Curriculum Map: Wood 7 2022/23

Course: BLDG CONST Sub-topic: Uncategorized

Grade(s): 7

Course Description: Wood 7 is a nine week rotation for all 7th grade students. This introductory course is designed to introduce students to shop and workplace safety, the technological process, and project management. Students learn how to safely use tools and machines to construct small woodworking projects.

Unit: 1. Intro to Wood Working

Timeline: Week 1 to 2

Unit Description: Unit 1 is an overall introduction to the shop area and procedures. We cover general safety procedures, fire safety, and specific safety procedures for every tool and process before we engage in any activity.

Unit Essential Questions:

1. How have technological developments impacted devices, processes, and systems for the way we live?
2. How do various areas of technology influence the economy, the environment, and society?
3. How would you apply technological design and problem solving methods in the development of inventions and innovations?
4. What knowledge and skills are essential for humans to make sound decisions about creating, using, and modifying technologies?
5. What is technological literacy?

Unit Big Ideas:

1. A technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live.
2. Each area of technology has a set of characteristics that separates it from others; however, many areas overlap in order to meet human needs and wants.
3. Technological design is a creative process that anyone can do which may result in new inventions and innovations.
4. Technology is created, used and modified by humans.
5. Technological literacy is the ability to use, assess and manage technology around us.

Unit Materials: Safety glasses, safety forms, safety quizzes, ruler quizzes, stationary power tools, portable power tools, hand tools, a good selection of lumber, screws, glue, nails, clamps, rulers, measurement worksheets.

Unit Assignments: General safety quiz, power tool safety quiz for each new power tool, ruler quiz, technological process worksheet.

Unit Key Terminology & Definitions:

Technology: the application of scientific knowledge for practical purposes, especially in industry

System: a set of principles or procedures according to which something is done; an organized scheme or method.

Manufacturing: the making of articles on a large scale using machinery; industrial production.

Invention: The act of creating something. Typically a process or device.

Innovation: A new method, product, idea, etc.

Diagnose: To figure out what is wrong by examination of symptoms.

Troubleshoot: To trace and correct faults in a system.

Technical Drawings: A precise and detailed drawing of an object, as employed in architecture or engineering.

Isometric Drawings: A pictorial representation of an object in which all three dimensions are drawn at full scale rather than foreshortening them to the true projection.

Technological Method: 1.) identify a problem, 2.) research the problem, 3.) generate possible solutions, 4.) select the best solution, 5.) create a model, 6.) test the model, 7.) refine and retest the model as needed, and 6.) communicate the final solution.

Project Proposal: A Project Proposal is a written offer from a bidder to the owner, preferably on a prescribed proposal form, to perform the work and to furnish all labor, materials, equipment and/or services for the prices and terms quoted by the bidder.

Scope of Work: (SOW) The area in an agreement where thework to be performed is described.

Project Management: The way in which a person organizes and manages resources that are necessary to complete a project

Technological Literacy: the ability to understand, use, assess, design, and produce technology

21st century skills: Skills, abilities, and learning dispositions that have been identified as being required for success in society and workplaces by educators, business leaders, academics, and governmental agencies.

STANDARDS:

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.

(* standards consolidated from Topic level)

Topic: 1.1 Shop and Workplace Safety.

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.

Topic: 1.2 Tool Operation

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.

Topic: 1.3 Measurement for Woodworking

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.

Topic: 1.4 Introduction to the Technological Process

Minutes for Topic: 176

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.

Unit: 2. Project 1

Timeline: Week 3 to 4

Unit Description: In unit 2, students complete their first project (usually a small cutting board or something similar). Students are introduced to and led through the planning process, the technological process, all shop procedures involved, and the key elements of project management. Student are trained on all required machinery before being given permission to use it.

Unit Essential Questions:

1. How have technological developments impacted devices, processes, and systems for the way we live?
2. How do various areas of technology influence the economy, the environment, and society?
3. How would you apply technological design and problem solving methods in the development of inventions and innovations?
4. What knowledge and skills are essential for humans to make sound decisions about creating, using, and modifying technologies?
5. What is technological literacy?

Unit Big Ideas:

1. A technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live.
2. Each area of technology has a set of characteristics that separates it from others; however, many areas overlap in order to meet human needs and wants.
3. Technological design is a creative process that anyone can do which may result in new inventions and innovations.
4. Technology is created, used and modified by humans.
5. Technological literacy is the ability to use, assess and manage technology around us.

Unit Materials: Safety glasses, safety quizzes, ruler quizzes, stationary power tools, portable power tools, hand tools, a good selection of lumber, screws, glue, nails, clamps, rulers, measurement worksheets, clear wood finish with brushes.

