CURRICULUM

Pre-Engineering Principles

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.	• 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	• Direct Instruction • Group Work • Hands-on Work • Demonstrations • Cooperative Learning • Class Discussions • Note Taking	• Activity Packets • Worksheets • Measuring Devices .	• Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Critical Thinking • Peer Evaluation • Q/A	• Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction	• Additional Projects • More In-depth Projects • Peer Instruction • Independent Research Projects

CURRICULUM

Pre-Engineering Principles

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
3.1.10 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.	• 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: 1. Floor Plan 2. Site Plan 3. Elevation Plan 4. Wall Section 5. Electrical Plan	• Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video	• Activity Packets • Worksheets • Calculators • Measuring Devices • Computer • AutoCAD .	• Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A	• Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction	• Additional Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips

CURRICULUM

Pre-Engineering Principles

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 B Apply appropriate instruments and apparatus to examine a variety of objects and processes. 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.	• 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	• Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video	• Activity Packets • Worksheets • Calculators • Measuring Devices • Computer • AutoCAD .	• Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A	• Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction	• Additional Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips

CURRICULUM

Pre-Engineering Principles

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.	• 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	• Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video	• Activity Packets • Worksheets • Calculators • Measuring Devices • Computer • AutoCAD .	• Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A	• Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction	• Additional Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips

CURRICULUM

Pre-Engineering Principles

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.	• 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	• Direct Instruction • Group Work • Hands-on Work • Demonstrations • Internet Research • Cooperative Learning • Brainstorming • Class Discussions • Note Taking • Independent Design and Development • Video	• Activity Packets • Worksheets • Calculators • Hand Tools • Production Machines • Measuring Devices • Computer • AutoCAD • CAM Software • CNC Equipment .	• Teacher Observation • Tests • Quizzes • Problem Solving • In-Class Work • Write-ups • Portfolio Check • Projects • Critical Thinking • Essays • Rubric • Peer Evaluation • Q/A	• Extended Time • Tutoring • Technology • Adapted Lessons • Access to Learning Support • Review and Re-teach • Peer Interaction • Group Instruction	• Additional Projects • More In-depth Projects • Technology Competition • Peer Instruction • Independent Research Projects • Field Trips