>2014 New Jersey Student Learning Standards, Strand(s)/CPI #</u></p> <p>8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.</p> <p>8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. C. Design: The design process is a systematic approach to solving problems.</p> <ul style="list-style-type: none"> • 8.2.12.C.7 Use a design process to devise a technological product or system that addresses a global problem, provide research, identify trade-offs and constraints, and document the process through drawings that include data and materials. 	<p style="text-align: center;"><u>21st Century Themes</u> <u>(www.21stcenturyskills.org)</u></p> <p><input checked="" type="checkbox"/>_X_ Global Awareness <input type="checkbox"/>_ Financial, Economic, Business and Entrepreneurial Literacy <input type="checkbox"/>_ Civic Literacy <input type="checkbox"/>_ Health Literacy <input checked="" type="checkbox"/>_X_ Environmental Literacy</p> <hr/> <p style="text-align: center;"><u>21st Century Skills</u></p> <p><i>Learning and Innovation Skills:</i> <input checked="" type="checkbox"/>_X_ Creativity and Innovation <input checked="" type="checkbox"/>_X_ Critical Thinking and Problem Solving <input checked="" type="checkbox"/>_X_ Communication and Collaboration</p> <p><i>Information, Media and Technology Skills:</i> <input checked="" type="checkbox"/>_X_ Information Literacy <input checked="" type="checkbox"/>_X_ Media Literacy <input checked="" type="checkbox"/>_X_ ICT (Information, Communications and Technology) Literacy</p>

<p>9.1 21st-Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p> <p>9.1.12.A.1 Apply critical thinking and problem-solving strategies during structured learning experiences.</p>	<p><i>Life and Career Skills:</i> <input checked="" type="checkbox"/> Flexibility and Adaptability <input checked="" type="checkbox"/> Initiative and Self-Direction <input checked="" type="checkbox"/> Social and Cross-Cultural Skills <input checked="" type="checkbox"/> Productivity and Accountability <input checked="" type="checkbox"/> Leadership and Responsibility</p>
<p><u>Enduring Understandings:</u> <i>Students will understand that . . .</i></p> <p><i>EU 1</i> designers use precise drawings to communicate design intent.</p> <p><i>EU 2</i> the complexity of the object determines the type of drawing to be created.</p>	<p><u>Essential Questions:</u></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • How can using CAD help solve engineering problems? • How important is accuracy? • How do designers use drawings to communicate with each other? <p><i>EU 2</i></p> <ul style="list-style-type: none"> • Why are different types of drawings needed? • What makes a good drawing?
<p><u>Knowledge:</u> <i>Students will know . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • communicating design intent in drawings is important. • the correct amount of dimensions and their locations. • dimensions show specific size and detail of an object. • dimensions follow international standards. <p><i>EU 2</i></p> <ul style="list-style-type: none"> • common drawing types, such as: 1-view, orthographic projection, and isometric. • correct drawing setup including border and titleblock. • commands and functions of CAD such as line, offset, circle, endpoint, midpoint, tangent, etc. 	<p><u>Skills:</u> <i>Students will be able to . . .</i></p> <p><i>EU 1</i></p> <ul style="list-style-type: none"> • use CAD programs to communicate design intent. • properly dimension a drawing. <p><i>EU 2</i></p> <ul style="list-style-type: none"> • create single-view, multi-view, and pictorial drawings with dimensions.

Stage 2 – Assessment Evidence

Other Recommended Evidence:

- Design Challenges
- Teacher observations
- Project rubric(s)
- Worksheets
- Quizzes/tests
- Drawing Packets
- Engineering notebook

Stage 3 – Learning Plan

Suggested Learning Activities to Include Differentiated Instruction and Interdisciplinary Connections:

- Using illustrations of drawings, students will identify the types of drawing and its applications. (A)
- For a given type of drawing, list 10 CAD commands that would be used to create it.(A, M)
- Using a given example, identify the component parts of a typical drawing. (A,M)
- Dimension standards handout (A)
- Dimension parts handout (A)
- Reading dimensions worksheet (M)
- For a given 3D drawing, create a specific technical drawing.(M)
- Pick 2 types of drawings and explain how they are different. (M,T)
- Use the 10 selected commands (from bullet #2) and re-create the drawing. List any other commands that you didn't include on your list but had to use to complete it. (M,T)
- For a given object, create a 3 dimensional model. (M,T)
- Create a self assessment rubric that would evaluate the key components of a correctly constructed drawing. (M,T)