Unit Assignments: Technical drawing, isometric drawing, material list, cost proposal, completed project.

Unit Key Terminology & Definitions:

Technology: the application of scientific knowledge for practical purposes, especially in industry

System: a set of principles or procedures according to which something is done; an organized scheme or method.

Manufacturing: the making of articles on a large scale using machinery; industrial production.

Invention: The act of creating something. Typically a process or device.

Innovation: A new method, product, idea, etc.

Diagnose: To figure out what is wrong by examination of symptoms.

Troubleshoot: To trace and correct faults in a system.

Technical Drawings: A precise and detailed drawing of an object, as employed in architecture or engineering.

Isometric Drawings: A pictorial representation of an object in which all three dimensions are drawn at full scale rather than foreshortening them to the true projection.

Technological Method: 1.) identify a problem, 2.) research the problem, 3.) generate possible solutions, 4.) select the best solution, 5.) create a model, 6.) test the model, 7.) refine and retest the model as needed, and 6.) communicate the final solution.

Project Proposal: A Project Proposal is a written offer from a bidder to the owner, preferably on a prescribed proposal form, to perform the work and to furnish all labor, materials, equipment and/or services for the prices and terms quoted by the bidder.

Scope of Work: (SOW) The area in an agreement where thework to be performed is described.

Project Management: The way in which a person organizes and manages resources that are necessary to complete a project

Technological Literacy: the ability to understand, use, assess, design, and produce technology

21st century skills: Skills, abilities, and learning dispositions that have been identified as being required for success in society and workplaces by educators, business leaders, academics, and governmental agencies.

STANDARDS:

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A1 (Advanced)	Explain how technology is closely linked to creativity, which has resulted in innovation and invention.
3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.10.A2 (Advanced)	Interpret how systems thinking applies logic and creativity with appropriate comprises in complex real-life problems.
3.4.10.A3 (Advanced)	Examine how technology transfer occurs when a new user applies an existing innovation developed for one purpose in a different function.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

(* standards consolidated from Topic level)

Topic: 2.1 Project Planning

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.10.A2 (Advanced)	Interpret how systems thinking applies logic and creativity with appropriate comprises in complex real-life problems.
3.4.10.A3 (Advanced)	Examine how technology transfer occurs when a new user applies an existing innovation developed for one purpose in a different function.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
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3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 2.2 Tool Operation

Minutes for Topic: 44

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 2.3 Construction Techniques

Minutes for Topic: 220

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A1 (Advanced)	Explain how technology is closely linked to creativity, which has resulted in innovation and invention.
3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 2.4 Project Finish

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Unit: 3. Project 2

Timeline: Week 5 to 7

Unit Description: In unit 3, students will work through the entire technological process once again to complete a second project. The second project (typically a small shelf) requires a similar skill set as the first project but there will be a little more focus on structural integrity.

Unit Essential Questions:

1. How have technological developments impacted devices, processes, and systems for the way we live?
2. How do various areas of technology influence the economy, the environment, and society?
3. How would you apply technological design and problem solving methods in the development of inventions and innovations?
4. What knowledge and skills are essential for humans to make sound decisions about creating, using, and modifying technologies?
5. What is technological literacy?

Unit Big Ideas:

1. A technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live.
2. Each area of technology has a set of characteristics that separates it from others; however, many areas overlap in order to meet human needs and wants.
3. Technological design is a creative process that anyone can do which may result in new inventions and innovations.
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Unit Materials: Safety glasses, safety quizzes, ruler quizzes, stationary power tools, portable power tools, hand tools, a good selection of lumber, screws, glue, nails, clamps, rulers, measurement worksheets, clear wood finish with brushes.

Unit Assignments: Technical drawing, isometric drawing, material list, cost proposal, completed project.

Unit Key Terminology & Definitions:

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Invention: The act of creating something. Typically a process or device.

Innovation: A new method, product, idea, etc.

Diagnose: To figure out what is wrong by examination of symptoms.

Troubleshoot: To trace and correct faults in a system.

Technical Drawings: A precise and detailed drawing of an object, as employed in architecture or engineering.

Isometric Drawings: A pictorial representation of an object in which all three dimensions are drawn at full scale rather than foreshortening them to the true projection.

Technological Method: 1.) identify a problem, 2.) research the problem, 3.) generate possible solutions, 4.) select the best solution, 5.) create a model, 6.) test the model, 7.) refine and retest the model as needed, and 6.) communicate the final solution.

Project Proposal: A Project Proposal is a written offer from a bidder to the owner, preferably on a prescribed proposal form, to perform the work and to furnish all labor, materials, equipment and/or services for the prices and terms quoted by the bidder.

Scope of Work: (SOW) The area in an agreement where thework to be performed is described.

