

Course Title: Manufacturing III

Board Approval Date:

Credit / Hours: .5 credit

Course Description:

Manufacturing III is the third course offered in the Engineering, Manufacturing and Industrial Technology (EMIT) Pathway. This course is designed to allow students to manufacture more advanced projects using various types of metal, wood and plastics.

Learning Activities / Modes of Assessment:

Large group / Individual instruction
Participation & Clean Up
Individual / Group Work
Computer Aided Design
Computer Numeric Controlled Equipment

Tests and Quizzes
Checklists/Teacher Observation
Projects with Rubrics

Instructional Resources:

www.pacareerzone.com

www.discoveryeducation.com

Technology and Engineering Education Association of Pennsylvania

Online Tutorials

Technology Student Association

Project Plans

Course Pacing Guide

Course: **Manufacturing III**

Course Unit (Topic)	Length of Instruction (Days/Periods)
1. 1M Advanced Welding Techniques	15 days
2. 1W Woodworking Production	31 days
3. 2M Cutting Metal with Heat	5 days
4. 2W Plastic Molding Processes	7 days
5. 3M CAD and CNC Machines	10 days
6. 3W Plastic Thermoforming Processes	7 days
7. 4M Sheet Metal	5 days
9. 5M Making a Project	10 days

Topic: 1M Advanced Welding Techniques

Days: 15

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.A1. – Important
 CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.

3.4.12.A2. – Essential
 CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.

3.4.12.A3. – Essential
 TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).

3.4.12.C3. – Essential
 RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.

With proper set up and technique various types of metal can be successfully welded using a variety of joints.

3.4.12.A1. – Important
 CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.

3.4.12.A2. – Essential
 CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.

3.4.12.A3. – Essential
 TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).

3.4.12.C3. – Essential
 RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.

3.4.12.D2. – Important
 USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Research welders and compare and contrast them on items such as: cost, processes and duty cycle.

Safely Produce the following welded joints:

- *TIG fusion Butt Weld
- *TIG Butt weld with filler rod
- *MIG Tee Weld
- *MIG Lap Weld
- *SMAW Tee Weld
- *SMAW Lap Weld

Topic: 1M Advanced Welding Techniques

Days: 15

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Duty Cycle

GMAW

GTAW

SMAW

Root Weld

*SMAW Vertical Up Weld

*SMAW Multi-Pass with an open root Butt Weld

Topic: 1W Woodworking Production

Days: 31

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:	Understand:	Do:
<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p>	<p>When manufacturing an advanced wood product there are many necessary steps that need to be taken.</p>	<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES - Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.</p> <p>Calculate board footage and cost for a wood product.</p> <p>Read the plans or drawings used to construct the wood product.</p> <p>Select the proper material for function and appearance of the wood product.</p> <p>Incorporate complex joinery within the wood product.</p> <p>Construct the product safely and efficiently using the advanced handtools and machines in the shop.</p> <p>Incorporate advanced finishing techniques into the wood product.</p>

Topic: 1W Woodworking Production

Days: 31

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES -
Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.

How to calculate board footage and cost for a wood product.

How to read the plans or drawings used to construct the wood product.

How to select the proper material for function and appearance of the wood product.

How to incorporate complex joinery within the wood product.

How to construct the product safely and efficiently using the advanced handtools and machines in the shop.

How to incorporate advanced finishing techniques into the wood product.

3.4.12.A2. - CORE CONCEPTS OF TECHNOLOGY -
Describe how management is the process of planning, organizing, and controlling work.

Topic: 2M Cutting Metal With Heat

Days: 5

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

<p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p>	<p>Using heat a user is able to cut through various metal types and thicknesses.</p>	<p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>Use the oxyacetylene torch to cut their initials out of a piece of 1/4"</p> <p>Use the plasma cutter to shape the base piece of metal that their initials will be welded onto.</p>
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Topic: 2M Cutting Metal With Heat

Days: 5

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Regulator

Purge

Topic: 2W Plastic Molding Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:

Understand:

Do:

<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p>	<p>Molding Processes in plastics technology have a wide variety of uses and many benefits in industry.</p>	<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.B1. – Essential EFFECTS OF TECHNOLOGY - Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies.</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p>
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Topic: 2W Plastic Molding Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES - Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.</p>		<p>3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES - Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.</p> <p>Identify and describe the materials used in the molding process.</p> <p>Describe the uses of injection molding.</p> <p>Explain the advantages and disadvantages of injection molding.</p> <p>Demonstrate safe and proper use of equipment and machines for injection molding.</p> <p>Manufacture several products using injection molding.</p> <p>3.4.12.B2. - TECHNOLOGY AND ENVIRONMENT - Illustrate how, with the aid of technology, various aspects of the environment can be monitored to provide information for decision making.</p>

