Unit 2: Introduction to Computer Aided Design

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **14 Days**
Status: **Published**

Brief Summary of Unit

Students will learn how to use a Computer Aided Design (CAD) program to design and create floor plans and mechanical drawings, while defining the criteria and constraints of the design problem with sufficient precision to ensure a successful solution. Students will utilize the design engineering process during this unit.

Revision Date: June 2021

LA.RI.6.2	Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
TECH.K-12.1.4.a	know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.
LA.RI.6.7	Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.
LA.W.6.2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.
LA.W.6.2.F	Provide a concluding statement or section that follows from the information or explanation presented.
LA.W.6.4	Produce clear and coherent writing in which the development, organization, voice and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.W.6.7	Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
LA.L.6.4.C	Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
CS.6-8.8.2.8.ED.3	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).
CS.6-8.8.2.8.ED.4	Investigate a malfunctioning system, identify its impact, and explain the step-by-step process used to troubleshoot, evaluate, and test options to repair the product in a collaborative team.
CS.6-8.8.2.8.ED.5	Explain the need for optimization in a design process.
WRK.9.2.8.CAP.1	Identify offerings such as high school and county career and technical school courses, apprenticeships, military programs, and dual enrollment courses that support career or occupational areas of interest.
WRK.9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
	People use digital devices and tools to automate the collection, use, and transformation of data. The manner in which data is collected and transformed is influenced by the type of digital device(s) available and the intended use of the data.

Essential Questions/Enduring Understandings

Essential Questions:

Why is Computer Aided Design (CAD) important?

How can CAD be used in the Engineering Design Process?

What are the benefits of using CAD to make prototypes of designs?

How can CAD be used to test products before they are developed?

In what ways can CAD be used to assist in the creation, modification, analysis or optimization of a design?

Enduring Understandings:

There are many different types of CADD software.

Orthographic Projection is a method of projection in which an object of surface mapped uses parallel lines to project its shape onto a plane.

Objectives

Students will know how to set up their drawings.

Students will know how to use the commands necessary to complete their drawings.

Students will know some of the many types of CAD software packages and browser based sites.

Students will know how to draw using three dimensions.

Students will know what an orthographic projection is.

Students will be skilled at layering objects in CAD projects.

Students will be skilled at changing measurements and grid sizes.

Students will be skilled at viewing 3D projects from all angles and distances.

Students will be skilled at create different sized/shaped holes in object to create unique shaped spaces in their designs.

Assessment

Formative Assessments:

Google Forms, Docs, or Slides

Do Nows

Guided Notes

Class discussions

Summative Assessments:

Completion of kitchen design project

Benchmark Assessment:

Completion of gift box and button projects

Exit tickets

Engineering Notebook completion

Alternative Assessment:

Checklists

Verbal discussions

Assessment Example: Measuring Tool

Materials

Tinkercad

Chromebook

Projector

Pencil

Grid paper

Ruler

Google Slides presentation

3D printer

3D filament

Integrated Accommodation and Modifications, Special Ed, ELLs, At-Risk, G & T, Career Education, 504s

See attached document:

https://docs.google.com/spreadsheets/d/1pzkODxxGOSxESwthnE0jQW8hVfMaZ9ygEBg5QsKBcDA/edit?usp=sharing