

Boat Building

Unit 1: Safety

Essential Questions: What should you know in order to work safely in this environment?

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
<p>Voc. Tech Ed 1. A Define health and safety regulations. 2.5 Safe and proper use of common hand tools and common power tools and measurement devices used in construction.</p>	<p>Identify and apply OSHA and other health and safety regulations that apply to specific tasks and jobs in the occupational area. Identify and apply Right-To-Know (Hazard Communication Policy) and other communicative regulations that apply to specific tasks and jobs in the occupational area. Explain procedures for documenting and reporting hazards to appropriate authorities. List penalties for non-compliance with appropriate health and safety regulations. Identify contact information for appropriate health and safety agencies and resources. Describe the history, function and importance of the Occupational Safety and Health Administration (OSHA).</p>	<p>Student survey Safety policy Clean up list Writing across the curriculum handouts OSHA materials Book of tests from NEAWT Safety contract</p>	<p>Discussion Descriptions Classifications Journal Modeling Note-taking Oral Presentation Step by step sequencing Demonstrations</p>	<p>Journal Writing across the curriculum assignments Performance evaluation Safety tests</p>

<p>Voc. Tech Ed 1. B Demonstrate health and safety practices.</p>	<p>Identify, describe and demonstrate the effective use of Material Safety Data Sheets (MSDS). Read chemical, product, and equipment labels to determine appropriate health and safety considerations. Identify, describe and demonstrate personal, shop and job site safety practices and procedures. Demonstrate safe dress and use of relevant safety gear and personal protective equipment (PPE), including wrist rests, adjustable workspaces and equipment, gloves, boots, earplugs, eye protection, and breathing apparatus. Illustrate appropriate safe body mechanics, including proper lifting techniques and ergonomics. Locate emergency equipment in your lab, shop, and classroom, including (where appropriate) eyewash stations, shower facilities, sinks, fire extinguishers, fire blankets, telephone, master power switches, and emergency exits. Demonstrate the safe use, storage, and maintenance of every piece of equipment in the lab, shop, and classroom. Describe safety practices and procedures to be followed when working with and around electricity.</p>	<p>Sample MSDS sheets Proper attire Gloves Boots Ear protection Eye protection Respirators Fall protection harness Shop fire extinguishers Exit signs Emergency shut off switch Sinks Telephone Nonflammable cabinet Ladder Staging sections Latex gloves Rags for demos Brooms Trash barrels Dust pan Wisk brooms Shop vac Respirators</p>	<p>Discussion Descriptions Classifications Journal Modeling Note-taking Oral Presentation Step by step sequencing Demonstrations</p>	<p>Journal Assessment Writing across the curriculum assignments Performance evaluation Safety tests</p>
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	<p>Properly handle, store, dispose of, and recycle hazardous, flammable, and combustible materials. Demonstrate proper workspace cleaning procedures. Identify and describe ladder and scaffold safety practices and procedures. Use and maintain fall arrest systems. Identify and describe standard precautions for blood borne pathogens and the procedures for responding to and reporting exposure.</p>			
<p>Voc. Tech Ed 1. C Demonstrate responses to situations that threaten health and safety.</p>	<p>Illustrate First Aid procedures for potential injuries and other health concerns in the occupational area. Describe the importance of emergency preparedness and an emergency action plan. Illustrate procedures used to handle emergency situations and accidents, including identification, reporting, response, evacuation plans, and follow-up procedures. Identify practices used to avoid accidents. Identify and describe fire protection, precautions and response procedures. Discuss the role of the individual and the company/organization in ensuring workplace safety.</p>	<p>Latex gloves First aid kit Evacuation plan</p>	<p>Discussion Descriptions Classifications Journal Modeling Note-taking Oral Presentation Step by step sequencing Demonstrations</p>	<p>Journal Assessment Writing across the curriculum assignments On/off site performance evaluation Safety tests</p>

	Discuss ways to identify and prevent workplace/school violence.			
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Unit 2: Demonstrate the fundamentals of marine fabrication.
Essential Questions: What is the most effective technique used to solve a specific problem?

