

Lake Mills School District

Year at a Glance Scope and Sequence for Career & Technical Education

Overarching Goal of the Curricular Area: Through technical Skills and employability development, students are able to apply and relate academic knowledge to succeed.

Technology & Engineering Grade 6

Unit Theme	Unit Goal	Enduring Understandings for the Unit	Essential Questions for the Unit
Engineering Design	Students will be able to apply the Engineering Design Process.	<p>Students will understand that design is a creative planning process that leads to useful products and systems.</p> <p>Students will understand that the requirements for a design are made up of criteria and constraints.</p>	Why would a person using the engineering design process be more successful solving a problem than someone who did not use the engineering design process?
Manufacturing	<p>Students will be able to select and apply manufacturing technologies.</p> <p>Students will apply the concepts of appropriate tool and machine selection for manufacturing and operate them safely.</p> <p>Students will be able to apply measurement systems in the planning and layout process used in the construction and manufacturing industries.</p>	<p>Students will understand that manufacturing systems use mechanical processes that change the form of materials.</p> <p>Students will understand that when used properly, tools and machines are very useful in manufacturing products, but improper use can result in physical injury.</p> <p>Students will understand that without proper measurement skills it is difficult to produce quality products.</p>	<p>What are some ways in which the form of materials can be changed to manufacture a product? Describe them.</p> <p>Why would an individual want to predict and avoid the risks present when operating equipment, using tools and performing procedures?</p> <p>Why are measuring skills essential to producing quality products?</p>
Architecture & Construction	Students will be able to select, use, and apply architecture and construction technologies.	<p>Students will understand that construction began to meet the basic need of shelter.</p> <p>Students will understand that designs for structures are selected based on factors such as building codes and requirements, style, convenience, cost, climate, culture and function.</p> <p>Students will understand that structures are planned and constructed based on financial constraints.</p>	<p>Why are buildings in warm climates, such as Florida, constructed differently than buildings in cold climates like Wisconsin?</p> <p>How do financial constraints affect the type of structure that is built?</p>
Graphic Communication & Information Systems	Students will be able to select, use and apply information and communications technologies.	<p>Students will understand that there are different forms of communication and is an ever evolving process that has effects on society.</p> <p>Students will understand that communication can come in graphic form or electronic form.</p>	<p>How do the use of symbols, measurements, and drawings promote clear communication by providing a common language to express ideas?</p> <p>Animation is a form of communication. Where can you find examples of animation in use?</p>

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Technology & Engineering Grade 7

Unit Theme	Unit Goal	Enduring Understandings for the Unit	Essential Questions for the Unit
Engineering Design and Drafting	<p>Students will be able to apply the Engineering Design Process.</p> <p>Students will be able to apply computer aided design software to create a design solution following criteria and constraints of the design problem.</p>	<p>Students will understand that design is a creative planning process that leads to useful products and systems.</p> <p>Students will understand that the requirements for a design are made up of criteria and constraints.</p> <p>Students will understand that 2 dimensional and 3 dimensional representations are used to solve a problem and communicate solutions.</p>	<p>Why are criteria and constraints important to solving a design problem?</p> <p>How computer can aided design software increase the probability of a successful design solution?</p>
Engineering & Manufacturing	<p>Students will be able to apply the Engineering Design Process.</p> <p>Students will be able to select and apply manufacturing technologies.</p> <p>Students will be able to choose appropriate tools and machines of manufacturing and operate/apply them safely.</p>	<p>Students will understand that manufacturing systems use mechanical processes that change the form of materials through the processes of separating, forming, combining, and conditioning.</p> <p>Students will understand that when used properly, tools and machines are very useful in manufacturing products, but improper use can result in physical injury.</p>	<p>How do criteria and constraints influence how you manufacture a design prototype?</p> <p>Why is no solution to a problem perfect?</p> <p>Why would an individual want to predict and avoid the risks present when operating equipment, using tools and performing procedures?</p>
Robotics Engineering	<p>Students will be able to show and assess how human to machine and machine to machine communication occurs while troubleshooting and solving problems.</p> <p>Students will be able to discuss and assess how robotics play a role in manufacturing.</p>	<p>Students will understand that robotics has changed how goods are manufactured and the types of manufacturing jobs available.</p> <p>Students will understand that programming is precise and robots are only capable of executing your commands.</p>	<p>How do robotics and automation play a role in the manufacturing industry?</p> <p>When would troubleshooting be applicable?</p> <p>What does “programming is precise” mean?</p>

<p>Graphic Communication & Information Systems</p>	<p>Students will be able to select and use/apply information and communications technologies.</p>	<p>Students will understand that there are different forms of communication and is an ever evolving process that has effects on society.</p> <p>Students will understand that communication can come in graphic form or electronic form.</p>	<p>How do new forms of communication change how society behaves?</p> <p>How do the use of symbols, measurements, and drawings promote clear communication by providing a common language to express ideas?</p>
<p>Power & Energy -Fluid Power</p>	<p>Students will be able to select and use/apply Power and Energy technologies.</p>	<p>Students will understand that power is the rate that energy is converted from one form to another or transferred from one place to another.</p> <p>Students will understand that power systems are used to drive and provide propulsion to other technological products and systems.</p>	<p>What can we do as a society to use our energy resources more efficiently?</p> <p>What are the advantages of fluid power over mechanical energy transfer methods?</p>

