Unit 2: Computer Aided Design

Content Area: **Technology**
Course(s): **Engineering Design 1**
Time Period: **October**
Length: **14 blocks**
Status: **Published**

Transfer Skills

2D and 3D CAD systems are used in conjunction with rapid prototyping equipment to aided in the design, creation and production of products.

Enduring Understandings

1. The use of computer aided design (CAD) has revolutionized the design of products.

2. There are different types of CAD systems, each with different uses and purposes.

3. There are multiple career paths, across a wide range of disciplines, that utilize CAD systems.

4. Rapid prototyping allows for an increased iterative process in the design of products.

Essential Questions

1. What are the applications of 2D and 3D CAD?

2. How has rapid prototyping influenced the design of products?

3. What is the future of CAD and rapid prototyping?

Content

Vocabulary:

Ribbon, Point, Object snap, End point, Mid Point, Tangent, Layers, Constraint, Crosshairs, Extrude, Loft, Revolve, Fillet, Chamfer, Rapid prototyping, 3D printer, Laser cutter, CNC

Skills

1. Create 2D engineering drawings using a CAD system.

2. Create digital 3D objects using a CAD system.

3. Design products using CAD.

4. Apply the properties of geometric shapes in the creation of engineering drawings.

5. Evaluate an engineering drawing situation and apply critical thinking and problem solving strategies to choose appropriate tools and techniques to achieve the specified degree of precision.

Resources

Decktop computers

2D CAD software (AutoCAD or similar)

3D CAD software (Autodesk Inventor or similar)

Printer

Standards

TECH.8.2.12.D.CS3 Assess the impact of products and systems

TECH.8.2.12.D.3 Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D Printers, CAD Software) in the design, development and creation of a technological product or system

TECH.8.2.12.C.3 Analyze a product or system for factors such as safety, reliablity, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).

TECH.8.2.12.F.1 Evaluate the strenghts and limitations of emerging technologies an their impact on educational, career, personal and or social needs

TECH.8.2.12.F.CS4 Use multiple processess and diverse perspectives to explore alternative solutions

TECH.8.2.12.C.5 Create scaled engineering drawings of products both manually and digitally with materials and measurements labeled

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