

Industrial Technology 2013

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Stanton Community Schools



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District Mission Statement

The Stanton Community Schools exist to create, foster and provide a positive learning environment in which all students can become responsible and productive citizens of the United States of America through academic, physical, social, vocational and emotional growth.

Goals

The students will:

1. Participate in a 21st century learning pedagogy by
 - a. Meeting or exceeding learning standards in the core curricular areas of Language Arts, Mathematics, Science and Social Science.
 - b. Acquiring lifelong learning skills such as self-direction, adaptability, and higher-order thinking/problem solving. Also included in these learning skills are researching information & reporting results, developing inter-personal & cross cultural relationships, and utilizing the student's curiosity & creativity.
 - c. Utilizing learning technologies to explore & investigate concepts; access, manage, analyze, & synthesize information; and communicate & produce quality products.
2. Be prepared to compete in a global society following graduation.
3. Develop respect and a positive attitude for themselves and others.
4. Assume civic responsibility as a member of a family, community, nation, and world.
5. Appreciate the arts.
6. Be provided with vocational and technological skills.
7. Have the knowledge and skills needed to maintain healthy and fit bodies throughout their lives.
8. Be provided an environment that stimulates emotional growth.
9. Develop effective work ethics.

Industrial Technology Mission Statement

The Stanton Community Schools Curriculum Developers prepare students for practical lifelong learning, understanding, skills, and attitudes that enable them to use Industrial Technology to lead productive and fulfilling lives and to be successful in the job market.

Industrial Technology Curriculum Guides

Eighth Grade Industrial Technology Curriculum

Purpose Statement: The student will distinguish among the four areas of technology, Communication, Manufacturing, Construction, Transportation, and assess how they relate to each other.

Focus: Communication, Manufacturing, Construction, Transportation Technologies

Outcome IT.8.1: The student will classify the different areas of technology and analyze their function. (8.1.3, 8.2.3, 8.4.3, 8.4.5)

IT.8.1.1 Define technology.

IT.8.1.2 Explain why the pace of technological change has increased.

IT.8.1.3 Evaluate and carry out the six steps of the problem-solving process. (1. State the problem clearly, 2. Collect information, 3. Develop possible solutions, 4. Select the best solution, 5. Implement the solution, 6. Evaluate the solution)

IT.8.1.4 Compose the seven types of resources that provide input for a system. (1. People, 2. Materials, 3. Tools and Machines, 4. Energy, 5. Time, 6. Capital, 7. Information)

Outcome IT.8.2: The student will describe how communication technology involves all the things people make and do to send and receive messages. (8.1.1, 8.1.2, 8.1.4, 8.1.5, 8.1.6)

IT.8.2.1 Describe communication technology.

IT.8.2.2 Explain why we need communication systems.

IT.8.2.3 Explain how computers are used to communicate.

IT.8.2.4 Express how the Internet, artificial intelligence, digital libraries, and virtual reality and how they affect employability.

IT.8.2.5 Discuss the importance of telecommunications.

Outcome IT.8.3: The student will describe how manufacturing is the making of parts and putting those parts together to make a product. (8.3.1, 8.3.2, 8.3.3, 8.3.4, 8.3.5, 8.3.6)

IT.8.3.1 Describe how manufacturing continues to develop.

IT.8.3.2 Explain how manufacturing and the economy influence one another.

IT.8.3.3 Review what engineers do to develop a product.

IT.8.3.4 Determine the importance of product testing.

IT.8.3.5 Illustrate how production and product quality are controlled.

Outcome IT.8.4: The student will know the four main types of construction to include residential, industrial, public works, and commercial construction. (8.2.1, 8.2.2, 8.2.4, 8.2.5, 8.2.6)

- IT.8.4.1 Explain the importance of construction.
- IT.8.4.2 Define regulations that apply to construction.
- IT.8.4.3 Explain the responsibility of a contractor.
- IT.8.4.4 Organize and give examples of the four basic types of construction.
- IT.8.4.5 Identify and describe seven types of bridges.

Outcome IT.8.5: The student will know why transportation is the movement of people, animals, and things from one place to another by using vehicles. (8.4.1, 8.4.2, 8.4.4, 8.4.6)

- IT.8.5.1 Define transportation.
- IT.8.5.2 Name the parts of transportation systems.
- IT.8.5.3 Name the five modes of transportation.
- IT.8.5.4 Determine what inter modal transportation is.
- IT.8.5.5 Express a career path in the area of transportation.

