

## Bemidji Middle School Industrial Technology Outcomes – Revised 2010

Architectural Design & Modeling		Grade 8
Standards	Benchmarks	Activities/Examples
<b>1. Students will develop an understanding of the characteristics and scope of technology.</b>	G The development of technology is a human activity and is the result of individual and collective needs and the ability to be creative.	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
<b>3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.</b>	E A product, system, or environment developed for one setting may be applied to another setting.	<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>
	F Knowledge gained from other fields of study has a direct effect on the development of technological products and systems.	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p> <p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>

Standards	Benchmarks		Activities/Examples
<p><b>4. Students will develop an understanding of the cultural, social, economic, and political effects of technology.</b></p>	D	<p>The use of technology affects humans in various ways, including their safety, comfort, choices, and attitudes about technology’s development and use.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
<p><b>5. Students will develop an understanding of the effects of technology on the environment.</b></p>	D	<p>The management of waste produced by technological systems is an important societal issue.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
	F	<p>Decisions to develop and use technologies often put environmental and economic concerns in direct competition with one another.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p> <p>Students will create a model framed structure following construction procedures outlined in the instruction booklet.</p> <p>Framing terminology will be used to correctly identify and place wall components in the proper locations to complete the model.</p>

Standards	Benchmarks		Activities/Examples
<p><b>6. Students will develop an understanding of the role of society in the development and use of technology.</b></p>	G	<p>Meeting societal expectations is the driving force behind the acceptance and use of products and systems.</p>	<p>Students will develop a basic understanding of Architecture and Architectural Engineering and how its progression has changed through a historical perspective.</p> <p>Students will learn how architecture effects their lives and its impact on society and the economy.</p> <p>Students will study architectural trends, building rules, regulations, and codes.</p>
<p><b>8. Students will develop an understanding of the attributes of design.</b></p>	E	<p>Design is a creative planning process that leads to useful products and systems.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>

Standards	Benchmarks	Activities/Examples
	<p>F There is no perfect design.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>
	<p>G Requirements for design are made up of criteria and constraints.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
		<p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>

Standards	Benchmarks		Activities/Examples
<p><b>9. Students will develop an understanding of engineering design.</b></p>	F	<p>Design involves a set of steps, which can be performed in different sequences and repeated as needed.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p>
	H	<p>Use information provided in manuals, protocols, or by experienced people to see and understand how things work.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p> <p>A floor plan will be developed using defined parameters and cost per square foot as size factors.</p> <p>Students will use standard architectural tools, symbols, and methods to correctly draw plan to a scale of ¼ inch = 1 foot.</p> <p>Students will use standard drafting methods, traditional or CAD.</p> <p>Students will create a model framed structure following construction procedures outlined in the instruction booklet.</p> <p>Framing terminology will be used to correctly identify and place wall components in the proper locations to complete the model.</p>

Standards	Benchmarks		Activities/Examples
<p><b>11. Students will develop the abilities to apply the design process.</b></p>	H	<p>Apply a design process to solve problems in and beyond the laboratory-classroom.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	I	<p>Specify criteria and constraints for the design.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	J	<p>Make two-dimensional and three-dimensional representations of the designed solution.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
	L	<p>Make a product or system and document the solution.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
<p><b>12. Students will develop the abilities to use and maintain technological products and systems.</b></p>	H	<p>Use information provided in manuals, protocols, or by experienced people to see and understand how things work.</p>	<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>

Standards	Benchmarks	Activities/Examples
	<p>I Use tools, materials, and machines safely to diagnose, adjust, and repair systems.</p>	<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>
	<p>J Use computers and calculators in various applications.</p>	<p>Students will design and construct a model bridge using supplied materials, set specifications and material limitations.</p> <p>Projects will be stress-tested and efficiencies calculated using a mathematical formula.</p>
		<p>Students will develop an architectural model using a scale of 1/16 inch = 1 foot.</p> <p>Standard model building procedures and materials will be covered and implemented on the project.</p> <p>Learned safety rules and procedures will be used on project construction.</p>