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
Demonstrate the fundamentals of boat building Voc. Tech Ed 2.A Read and interpret prints.	Identify building materials and describe their applications. Identify engineered building materials and describe their application. Read and interpret blueprints, working drawings and Estimate needs, costs, and quantity of materials. Apply basic math principles. Demonstrate measuring and layout procedures and applications. Explain proper storage methods for lumber. Explain the basic layout of a set of prints as well as the importance of	Samples of dimensional lumber Samples of engineered lumber Samples of boatbuilding materials Westsystem.com Tape measure Calculator Boat Plans and building notes Drafting definitions handout Architect’s ruler	Activating prior knowledge Authentic instruction-work on projects on/off site Community work Cooperative learning Demonstrations Discussion-directions Direct-Interactive Teaching Hands-on Known to unknown Modeling Measuring Performance of skills Practice Routine Skill inventory	Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences Performance evaluation Boat progress I.D. test

	<p>the accompanying job specifications document. Recognize and identify basic print terms, abbreviations, line types, symbols and notes. Interpret and follow drawing dimensions. Determine true measurements from a print using an Architect’s scale. Read and interpret plan, elevation, section and detail views and schedules. Identify, develop and complete material quantity takeoff sheets</p>		<p>Action project Authentic instruction-real plans for actual projects Collaborative Learning Demonstration Discussion Formulas Higher order thinking skills Measuring Managing Pair project Scale drawings Whole to part Word banks</p>	
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Unit 3: Use hand tools.
Essential Questions: How do you use hand tools safely and effectively?
How can I apply hand tool skill to solve problems?

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
<p>2.5 Safe and proper use of common hand tools, common power tools and measurement devices used in construction 7.2 Criteria necessary to select safe tools and procedures for the manufacturing process</p>	<p>Demonstrate use and maintenance of layout, marking, and measuring tools. Demonstrate use and maintenance of fastening, clamping and dismantling tools. Demonstrate use and maintenance of</p>	<p>Framing square, sliding t bevel, speed square, tape measure, cat’s paw, pry-bars, c clamps, bar clamps, ratchet straps, wood clamps, pull saw, hack saw, flush cut saw,</p>	<p>Activating prior knowledge Authentic instruction-work on projects on/off site Community work Demonstrations Discussion-directions Direct-Interactive Teaching</p>	<p>Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences performance evaluation</p>

Voc. Tech Ed 2.C Use hand tools.	sawing tools. Demonstrate use and maintenance of drilling and boring tools. Demonstrate use and maintenance of planing, smoothing and shaping tools.	rip saw, cross cut saw, planes, hammer/mallet, measuring tools, spoke shave, scrapers, chisels, sharpening stones, files, nail set, screwdrivers	Hands-on Known to unknown Modeling Measuring Performance of skills Practice Routine Skill inventory	Boat progress
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Unit 4: Operate portable power tools.
Essential Questions: How do you safely and effectively operate these common power tools?
What is the most effective and appropriate power tool for completing a given task?

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
Voc. Tech Ed 2.D Operate power tools. 2.5 Safe and proper use of common hand tools, common power tools and measurement devices used in construction 7.2 Criteria necessary to select safe tools and procedures for the manufacturing process	Demonstrate use and maintenance of a portable circular saw. Demonstrate use and maintenance of dust collection devices/vacuums. Demonstrate use and maintenance of reciprocating saws. Demonstrate use and maintenance of portable drills. Demonstrate use and maintenance of a portable router. Demonstrate use and maintenance of a portable power miter box. Demonstrate use and maintenance of portable sanders.	Skill saw Makita contractors saw Jig saw Sawzall Cordless drills/ bits Router and cutters Sliding compound miter saw Belt sander Palm sander Compressor with brad nailer, finish nailer, framing nailer, stapler, and coil nailer	Activating prior knowledge Authentic instruction-work on projects on/off site Community work Cooperative learning Demonstrations Discussion-directions Direct-Interactive Teaching Hands-on Known to unknown Modeling Measuring Performance of skills Practice	Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences performance evaluation boat progress