Woods Technology Curriculum

Purpose Statement: The student will complete an approved wood project from start to finish.

Focus: Wood Projects

Outcome IT.WT.1: The student will demonstrate the proper application of safety rules with machines used in the lab. (12.2.4, 12.2.5)

- IT.WT.1.1 Show how to set up a safe workshop.
- IT.WT.1.2 Demonstrate the safe and appropriate use of hand tools.
- IT.WT.1.3 Demonstrate the safe and appropriate use of power tools.
- IT.WT.1.4 Demonstrate a safe attitude while working in the lab.

Outcome IT.WT.2: The student will demonstrate the assembly of their project. (12.3.3, 12.3.6)

- IT.WT.3.1 Describe the types of joints necessary for assembly.
- IT.WT.3.2 Describe the types of fasteners necessary for assembly.
- IT.WT.3.3 Prepare the problem-solving and decision-making skills needed for assembly of a project.
- IT.WT.3.4 Interpret several woodworking careers.

Outcome IT.WT.3: The student will apply the appropriate finish to their project. (12.3.4, 12.3.5)

- IT.WT.3.1 Describe the use of various finishing supplies.
- IT.WT.3.2 Choose the proper finish for a project.
- IT.WT.3.3 Understand how to care for brushes.
- IT.WT.3.4 Conclude the basic steps in applying a fine finish.

Power Drive Technology Curriculum

Purpose Statement: The student will build an electrical car for competition.

Focus: Car Design and Construction

Outcome IT.PD.1: The student will design a car for competition. (12.4.2, 12.4.3, 12.4.5)

- IT.PD.1.1 Study and research and discuss the number and configuration of wheels, aerodynamics, body shape, and frontal area.
- IT.PD.1.2 Develop individual sketches of the basic vehicle shape and layout.
- IT.PD.1.3 Sketch and build prototype of front axle, wheel configuration, and steering possibilities.
- IT.PD.1.4 Review and discuss possibilities of the frame and body material.

Outcome IT.PD.2: The student will assemble a car for competition. (12.4.1, 12.4.6)

- IT.PD.2.1 Design and fabricate front axle assembly.
- IT.PD.2.2 Construct frame checking for balance and center of gravity.
- IT.PD.2.3 Design and construct braking, steering and other driver controls.
- IT.PD.2.4 Carry out and install placement of electrical and drive components.
- IT.PD.2.5 Discuss careers pertaining to the techniques that are learned in the power drive class.

Outcome IT.PD.3: The student will test a car for competition. (12.4.4)

- IT.PD.3.1 Attach and test each component.
- IT.PD.3.2 Research the tire requirements and availability.
- IT.PD.3.3 Demonstrate a street test under power.
- IT.PD.3.4 Recheck all wells and electrical connections.

Outcome IT.PD.4: The student will demonstrate how the car does in competition.

- IT.PD.4.1 Record how car performs on the different tracks.
- IT.PD.4.2 Analyze any problems accruing at the track.
- IT.PD.4.3 Evaluate and repair issues during completion.
- IT.PD.4.4 Use evaluations to prepare car for future completions.

Small Engine Technology Curriculum

Purpose Statement: The student will generate an understanding of the workings of a small gas engine.

Focus: Tool Identification, Basic Small Engine Theory, Electrical Systems, and Engine Service

Outcome IT.SE.1: The student will identify various tools used in small engine repair.

- IT.SE.1.1 Identify different types of tools used in small engine repair.
- IT.SE.1.2 Describe the use for each tool.
- IT.SE.1.3 Explain the proper care and upkeep of tools.
- IT.SE.1.4 Restate the appropriate safety and proper usage for each tool.

Outcome IT.SE.2: The student will distinguish between the different types of engines.

- IT.SE.2.1 Recall terms associated with engine identification.
- IT.SE.2.2 Distinguish between characteristics of two- and four-stroke cycle engines.
- IT.SE.2.3 Show the types of information as found on the engine nameplate.
- IT.SE.2.4 Illustrate the operating position of the crankshaft.

Outcome IT.SE.3: The student will discuss types of current and the relationship between electricity and magnetism. (12.3.1)

- IT.SE.3.1 Name the sources of electricity related to the small engine repair.
- IT.SE.3.2 Determine between good conductors and insulators of electricity.
- IT.SE.3.3 Match the basic electrical schematic symbols to the correct names.
- IT.SE.3.4 Construct three types of electrical circuits.

