Teacher: CORE DDP Plus | Year: 2010-11

Course: DDPPlus | Month: All Months

September

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	1.Design Process a. Basic DesignTools b. Introduction toResearch c. Modeling	Students will apply engineering notebook standards and protocols. Students will identify and apply group brainstorming techniques and the rules. Students will research a product's history, develop a PowerPoint presentation and present. Students will use online and published works to research aspects of design problems. Student will identify the design	Assessment Brainstorming Client Constraint Design Design Brief Design Process Designer Engineer Engineer's Notebook Evolution\ Innovation Invention Iterative Problem Identification Process Product Research Sequential Solution Standard Target Consumer Time Line Chart				

		process steps used in given scenarios and be able to list the steps.								
	2.Techinical Sketching a. Basic Line Conventions b. Pictorial Sketches c. Introduction to Multiview Drawings	Students will identify, sketch, and explain the function of points, construction lines, object lines, and hidden lines. Students will plot points on grid paper to aid in the creation of sketches and drawings. Students will explain the concepts of technical sketching and drawing. Students will sketch an isometric view of	Construction Line Depth Documentation Edge Ellipse Freehand Grid Height Hidden Line Isometric Sketch Line Line Conventions Line Weight Manufacture Measurement Multiview Drawings Object Line Oblique Sketch Orthographic Projection Perspective Sketch Pictorial Sketch Plane Point Profile Projection Line Projection Plane Proportion Scale							

			simple geometric solids. Students will explain how an oblique view of simple geometric solids differs from an isometric view. Students will sketch one-point, two-point, and three-point perspectives of simple geometric solids. Students will describe the concept of proportion as it relates to freehand sketching. Students will sketch multiview drawings of simple geometric solids. Student will determine	Shading Shape Size Sketch Solid Technical Working Drawing Tone Vanishing Point Views Visualize Width						

			the front view for a given object.							

October

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	3. Measurement and Stats a. History of Measurement b. English and Metric Linear Measurements c. Dial Caliper Measurement d. Linear Dimensions e. Applied Statistics	Students will measure and record linear distances using a scale to a precision of 1/16 inch and 1 mm. Students will measure and record linear distances using a dial caliper to a precision of 0.001 inch. Students will apply linear dimensions to a multiview drawing. Students	ANSI Accuracy Caliper Class Interval Convert Data Data Set Dimension Dimension Lines English System Extension Lines Foot Frequency Graph Histogram Inch ISO Mean Measure Median Meter Metric System Millimeter Mode Normal Distribution Numeric Constraint Precision Scale				

			will calculate the mean, mode, median, and range of a data set.	Standard Statistics Two-Dimensional Unit Variation						

November

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	4. Design problem a. Puzzle Design Challenge b. Puzzle Part Combinations c. Packaging Design d. Marketing	Students will brainstorm and sketch possible solutions to an existing design problem. Students will select an approach that meets or satisfies the constraints given in a design brief. Students will create simple extruded solid Computer Aided Design (CAD)	Accuracy Annotate Assembly Drawing Computer-Aided Design or Computer-Aided Drafting (CAD) Cube Design Brief Design Statement Extrusion Geometric Constraint Mock-up Model Numeric Constraint Origin Plane Prototype Puzzle Scale Model Shape Solid Solid Modeling				

			models from dimensioned sketches. Students will Generate dimensioned multiview drawings from simple CAD models. Students will measure and Fabricate parts for a functional prototype from the CAD multiview drawings. Students will assemble the product using the CAD modeling software. Students will test and evaluate the prototype and record results. Students will apply geometric and numeric	Space Three-Dimensional Two-Dimensional						

		constraints to CAD sketches. Students will identify the purpose of packaging in the design of consumer products.						

December

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Design Solutions 1.Geometrics a. Geometric Shapes b. Geometric Solids c. Calculating Area d. Calculating Properties e.CAD Fundamentals f. Modeling Creation						
	2.Dimension andTolerance a. Dimensioning Conventions b.						

	Tolerancing							

January

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	3. Advanced Modeling a. Parameters b. Auxiliary Views c. Section Views d. Feature-Based Solid Modeling e. Assembly Modeling f. Assembly Drawing Standards g. Exploding Assemblies h. Assembly Animation						
	4. Advanced Designs a. Advanced Designs b. Design Process c. Teamwork						

	d. Decision Matrix e. Revision Blocks f. Assembly Drawing Standards							

February

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Reverse Engineering 1.Visual Analysis a. Visual Design Elements b. Visual Design Principles c. Composition d. Advertising e. Graphic Design						

March

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	2.Functional Analysis a. Identifying						

	Subsystems b. System Analysis							
	3. Structural Analysis a. Structural Connections b. Precision Measurement c. Material Analysis d. Property Analysis							

April

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	4. Product Improvement a. Researching Product History and Evolution b. Product Innovation. c. Problem Identification d. Writing a Design Brief e. Brainstorming f. Design Critique g. Technical Report						

May

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	Design Problems 1. Engineering Ethics a. Human Impacts b. Product Lifecycle c. Recycling d. Design For Disassembly (DFD) e. Environmental Protection Agency (EPA) f. Occupational Safety and Health Administration (OSHA)						

June

Introduction to Design

Essential Questions	Content	Skills	Vocabulary	Assessments	Lessons	Resources	Standards
	2. Design Teams a. Teamwork b. Project Planning c. Assessment d. Meetings e. Virtual						

	Teams								