04 Orthographic Drawing

Content Area: **Technology**
Course(s):
Time Period: **Full Year**
Length: **2 Weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

This full year honors course continues to emphasize the application of integrated STEM (Science, Technology, Engineering and Mathematics) principles and the design method to invent solutions to real world problems through robotic applications. Students will identify problems, research, design and fabricate solutions. Problem solving, critical thinking and design skills are taught through a variety of activities. Hands-on themes include structural and robotic systems, as well as system control technology. This course provides all students with valuable skills such as: problem solving, design, creative thinking, systems thinking, team work, documentation, programming and computer applications.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Orthographic drawings are used by Designers, Engineers, and Architects to communicate design solutions. Orthgraphic, or 3-View, drawings, accurately communicate designs on a scale, including dimensions and annotations.

How do I best preresent and accurately portray visualizations of products and solutions in a multi-view drawing? How are hidden and center lines used to accurately describe features in a drawing?

CONTENT AREA STANDARDS

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

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.

STUDENT LEARNING TARGETS

Declarative Knowledge

Students will understand that:

- Their are differences between drawing and sketching, and how to identify them.
- There are a varitey of tools to use for specific applications, and how to use them properly when creating drawings.
- Visible, hidden, and centerlines must be used properly in order to create an accurate visual representation of an object.
- Properly measuring and annotating drawings is required.
- Properly aligning views is required in an orthographic drawing.

Procedural Knowledge

Students will be able to:

- Properly draw visible, hidden and centerlines.
- Properly align views.
- Properly measure, dimension and annotate drawings.
- List the tools required to create and orthographic drawing.
- Edit and revise orthographic drawings.
- Select the best front view for a drawing.
- Distinguish when to use visible vs. hiddlen lines.

EVIDENCE OF LEARNING

Formative Assessments

- Worksheets 101-104
- Observation of Widget Drawings

Summative Assessments

- Widget Drawings #1 and #2

RESOURCES (Instructional, Supplemental, Intervention Materials)

- Orthographic Worksheets
- Teacher Presentation

INTERDISCIPLINARY CONNECTIONS

- Modeling with Mathematics and Make sense of problems and persevere in solving them.

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.