

Engineering Drawing: Modeling Unit

ESTABLISHED GOALS:	Transfer	
<u>Competencies:</u>	<i>Students will be able to independently use their learning to create a model.</i>	
<ul style="list-style-type: none"> • <i>Students will demonstrate the ability to use computer aided drafting and design (CAD) software in order to model a 3D object</i> • <i>Students will demonstrate the ability to create technical drawings in order to communicate a design.</i> • <i>Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials.</i> • <i>Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences.</i> • <i>Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style.</i> 	Meaning	ESSENTIAL QUESTIONS
<u>Content Standards:</u>	Acquisition	
<p>New Hampshire Vocational Curriculum Guide</p> <ul style="list-style-type: none"> • Standard 1: Students will develop an understanding of the characteristics and scope of technology. • Standard 2: Students will develop an understanding of the core concepts of technology. • Standard 3: Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study. • Standard 8: Students will develop an understanding of the attributes of design. • Standard 12: Students will develop the abilities to use and maintain technological products and systems. • Standard 17: Students will develop an understanding of and be able to select and use information and communication technologies. 	<p><i>Students will know...</i></p> <ul style="list-style-type: none"> • that work features, sketched features and placed features are used in combination to create 3D models of parts. • that relationships between parts are defined to determine component placement and allowable movement in assemblies. • the characteristics, scope and core concepts of the technologies that are used. <p><u>vocabulary:</u> assembly, assembly constraint, axis, Cartesian coordinate system, computer-aided drafting and design, degree of freedom, feature dimension, geometric constraint, numeric constraint, origin, part, plane, solid, solid modeling, wire-frame modeling</p>	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> • creating three-dimensional (3D) models of parts using software. Including appropriate: geometric dimensional constraints 3D features. • using advanced modeling features to create 3D models of assemblies within software using appropriate assembly constraints. • comparing the efficiency of the modeling method of an object using different combinations of additive and subtractive methods. • evaluating the relationships among technologies and other field of study.
Content Area Literacy Standards	21st Century Skills	
RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	<ul style="list-style-type: none"> • <i>Apply technology effectively</i> • <i>Reason effectively</i> 	

<p>RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</p> <p>RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</p> <p>WHST.11-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p>WHST.11-12.4 Produce clear and coherent writing in which the development, organizations, and style are appropriate to task, purpose, and audience.</p>	<ul style="list-style-type: none"> ● <i>Solve problems</i> ● <i>Think creatively</i>
<p><i>Science and Engineering Practices</i></p>	<ul style="list-style-type: none"> ●
<p>S&E P 1. Asking questions (for science) and defining problems (for engineering)</p> <p>S&E P 2. Developing and using models</p> <p>S&E P 4. Analyzing and interpreting data</p> <p>S&E P 5. Using mathematics and computational thinking</p> <p>S&E P 6. Constructing explanations (for science) and designing solutions (for engineering)</p> <p>S&E P 8. Obtaining, evaluating, and communicating information</p>	<ul style="list-style-type: none"> ●

<i>Evaluative Criteria</i>	<i>Assessment Evidence</i>
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

<i>Summary of Key Learning Events and Instruction</i>	
<i>Language Arts Integration</i>	<i>Mathematics Integration</i>
<ul style="list-style-type: none"> • 1.OA.1 Use 	<ul style="list-style-type: none"> • 1.OA.1 Use
<i>Technology Integration</i>	<i>District Materials</i>
<ul style="list-style-type: none"> • 1.OA.1 Use 	