

# **Technology Education**

## **CURRICULUM**

### **WOODS II**

(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 II**

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

<p><b>GOAL: District Goal #1 (State Standard #1) The Nature &amp; Evolution of Technology</b></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>1.4 Explore and describe how electricity is generated, transferred and used in modern technologies.</p> <p>1.5 Use the systems model to analyze a complex technological system;</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 advanced projects utilizing newly learned techniques such as the squaring process, biscuit joinery, pocket hole joinery, mortise and tenon joinery, splined miter joints, lap joints, machine cut dove tail joinery, rabbetting, and mass production</p> <p>a. Identify benefits and causes for the industrial use of mass production</p> <p>b. Recognize the negative and positive impact of mass production</p> <p>a. Design, build and assess the performance of a spinning top</p> <p>a. Discuss how electricity is safely and efficiently used in the shop/home environment</p> <p>a. Demonstrate an understanding of the sub-systems of a mass produced product such as a chair</p> <p>a. Identify and/or produce the universal characteristics of the systems, sub –systems and standards needed to produce advanced wooden projects utilizing the artisan and mass production methods</p>

**STUDENT LEARNING OBJECTIVES**  
**Woods II**

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

<p><b>GOAL:</b> District Goal #2 (State Standard #2) The <b>Impacts of Technology</b> 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><i>Students will be able to:</i></p> <p>a. Select from a wider variety of methods and technologies the most effective and safe processes needed to perform a task</p> <p>a. Research prefab building materials versus natural wood building materials and the impact on the environment and economy</p> <p>b. Describe the evolution of mass production and its impact on the economy and the environment</p> <p>c. Construct an artisan made product and a mass manufactured product</p> <p>d. Journalize their experience in making both products</p> <p>a. Expand their understanding of the role of government safety agencies such as OSHA and NIOSH in the workplace</p> <p>b. Use the information contained on material safety sheets to facilitate the community collection of hazardous materials</p> <p>a. Recognize the potential negative impact of outsourcing such as using child labor and ignoring environmental concerns to promote economical gains</p> <p>a. Identify and research manufacturing career opportunities that could be pursued using their developed skills</p> <p>b. Experience some related careers through a production situation</p> <p>c. Explore career opportunities through interaction with guest speakers</p>

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**Woods II**

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

GOAL: District Goal #2 (State Standard #2) The <b>Impacts of Technology</b>	
Continued	
LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>2.6 Describe and evaluate how society's expectations drive technological development</p>	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> <li>a. Describe the impact of societal safety expectations on technological development such as the "Saw Stop" technology as found on a table saw, the in-feed rollers on the surface planer, and anti kick-back cutters</li> <li>b. Describe the societal expectations of mass production focusing on lower prices, greater product variety and improved workplace conditions</li> </ul>

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**Woods II**

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

<p><b>GOAL: District Goal #3 (State Standard #3) The Research, Design &amp; Engineering</b></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 communication technologies to visualize a design idea;</p> <p>3.4 Demonstrate knowledge of the legal and ethical principles related to ownership of intellectual properties</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 print and non-print media sources to enhance product design</p> <p>a. Select from a wide array of materials and manufacturing processes to design and construct wooden products</p> <p>a. Create multiple part products from self design and/or published design drawings</p> <p>a. Discuss patents and their implications</p> <p>a. Create sets of design drawings either by hand or computer generated to facilitate the manufacturing of a mass produced and an artisan made product</p> <p>a. Design, build and test an original model of self designed products using appropriate technical processes</p>

**STUDENT LEARNING OBJECTIVES**  
**Woods II**

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

<p><b>GOAL: District Goal #4 (State Standard #) 4 The Creation &amp; Use of Technology</b></p> <p>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>4.2 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. Identify wood characteristics such as types, weathering capabilities, aesthetic appeal and strength</p> <p>b. Apply technological processes based on this information</p> <p>a. Apply a variety of ways to alter wood materials such as staining, steaming, finishing, cutting, gluing, and bending</p> <p>a. Design and build assigned wooden products such as an advanced joinery project, a mass produced product and a self designed product</p> <p>b. Apply CNC machine skills independently, effectively and safely when working on products</p> <p>a. Demonstrate the ability to safely operate all machine tools used in class projects</p> <p>b. Recognize unsafe situations in the workplace and decide how to correct them</p> <p>c. Demonstrate the ability to safely use all hand tools used in class projects</p> <p>d. Demonstrate and appropriately use the knowledge of personal safety habits in all environments</p>

**STUDENT LEARNING OBJECTIVES**  
**Woods II**

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

GOAL: District Goal #4 (State Standard #) 4 <b>The Creation &amp; Use of Technology</b>	
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. Apply independently problem solving skills to select appropriate tools and procedures to build a variety of wooden products</p> <p>a. Utilize 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 multi-step tasks/problems</p>

**STUDENT LEARNING OBJECTIVES**  
**Woods II**

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

<p><b>GOAL:</b> 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>5.3 Explore the problems and possibilities of construction practices in the alternative environmental settings;</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. Apply computerized machining and new applicable safety devices</p> <p>b. Research and share trends in newly developed building materials</p> <p>a. Research and share emerging job opportunities in construction/engineering/manufacturing related fields including the educational needs for each job</p> <p>b. Explore the impact of outsourcing</p> <p>a. Compare and contrast working in a controlled school lab with working on a job site setting</p> <p>a. Explain how lumber is a renewable resource</p> <p>b. Describe the impact and efficiency of engineered lumber in future building needs</p> <p>c. Discuss the state of Connecticut’s current and future lumbering resources</p> <p>a. Use mass production technology to increase effective and efficient product output</p> <p>b. Design and build a product where waste/scrape is kept to a minimum and longevity is a key design element</p>