Unit 5: Operate stationary power tools.				
Essential Questions: How do you safely and effectively operate these common stationary power tools?				
What is the most effective and appropriate stationary power tool for completing a given task?				
	Demonstrate use and maintenance of a screw gun. Demonstrate use and maintenance of power plane. Describe the operation of power fastening tools and systems.	On/off-site projects	Routine Skill inventory	

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
<p>Voc. Tech Ed 2.D Operate power tools. 2.5 Safe and proper use of common hand tools, common power tools and measurement devices used in construction 7.2 Criteria necessary to select safe tools and procedures for the manufacturing process</p>	<p>Demonstrate use and maintenance of the dust collection system. Demonstrate use and maintenance of the radial arm saw. Demonstrate use and maintenance of the surface planer. Demonstrate use and maintenance of the jointer. Demonstrate use and maintenance of the table saw. Demonstrate use and maintenance of the shaper. Demonstrate use and maintenance of the drill press. Demonstrate use and maintenance of the band saw. Demonstrate use and maintenance of the Lathe. Demonstrate use and maintenance of the performax sander. Demonstrate use and maintenance of the oscillating spindle sander.</p>		<p>Activating prior knowledge Authentic instruction-work on projects on/off site Community work Cooperative learning Demonstrations Discussion-directions Direct-Interactive Teaching Hands-on Known to unknown Modeling Measuring Performance of skills Practice Routine Skill inventory</p>	<p>Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences performance evaluation boat progress</p>

Unit 6: Engineering Design (Boat building joinery and finish work)
Essential Questions: How do I apply the engineering design process to solve real world problems?

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
<p>Technology/ Engineering 1.0 Engineering Design <i>Central Concepts:</i> Engineering design involves practical problem solving, research, development, and invention/innovation, and requires designing, drawing, building, testing, and redesigning. Students should demonstrate the ability to use the engineering design process to solve a problem or meet a challenge</p> <p>7.1 Describe the manufacturing processes of casting and molding, forming, separating, conditioning, assembling, and finishing.</p> <p>7.2 Identify the criteria necessary to select the tools and procedures used in the safe production of products in the manufacturing process, such as material properties, required tolerances, and end-uses.</p>	<p>Structural components in boat design; knees, breasthooks, decks, laminated center framer, thwarts, ribs, rails, Fasteners; screws, bolts, nails Joinery;mortise and tennon, edge. Miter, splined miter, cove and bead, cutting a gain, scrrfing Finishing skills; priming and painting, bright work, cleaning a paintbrush, sanding and prepping, dust control while finishing Scribing Reading blueprints Interpreting scale Measurement Lofting Estimating costs of materials Drawing a curve with a batten Bent laminations Steam bending Choosing fasteners and fastening Choosing bending method Fiberglassing Cannshaping wood Sanding Mixing and applying epoxy</p>	<p>Boatbuilding plans and materials Boatbuilding materials and tools Westsystem.com Wooden boat magazine Ma. State Frameworks</p>	<p>Activating prior knowledge Authentic instruction-work on projects on/off site Demonstrations Discussion-directions Hands-on Known to unknown Modeling Measuring Performance of skills Practice Routine Skill inventory</p>	<p>Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences Performance evaluation Boat progress</p>

Unit 7: Historical and Social Context for Boat Building
Essential Questions:

Framework Standard	Content / Skills	Resources	Instructional Strategies	Assessments
Appendix III	History of Boatbuilding on the North and South River Using boatbuilding skills in your everyday life	Boat plans and building notes Boatbuilding materials and tools Ma. State Frameworks <u>The North River</u> , J. Galluzzo <u>History of Shipbuilding on the North River</u> , L.V. Briggs <u>Marshfield a town of villages</u> , C Cruselle	Activating prior knowledge Authentic instruction-work Audio-visuals Demonstrations Discussion-directions Direct-Interactive Teaching Hands-on Known to unknown Modeling Measuring Performance of skills Practice One-way lecture Routine Skill inventory Field trips Journal	Journal assessments Writing across the curriculum assignments Quiz based on plans and classroom experiences performance evaluation boat progress