Outcome IT.SE.4: The student will identify the four basic systems in a small engine.

- IT.SE.4.1 Recognize the proper way of changing oil and checking the lubrication system on a small engine.
- IT.SE.4.2 Interpret the functions of the cooling system.
- IT.SE.4.3 Connect the fuels systems on a small engine.
- IT.SE.4.4 Identify the components of the governor system.

Computer-Aided Drafting (CAD) Technology Curriculum

Purpose Statement: The student will learn the basic skills in computer-aided drafting by assigned problems and projects.

Focus: Uses and Applications of AutoCAD® 2005

Outcome IT.CAD.1: The student will understand the need for computer-aided drafting in the drafting profession. (12.1.2, 12.1.5, 12.1.6, 12.3.2)

- IT.CAD.1.1 Recognize the advantages of computer-aided drafting over manual drafting.
- IT.CAD.1.2 Discuss two different types of drafting in industry and construction.
- IT.CAD.1.3 Recognize the need for computer-aided drafting in competitive industries.

Outcome IT.CAD.2: The student will develop a process of creating designs by computer. (12.1.3)

- IT.CAD.2.1 Recognize the screen layout in AutoCAD® 2005.
- IT.CAD.2.2 Recognize different tool bars.
- IT.CAD.2.3 Demonstrate the proper use of the mouse.
- IT.CAD.2.4 Use the different commands in a drawing.
- IT.CAD.2.5 Create, and transfer a drawing to, a CAD file folder.

Outcome IT.CAD.3: The student will recognize different line and circle commands.

- IT.CAD.3.1 Recognize all measurements are in units.
- IT.CAD.3.2 Identify the drawing limits on drawings.
- IT.CAD.3.3 Recognize all zoom commands.
- IT.CAD.3.4 Apply the erase command to drawings.

Outcome IT.CAD.4: The student will apply the setup wizard to the first drawing.

- IT.CAD.4.1 Apply drawing units to the setup.
- IT.CAD.4.2 Use a reference area in the setup.
- IT.CAD.4.3 Activate the grid and snap settings from the toolbar.
- IT.CAD.4.4 Set the multi-line command for the line style.

Outcome IT.CAD.5: The student will use layers and object properties in a drawing.

- IT.CAD.5.1 Apply the layers properties manager in the drawing.
- IT.CAD.5.2 Use different names on each layer.
- IT.CAD.5.3 Use appropriate colors in each layer.
- IT.CAD.5.4 Use objects snap toolbar on each layer.

Outcome IT.CAD.6: The student will design a template and select the appropriate printing for a drawing. (12.1.1, 12.1.4)

- IT.CAD.6.1 Use the start from scratch command from a startup window.
- IT.CAD.6.2 Pick the imperial (feet and inches) from the default setting.
- IT.CAD.6.3 Draw a standardized title block.
- IT.CAD.6.4 Recognize the correct scale and paper size for a drawing before printing.
- IT.CAD.6.5 Identify the use of the item on the template.

Robotics Technology Curriculum

Propose Statement: The student will build a robot for use in a competition.

Focus: Robot Design and Construction

Outcome IT.RT.1: The student will design a robot for competition. (12.4.2, 12.4.3, 12.4.5)

IT.RT.1.1 Do research on how to construct robot.

IT.RT.1.2 Develop individual design for robot.

IT.RT.1.3 Design and sketch the different attachment that will be needed for competition.

IT.RT.1.4 Design which wheels will work for the competition.

Outcome IT.RT.2: The student will assemble a robot for a competition. (12.3.3, 12.3.6)

IT.RT.2.1 Describe the necessary parts to construct robot.

IT.RT.2.2 Demonstrate the appropriate use of hand tools.

IT.RT.2.3 Prepare the problem-solving and decision-making skills needed for assemble of the robot.

IT.RT.2.4 Interpret several careers robotics.

Outcome IT.RT.3: The student will test robot for competition. (12.3.4,12.3.7)

IT.RT.3.1 Describe the different problems that may arise in competition.

IT.RT.3.2 Identify the tools needed for completion.

IT.RT.3.3 Demonstrate problem solving to fix anything that would come up in completion.

IT.RT.3.4 Report how the robot performed in the test.