

CURRICULUM

Design Engineering Thomas Jefferson High School

Curriculum Strand: Measurement

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, workbooks, software, hardware, etc	*Assessment Procedures *Additional adaptations, modification, 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
3.1.10 D Apply scale as a way of relating concepts and ideas to one another by some measure. 3.1.12 D Analyze scale as a way of relating concepts and ideas to one another by some measure. 3.7.10 B Apply appropriate instruments and apparatus to examine a variety of objects and processes.	<ul style="list-style-type: none"> • Demonstrate an understanding of the customary scale to the 1/16" • Demonstrate an understanding of the metric scale • Apply the use of various measuring tools for both the customary and metric scale 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Demonstrations • Cooperative Learning • Class Discussions • Note Taking • Video 	<ul style="list-style-type: none"> • Activity Packets • Worksheets • Calculators • Measuring Devices • Computer 	<ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A 	<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 Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects

CURRICULUM

Design Engineering Thomas Jefferson High School

Curriculum Strand: Architecture

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, workbooks, software, hardware, etc	*Assessment Procedures *Additional adaptations, modification, 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
3.2.10 D Identify and apply the technological design process to solve problems. 3.6.10 C Apply physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design to real world problems 3.7.10 C Apply basic computer operations and concepts.	<ul style="list-style-type: none"> • 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 • Identify and describe how rooms and spaces should be laid out. • Identify the characteristics of quality architectural drawings including: <ol style="list-style-type: none"> 1. Floor Plan 2. Site Plan 3. Elevation Plan 4. Wall Section 5. Electrical Plan 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video 	<ul style="list-style-type: none"> • Activity Packets • Worksheets • Calculators • Measuring Devices • Computer • AutoCAD 	<ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A 	<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 Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips

CURRICULUM

Design Engineering Thomas Jefferson High School

Curriculum Strand: Architecture

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, workbooks, software, hardware, etc	*Assessment Procedures *Additional adaptations, modification, 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
3.7.10 D Utilize computer software to solve specific problems. 3.8.10 A Analyze the relationship between societal demands and scientific and technological enterprises.	<ul style="list-style-type: none"> Develop quality architectural drawings using AutoCAD software Analyze and evaluate several architectural drawings for quality and readability Identify how to scale a drawing Apply scale to the developed architectural drawings Identify how to accurately plot a drawing Identify and describe various careers related to CAD and architecture 	<ul style="list-style-type: none"> Direct Instruction Group Work Hands-on Work Demonstrations Internet Research Cooperative Learning Brainstorming Class Discussions Note Taking Independent Design and Development Video 	<ul style="list-style-type: none"> Activity Packets Worksheets Calculators Measuring Devices Computer AutoCAD 	<ul style="list-style-type: none"> Teacher Observation Tests Quizzes Problem Solving In-Class Work Write-ups Portfolio Check Projects Critical Thinking Essays Rubric Peer Evaluation Q/A 	<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 Projects More In-depth Projects Technology Competition Peer Instruction Independent Research Projects Field Trips

CURRICULUM

Design Engineering Thomas Jefferson High School

Curriculum Strand: Mechanical Engineering

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, workbooks, software, hardware, etc	*Assessment Procedures *Additional adaptations, modification, 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
3.1.10 D Apply scale as a way of relating concepts and ideas to one another by some measure. 3.2.10 D Identify and apply the technological design process to solve problems. 3.6.10 C Apply physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design to real world problems.	<ul style="list-style-type: none"> • Identify the purpose for and use of solid models in real-world applications • Develop solid model drawings using various CAD software • Develop various working drawings including assembly and layout views using various CAD software 	<ul style="list-style-type: none"> • Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video 	<ul style="list-style-type: none"> • Activity Packets • Worksheets • Calculators • Measuring Devices • Computer • AutoCAD 	<ul style="list-style-type: none"> • Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A 	<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 Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips

CURRICULUM

Design Engineering Thomas Jefferson High School

Curriculum Strand: Research and Development

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, workbooks, software, hardware, etc	*Assessment Procedures *Additional adaptations, modification, 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
3.2.10 D Identify and apply the technological design process to solve problems. 3.6.10 C Apply physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design to real world problems. 3.7.10 C Apply basic computer operations and concepts. 3.7.10 D Utilize computer software to solve specific problems. 3.8.10 A Analyze the relationship between societal demands and scientific and technological enterprises.	<ul style="list-style-type: none"> Identify and discuss the design process for developing new inventions or innovations Apply CAD software as well as the design process in developing inventions and innovations Develop a model for a new innovation or invention 	<ul style="list-style-type: none"> Direct Instruction Group Work Hands-on Work Demonstrations Internet Research Cooperative Learning Brainstorming Class Discussions Note Taking Independent Design and Development Video 	<ul style="list-style-type: none"> Activity Packets Worksheets Calculators Hand Tools Production Machines Measuring Devices Computer AutoCAD West Point Bridge Builder CAM Software CNC Equipment 	<ul style="list-style-type: none"> Teacher Observation Tests Quizzes Problem Solving In-Class Work Write-ups Portfolio Check Projects Critical Thinking Essays Rubric Peer Evaluation Q/A 	<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 Projects More In-depth Projects Technology Competition Peer Instruction Independent Research Projects Field Trips