

WEST JEFFERSON HILLS SCHOOL DISTRICT
Engineering Design

GRADE 8

PA Academic Standards Student must be able to do	Objective Content or process student will be able to know and do	Instructional Methods	Materials/Resources Textbooks, trade books, workbooks, software, hardware, etc.	*Assessment Procedures *Additional adaptations, modifications, accommodations, and enrichment/ acceleration will be provided per IEP	*Additional Learning Opportunities for students who do not meet basic standards *Additional adaptations, modifications, and accommodations will be provided per IEP	*Extended Learning Opportunities for students who can go beyond the basic standards. *Additional enrichment/acceleration will be provided per IEP
<i>Pennsylvania's public schools shall teach, challenge and support every student to realize his or her maximum potential and to acquire the knowledge and skills needed to. . .</i>						
3.1.7 A Explain the parts of a simple system and their relationship to each other. 3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure. 3.2.7 B Apply process knowledge to make and interpret observations. 3.2.7 C Identify and use the elements of scientific inquiry to solve problems.	<ul style="list-style-type: none"> • Identify how to measure with the metric scale and with the Standard English scale. • Demonstrate understanding of the customary scale to the 1/16" • Apply the use of various tools for both the customary and metric scale • Describe the importance of testing and evaluating products as it relates to the engineering design process model. 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Internet Research • Cooperative Learning • Class Discussions • Q/A • Demonstrations • Note Taking 	<ul style="list-style-type: none"> • Activity Packet • Calculators • Measuring Devices • Worksheets • Hand Tools • Production Machines • Computers • AutoCAD • West Point Bridge Builder • Adobe Photoshop 	<ul style="list-style-type: none"> • Teacher Observation • Tests • In-Class Work • Portfolio Check • Critical Thinking • Peer Evaluation • Q/A • Problem Solving • Critical Thinking • Rubric 	<ul style="list-style-type: none"> • Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction 	<ul style="list-style-type: none"> • Additional Work • More In-depth Project • Technology Competition • Peer Instruction • Independent Research Project

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3.2.7.D Know and use the technological design process to solve problems. 3.4.7.C Identify and explain the principles of force and motion. 3.6.7.B Explain information technologies of encoding, transmitting, receiving, storing, retrieving and decoding.	<ul style="list-style-type: none"> • Define aerodynamics, drag, turbulence, and streamlined as they relate to vehicle design. • Describe how a vehicle's design and size influences drag. • Describe the importance of testing and evaluating products as it relates to the design process model. 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Internet Research • Cooperative Learning • Class Discussions • Q/A • Demonstrations • Note Taking 	<ul style="list-style-type: none"> • Activity Packet • Calculators • Measuring Devices • Worksheets • Hand Tools • Production Machines • Computers • AutoCAD • West Point Bridge Builder • Adobe Photoshop 	<ul style="list-style-type: none"> • Teacher Observation • Tests • In-Class Work • Portfolio Check • Critical Thinking • Peer Evaluation • Q/A • Problem Solving • Critical Thinking <ul style="list-style-type: none"> • Rubric 	<ul style="list-style-type: none"> • Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction 	<ul style="list-style-type: none"> • Additional Work • More In-depth Project • Technology Competition • Peer Instruction • Independent Research Project

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3.6.7.C Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design. 3.7.7 A Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.	<ul style="list-style-type: none"> • Understand the basic functions related to using PowerPoint to present information. • Define CNC and related terms • Identify, describe, and discuss the history of CNC and other uses of computers in industry 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Internet Research • Cooperative Learning • Class Discussions • Q/A • Demonstrations • Note Taking 	<ul style="list-style-type: none"> • Activity Packet • Calculators • Measuring Devices • Worksheets • Hand Tools • Production Machines • Computers • AutoCAD • West Point Bridge Builder <ul style="list-style-type: none"> • Adobe Photoshop 	<ul style="list-style-type: none"> • Teacher Observation • Tests • In-Class Work • Portfolio Check • Critical Thinking • Peer Evaluation • Q/A • Problem Solving • Critical Thinking <ul style="list-style-type: none"> • Rubric 	<ul style="list-style-type: none"> • Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction <ul style="list-style-type: none"> • Group Instruction 	<ul style="list-style-type: none"> • Additional Work • More In-depth Project • Technology Competition • Peer Instruction • Independent Research Project

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3.7.7 B Use appropriate instruments and apparatus to study materials. 3.7.7 C Explain and demonstrate basic computer operations and concepts. 3.7.7 D Apply computer software to solve specific problems. 3.7.7 E Explain basic computer communications systems.	<ul style="list-style-type: none"> • Demonstrate an understanding of the purpose of working as a contributing member of a team • Define several terms associated with architecture • Identify the history of architecture and its influences on today • Identify and describe several types and styles of architecture 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Internet Research • Cooperative Learning • Class Discussions • Q/A • Demonstrations • Note Taking 	<ul style="list-style-type: none"> • Activity Packet • Calculators • Measuring Devices • Worksheets • Hand Tools • Production Machines • Computers • AutoCAD • West Point Bridge Builder • Adobe Photoshop 	<ul style="list-style-type: none"> • Teacher Observation • Tests • In-Class Work • Portfolio Check • Critical Thinking • Peer Evaluation • Q/A • Problem Solving • Critical Thinking <ul style="list-style-type: none"> • Rubric 	<ul style="list-style-type: none"> • Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction 	<ul style="list-style-type: none"> • Additional Work • More In-depth Project • Technology Competition • Peer Instruction • Independent Research Project

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3.8.7 B Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life. 3.8.7 C Identify the pros and cons of applying technological and scientific solutions to address problems and the effect upon society.	<ul style="list-style-type: none"> • Research new graphic design technologies • Apply desktop publishing skills to create project • Evaluate peer projects and give feedback 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Internet Research • Cooperative Learning • Class Discussions • Q/A • Demonstrations • Note Taking 	<ul style="list-style-type: none"> • Activity Packet • Calculators • Measuring Devices • Worksheets • Hand Tools • Production Machines • Computers • AutoCAD • West Point Bridge Builder • Adobe Photoshop 	<ul style="list-style-type: none"> • Teacher Observation • Tests • In-Class Work • Portfolio Check • Critical Thinking • Peer Evaluation • Q/A • Problem Solving • Critical Thinking • Rubric 	<ul style="list-style-type: none"> • Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction 	<ul style="list-style-type: none"> • Additional Work • More In-depth Project • Technology Competition • Peer Instruction • Independent Research Project