

Technology Education CURRICULUM

METALS III

(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
Metals III

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>1.5 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. Select at least four out of seventeen learned technologies to construct a metal product</p> <p>a. Compare the characteristics of poorly constructed metal products with those of well made metal products</p> <p>b. Explain the impact of economic forces on construction/manufacturing of metal products</p> <p>a. Design and use sub systems that work together to form functioning products</p> <p>a. Apply the universal characteristics of the systems, sub-systems and standards needed to produce individual complex metal projects</p>

STUDENT LEARNING OBJECTIVES
Metals III

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>2.3 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. Select and apply the most effective and safe methods and technologies available to produce independently made products</p> <p>a. Continue to expand their understanding of the role of government safety agencies such as OSHA and NIOSH in the workplace</p> <p>b. Apply the information contained on material safety sheets to facilitate safe work practices</p> <p>a. Select materials and processes that limit the negative impact on the environment</p> <p>a. Research a construction or manufacturing career of interest and put the information in written form</p> <p>b. Explore career opportunities through interaction with guest speakers</p> <p>a. Locate, analyze, and share articles based on society's expectations and how they drive technological development</p>

STUDENT LEARNING OBJECTIVES
Metals III

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 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. Continue to utilize print and non-print media sources to enhance student product design</p> <p>a. Select appropriate materials and manufacturing processes to design and construct complex metal products</p> <p>a. Use self design and/or published design drawings to construct multi part metal products</p> <p>a. Choose one of their own products to use in a simulation of the patent application process</p> <p>a. Create sets of drawings either by hand or by computer that show product details when making a self designed product</p> <p>a. Design, build and test a complex original model of self designed products using appropriate technical processes</p>

STUDENT LEARNING OBJECTIVES
Metals III

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</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>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><i>Students will be able to:</i></p> <p>a. Identify metal characteristics found in high quality metal products</p> <p>b. Apply technological processes based on this information</p> <p>a. Choose from a variety of ways to alter metal materials when producing metal products</p> <p>a. Design and build a multi-part, self designed product</p> <p>b. Continue to apply CNC machine skills to enhance the product</p> <p>a. Demonstrate the ability to safely operate machine tools in producing advanced products</p> <p>b. Continue to recognize unsafe situations in the workplace and decide how to correct them</p> <p>c. Demonstrate the ability to safely use hand tools in producing advanced products</p> <p>d. Continue to demonstrate and appropriately use the knowledge of personal safety habits in all environments</p> <p>a. Select and use appropriate tools and procedures for producing advanced products</p> <p>a. Utilize critical thinking skills to select appropriate tools, processes, and correct sequential steps needed to produce advanced products</p>

STUDENT LEARNING OBJECTIVES
Metals III

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

GOAL: District Goal #5 (State Standard #5) The Future of Technology
Demonstrate the ability to take known principles of technological innovation and apply them to hypothetical scenarios effectively.

LEARNING OBJECTIVES	SAMPLE INDICATORS/ASSESSMENTS OF LEARNING
<p><i>Students will know how to:</i></p> <p>5.2 Explore future labor market trends and educational needs</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> <ul style="list-style-type: none"> a. Research and share connections between new and emerging technologies and potential careers a. Develop skills to independently process raw materials into usable products in a safe and efficient manner