Topic: 2W Plastic Molding Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>What is a molding process?</p> <p>Types of Molding</p> <p>Injection Molding Machines</p> <p>Elements of a Molding Cycle</p> <p>Advantages & Disadvantages of Injection Molding</p> <p>3.4.12.A2. - CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.B1. - EFFECTS OF TECHNOLOGY - Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of technologies.</p> <p>3.4.12.B2. - TECHNOLOGY AND ENVIRONMENT - Illustrate how, with the aid of technology, various aspects of the environment can be monitored to provide information for decision making.</p>		

Topic: 3M CAD and CNC Machines

Days: 10

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p>	<p>Understand how CAD and CNC equipment can be used to make manufacturing a product more efficient.</p>	<p>3.4.12.A1. – Important CHARACTERISTICS OF TECHNOLOGY - Compare and contrast the rate of technological development over time.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>Develop a CAD drawing to be used on the CNC equipment.</p> <p>Safely use the CNC equipment to manufacture a product from a CAD drawing.</p> <p>3.4.12.E4. - INFORMATION AND COMMUNICATION TECHNOLOGIES -</p>

Topic: 3M CAD and CNC Machines

Days: 10

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

3.4.12.E4. – Compact INFORMATION AND COMMUNICATION TECHNOLOGIES - Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.

How to import a drawing into CAD.

How to turn the drawing into a CAD file.

How to turn the CAD file into a G-Code.

Synthesize the effects of information and communication systems and subsystems as an integral part of the development of the Information Age.

Topic: 3W Plastic Thermoforming Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/ PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p>	<p>Thermoforming processes in plastics technology have a wide variety of uses and many benefits in industry.</p>	<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.A3. – Essential TECHNOLOGY CONNECTIONS - Demonstrate how technological progress promotes the advancement of science, technology, engineering and mathematics (STEM).</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES - Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.</p> <p>Identify and describe the material used for straight vacuum forming.</p>

Topic: 3W Plastic Thermoforming Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.D2. – Important USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.

3.4.12.E7. – Important CONSTRUCTION TECHNOLOGIES - Analyze the technologies of prefabrication and new structural materials and processes as they pertain to constructing the modern world.

What is the thermoforming process?

Types of Thermoforming

Straight Vacuum Forming

Steps to Straight Vacuum Forming

Advantages and Disadvantages of Thermoforming

Describe the uses of thermoforming processes.

Explain the advantages and disadvantages of thermoforming processes.

Demonstrate safe and proper use of equipment and machines for the thermoforming process.

Manufacture several products using injection molding.

Topic: 3W Plastic Thermoforming Processes

Days: 7

Subject(s): Technology, Vocations

Grade(s): 9th, 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.A2. - CORE
CONCEPTS OF
TECHNOLOGY -
Describe how
management is the
process of planning,
organizing, and
controlling work.

Topic: 4M Sheet Metal
 Subject(s): Technology, Vocations

Days: 5
 Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>Shear</p> <p>Slip Roller</p>	<p>Sheet metal can be processed into usable products with the use of the sheet metal machines.</p>	<p>3.4.12.A2. – Essential CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p> <p>3.4.12.C3. – Essential RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.</p> <p>3.4.12.C2. – Essential ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.</p> <p>3.4.12.E6. – Essential MANUFACTURING TECHNOLOGIES - Compare and contrast the importance of science, technology, engineering and math (STEM) as it pertains to the manufactured world.</p> <p>Develop the project using a set of plans as well as the machines.</p> <p>Safely use all sheet metal machines.</p>

Topic: 4M Sheet Metal
Subject(s): Technology, Vocations

Days: 5
Grade(s): 9th, 10th, 11th, 12th

Know:	Understand:	Do:
<p>Box and Pan Break</p> <p>Rotary Machine</p> <p>Solder</p> <p>Flux</p> <p>Rivet</p> <p>3.4.12.A2. - CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p>		

Topic: 5M Making a Project

Days: 10

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

3.4.12.A2. – Essential
CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.

3.4.12.C2. – Essential
ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

3.4.12.C3. – Essential
RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.

3.4.12.D2. – Important
USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Plans

It is important to follow all safety and instruction to produce a quality project.

3.4.12.A2. – Essential
CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.

3.4.12.C2. – Essential
ENGINEERING DESIGN - Apply the concept that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

3.4.12.C3. – Essential
RESEARCH & DEVELOPMENT, INVENTION & INNOVATION, EXPERIMENTATION/PROBLEM SOLVING AND TROUBLESHOOTING - Apply the concept that many technological problems require a multi-disciplinary approach.

3.4.12.D2. – Important
USING AND MAINTAINING TECHNOLOGICAL SYSTEMS - Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.

Safely use the machines to manufacture the project.

Follow the plans correctly to manufacture the project.

Topic: 5M Making a Project

Days: 10

Subject(s): Technology, Vocations

Grade(s): 10th, 11th, 12th

Know:

Understand:

Do:

<p>Dimensions</p> <p>Notes</p> <p>3.4.12.A2. - CORE CONCEPTS OF TECHNOLOGY - Describe how management is the process of planning, organizing, and controlling work.</p>		
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