

Technology Education

CURRICULUM

WOODS I

(Elective Course)

Supports Academic Learning Expectation # 2

Students and graduates of Ledyard High School will speak clearly and communicate ideas accurately in a variety of settings

Supports Academic Learning Expectation # 3

Students and graduates of Ledyard High School will employ problem-solving skills effectively

Supports Academic Learning Objective # 5

Students and graduates of Ledyard High School will demonstrate critical thinking skills

**Approved by the Instructional Council
May 19, 2008**

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

<p>GOAL: District Goal #1 (State Standard #1) The Nature & Evolution of Technology</p> <p>Understand the nature of technology, how it has evolved and its influence on its own evolution</p>	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>1.1 Critically analyze a given technology against a perceived need or want</p> <p>1.2 Research how, social, economic, and political forces influence innovation, invention and adaptation</p> <p>1.3 Describe the transformation and conservation of kinetic and potential energy in mechanical, chemical and electrical systems.</p> <p>1.6 Investigate the universal characteristics of systems and sub-systems;</p>	<p><i>Students will be able to:</i></p> <p>a. Design and construct functional projects based on their own needs or wants utilizing appropriate technology such as designing, cross cutting, ripping, planning, squaring, turning, curve cutting, routing, CNC machining, sanding, and finishing</p> <p>a. Compare and contrast in writing industrial/societal needs versus ecological needs such as the impact of lumber production versus the animal habitats</p> <p>a. Design and build a functioning, air propelled, scaled car</p> <p>b. Explain why some machines have longer coast time (time from shut off to completely stopped) and the impact on safety</p> <p>a. Identify and apply the universal characteristics of the systems and sub –systems such as three-view drawings and measuring needed to produce various wooden projects</p>

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

<p>GOAL: District Goal #2 (State Standard #2) The Impacts of Technology Understand the impact that technology has on the personal, social, cultural, economic, political and environmental aspects of their lives.</p>	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>2.1 Analyze technologies based on their positive and negative impacts;</p> <p>2.2 Describe the evolution of a technological system and its influence on the economy, culture, society and environment</p> <p>2.3 Demonstrate an understanding of local, state and national regulatory agencies in home and workplace safety;</p> <p>2.4 Select and demonstrate ethical solutions to technological problems;</p> <p>2.5 Identify and explore career opportunities in the areas of technology;</p> <p>2.6 Describe and evaluate how society's expectations drive technological development;</p>	<p><i>Students will be able to:</i></p> <p>a. Identify the most effective and safe technology needed to perform a task</p> <p>a. Describe prefab building materials versus natural wood building materials and the impact on the environment and economy</p> <p>b. Describe the evolution of lumber harvesting and the impact on the economy and the environment</p> <p>c. Compare and contrast artisan made versus mass produced products</p> <p>a. Demonstrate an understanding of the role of government safety agencies such as OSHA and NIOSH in the workplace</p> <p>b. Read and use the information contained on material safety sheets</p> <p>a. Demonstrate an understanding of the negative impact of utilizing oil based versus water based finishing products</p> <p>a. Identify manufacturing career opportunities that could be pursued using their developed skills</p> <p>a. Describe the impact of societal safety expectations on technological development such as tool development</p> <p>b. Research the impact of societal economic expectations resulting in outsourcing</p>

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

<p>GOAL: District Goal #3 (State Standard #3) The Research, Design & Engineering</p> <p>Recognize that technology is the result of a creative act, and will be able to apply formal problem-solving strategies to enhance invention and innovation.</p>	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>3.1 Use research techniques to support design development;</p> <p>3.2 Investigate multiple solutions to a design problem;</p> <p>3.3 Use a communication technologies to visualize a design idea;</p> <p>3.5 Document a design to facilitate replication;</p> <p>3.6 Select appropriate technical processes and fabricate a prototype;</p>	<p><i>Students will be able to:</i></p> <p>a. Utilize internet information to facilitate product design</p> <p>a. Identify and use appropriate materials and manufacturing processes to create specific wooden projects</p> <p>a. Create products from design drawings</p> <p>a. Create a set of design drawings to facilitate the manufacturing of a product</p> <p>a. Design and build various prototypes utilizing appropriate technical processes</p>

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

<p>GOAL: District Goal #4 (State Standard #) 4 The Creation & Use of Technology Know the origins, properties and processing techniques associated with the material building blocks of technology as demonstrated by effective application of the methods producing usable products and by effectively using those products.</p>	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>4.1 Compare the techniques used to extract raw materials;</p> <p>4.2 Process materials based on their properties</p> <p>4.3 Experiment with the alteration of material characteristics;</p> <p>4.4 Create a product demonstrating the application of technological processes;</p> <p>4.5 Use tools and procedures safely;</p>	<p><i>Students will be able to:</i></p> <p>a. Research and describe the various methods used to extract wood</p> <p>a. Identify wood characteristics such as grain direction, hardness and size b. Apply technological processes based on this information</p> <p>a. Explore a variety of ways to alter wood materials such as staining, steaming, finishing and cutting</p> <p>a. Design and build assigned wooden products such as shelves, scaled cars, and turning projects b. Design and build a self created wooden product c. Apply CNC machine skills effectively and safely when working on products</p> <p>a. Demonstrate the ability to safely operate machine tools such as jointer, stationery sanders, drill press, radial arm saw, lathe, CNC router, router table, and jig saws by passing written tests followed by application of skills b. Recognize unsafe situations in the workplace and decide how to correct them c. Demonstrate the ability to safely use hand tools such as chisels, planes, drills, sanders, hammers, files and screwdrivers by passing written tests followed by application of skills d. Demonstrate and appropriately use the knowledge of personal safety habits such as wearing protective equipment and proper dress</p>

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

GOAL: District Goal #4 (State Standard #) 4 The Creation & Use of Technology	
Continued	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>4.6 Select appropriate tools and procedures for a given task;</p> <p>4.7 Identify and describe methods used in manufacturing products;</p> <p>4.8 Explore and explain the properties and uses of common synthetic polymers such as polyethylene, polyvinyl chloride, and polystyrene</p>	<p><i>Students will be able to:</i></p> <p>a. Utilize problem solving skills to select appropriate tools and procedures to build specific wooden products</p> <p>a. Identify appropriate tools, processes, and correct sequential steps needed to fabricate raw materials into a finished product</p> <p>a. Select and utilize appropriate adhesives and finishes for a task/problem</p>

STUDENT LEARNING OBJECTIVES
Woods I

As a result of Technology Education, students independently and collaboratively will be able to:

<p>GOAL: District Goal #5 (State Standard #5) The Future of Technology</p> <p>Demonstrate the ability to take known principles of technological innovation and apply them to hypothetical scenarios effectively.</p>	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>5.1 Forecast trends in new and emerging technologies (e.g. nanotechnology, electro-magnetic radiation in communications, bio-related and alternative energy sources) and their potential impacts;</p> <p>5.2 Explore future labor market trends and educational needs</p> <p>5.5 Identify and explore technological solutions to future global needs and their impacts on individuals;</p> <p>5.6 Explore how human beings use technology to increase the carrying capacity of their environment</p>	<p><i>Students will be able to:</i></p> <p>a. Explore the role of computerized machining and new applicable safety devices</p> <p>a. Explore related careers of interest and necessary skills needed</p> <p>a. Recognize that lumber is a renewable resource b. Recognize the impact and efficiency of engineered lumber in future building needs</p> <p>a. Perform tasks to minimize waste/scrap produced in order to decrease the “human footprint” on the environment b. Select and use technologies that are less harmful to the environment</p>