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21st century skills: Skills, abilities, and learning dispositions that have been identified as being required for success in society and workplaces by educators, business leaders, academics, and governmental agencies.

STANDARDS: **STANDARDS**

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3.4.7.A1 (Advanced)	Explain how technology is closely linked to creativity, which has resulted in innovation and invention.
3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

(* standards consolidated from Topic level)

Topic: 3.1 Project Planning

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D1 (Advanced)	Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 3.2 Tool Operation

Minutes for Topic: 44

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 3.3 Construction Techniques

Minutes for Topic: 220

STANDARDS

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3.4.7.A1 (Advanced)	Explain how technology is closely linked to creativity, which has resulted in innovation and invention.
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3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 3.4 Project Finish

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

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3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Unit: 4. Project 3

Timeline: Week 8 to 9

Unit Description: Unit 4 is designed to review and build previously learned skills with less support. Students will construct a project (typically a key rack) on their own.

Unit Essential Questions:

1. How have technological developments impacted devices, processes, and systems for the way we live?
2. How do various areas of technology influence the economy, the environment, and society?
3. How would you apply technological design and problem solving methods in the development of inventions and innovations?
4. What knowledge and skills are essential for humans to make sound decisions about creating, using, and modifying technologies?
5. What is technological literacy?

Unit Big Ideas:

1. A technological world requires that humans develop capabilities to solve technological challenges and improve products for the way we live.

2. Each area of technology has a set of characteristics that separates it from others; however, many areas overlap in order to meet human needs and wants.

3. Technological design is a creative process that anyone can do which may result in new inventions and innovations.

4. Technology is created, used and modified by humans.

5. Technological literacy is the ability to use, assess and manage technology around us.

Unit Materials: Safety glasses, safety quizzes, ruler quizzes, stationary power tools, portable power tools, hand tools, a good selection of lumber, screws, glue, nails, clamps, rulers, measurement worksheets, clear wood finish with brushes.

Unit Assignments: Technical drawing, isometric drawing, material list, cost proposal, completed project.

Unit Key Terminology & Definitions:

Technology: the application of scientific knowledge for practical purposes, especially in industry

System: a set of principles or procedures according to which something is done; an organized scheme or method.

Manufacturing: the making of articles on a large scale using machinery; industrial production.

Invention: The act of creating something. Typically a process or device.

Innovation: A new method, product, idea, etc.

Diagnose: To figure out what is wrong by examination of symptoms.

Troubleshoot: To trace and correct faults in a system.

Technical Drawings: A precise and detailed drawing of an object, as employed in architecture or engineering.

Isometric Drawings: A pictorial representation of an object in which all three dimensions are drawn at full scale rather than foreshortening them to the true projection.

Technological Method: 1.) identify a problem, 2.) research the problem, 3.) generate possible solutions, 4.) select the best solution, 5.) create a model, 6.) test the model, 7.) refine and retest the model as needed, and 6.) communicate the final solution.

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Scope of Work: (SOW) The area in an agreement where thework to be performed is described.

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3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform

	ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

(* standards consolidated from Topic level)

Topic: 4.1 Project Planning

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.A3 (Advanced)	Explain how knowledge gained from other fields of study has a direct effect on the development of technological products and systems.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 4.2 Tool Operation

Minutes for Topic: 44

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B1 (Advanced)	Explain how the use of technology can have consequences that affect humans in many ways.
3.4.7.B2 (Advanced)	Explain how decisions to develop and use technologies may be influenced by environmental and economic concerns.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.D2 (Advanced)	Select and safely use appropriate tools, products and systems for specific tasks.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 4.3 Construction Techniques

Minutes for Topic: 220

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A1 (Advanced)	Explain how technology is closely linked to creativity, which has resulted in innovation and invention.
3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B3 (Advanced)	Describe how invention and innovation lead to changes in society and the creation of new needs and wants.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.
3.4.7.C1 (Advanced)	Describe how design, as a creative planning process, leads to useful products and systems.
3.4.7.C2 (Advanced)	Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions.
3.4.7.C3 (Advanced)	Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.

Topic: 4.4 Project Finish

Minutes for Topic: 88

STANDARDS

STATE: Pennsylvania SAS Academic Standards (2009-2013)

3.4.7.A2 (Advanced)	Explain how different technologies involve different sets of processes.
3.4.7.B4 (Advanced)	Explain how many inventions and innovations have evolved by using deliberate and methodical processes of tests and refinements.

3.4.7.D3 (Advanced)	Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
3.4.7.E6 (Advanced)	Examine the processes involved in extracting (e.g., harvesting, drilling, mining) raw materials from the earth for use in manufacturing processes.
3.4.7.E7 (Advanced)	Examine subsystems found in the construction of a building.