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Technology & Engineering Grade 8

Unit Theme	Unit Goal	Enduring Understandings for the Unit	Essential Questions for the Unit
Engineering	Students will be able to apply the Engineering Design Process.	<p>Students will understand that design is a creative planning process that leads to useful products and systems.</p> <p>Students will understand that the requirements for a design are made up of criteria and constraints.</p> <p>Students will understand that troubleshooting is a problem-solving method used to identify the cause of a malfunction in a system.</p>	<p>Why is the Engineering Design Process important to successfully solving a problem?</p> <p>How do criteria and constraints influence how you solve a design problem?</p> <p>Why is no solution to a problem perfect?</p>
Manufacturing	<p>Students will be able to select and use/apply manufacturing technologies.</p> <p>Students will be able to choose appropriate tools and machines of manufacturing and operate/apply them safely.</p> <p>Students will work cooperatively, adapt and respect individual differences.</p>	<p>Students will understand that manufacturing systems use mechanical processes that change the form of materials through the processes of separating, forming, combining, and conditioning.</p> <p>Students will understand that when used properly, tools and machines are very useful in manufacturing products, but improper use can result in physical injury.</p> <p>Students will understand that cooperation and teamwork are essential to success in the manufacturing industry.</p>	<p>Why would you choose one manufacturing process over another? What are the advantages and disadvantages?</p> <p>Why would an individual want to predict and avoid the risks present when operating equipment, using tools and performing procedures?</p> <p>Why are teamwork, cooperation, and respect for others important in the manufacturing industry?</p>
Electronics Systems	Students will be able to design, use, and apply basic electronics and electricity concepts.	<p>Students will understand that electrical theory includes current, voltage, resistance, power and their application.</p> <p>Students will understand the difference between a series and parallel circuit.</p> <p>Students will understand different number systems are used in electronics including binary.</p>	<p>How does understanding electrical theory help you choose and use electrical products properly?</p> <p>Where would you use a series circuit vs. a parallel circuit in your home? Why?</p>

<p>Architecture and Construction</p>	<p>Students will be able to identify and analyze structures and their components.</p> <p>Students will be able to apply measurement systems in the planning and layout process used in the construction and manufacturing industries.</p>	<p>Students will understand that buildings contain a variety of materials, and subsystems.</p> <p>Students will understand that climate, building codes, convenience, cost and function are all factors used in the design and construction of structures.</p> <p>Students will understand that and that being able to measure accurately is key to successful completion of structures and products.</p>	<p>How can climate determine how a structure is designed and built?</p> <p>Are building codes necessary or have they outlived their usefulness? Why?</p> <p>Why is measurement an important skill to successfully complete a structure or product?</p>
<p>Communication & Information Systems</p>	<p>Students will be able to select and use/apply information and communications technologies.</p>	<p>Students will understand that there are different forms of communication and is an ever evolving process that has effects on society.</p> <p>Students will understand that communication can come in graphic form or electronic form.</p> <p>Students will understand that 2 dimensional and 3 dimensional representations are used to solve a problem and communicate solutions.</p>	<p>How do new forms of communication change how society behaves?</p> <p>How do the use of symbols, measurements, and drawings promote clear communication by providing a common language to express ideas?</p>
<p>Power, Energy & Transportation Systems</p>	<p>Students will be able to select and use/apply Power and Energy technologies.</p>	<p>Students will understand that power systems are used to drive and provide propulsion to other technological products and systems.</p> <p>Students will understand that much of the energy used in our environment is not used efficiently.</p>	<p>What can we do as a society to use our energy resources more efficiently?</p> <p>How do our energy and transportation technologies affect where we can or do live?</p>

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Intro to Technology Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Design	<p>Students will self-assess the importance of design as it pertains to product development.</p> <p>Students will apply the technology design model to complete various project</p>	<p>Students will understand that the technology design model is essential in completing projects.</p> <p>Students will understand that all successful projects start with well thought out designs.</p>	<p>If a design model is not followed how can that affect the outcome of project?</p>
Technology Systems	<p>Students will self-assess the importance of systems in society.</p>	<p>Students will understand How system interrelate with one another.</p> <p>Students will understand that systems can be open loop or closed loop.</p>	<p>Why are systems so important to our existence as a society?</p>
Impact of Technology on Societies	<p>Students self-assess how technology has impacted societies.</p>	<p>Students will understand that technology impacts society in many ways.</p> <p>Students will understand how societies are impacted by technology.</p>	<p>How has technology impacted the society we live in in the last twenty years?</p> <p>How will technology continue impact societies?</p>
Influences on Technology	<p>Students will self-assess what influences technology.</p> <p>Students will identify social impacts on technology.</p>	<p>Students will understand that technology is influenced by many sources.</p> <p>Students will understand how they influence technology.</p>	<p>What is the greatest influence on technology in today's society?</p>

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Engineering Design Principles Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Line Types	Students will perform effectively drawing all drafting lines.	Students will understand how line types are used to define a drawing. Students will understand correct use of line types is essential in creating a working drawing.	How do line types affect the actual drawing? How important is it to use to correct line in the correct application?
Sketching and Views	Students will perform effectively using sketch components. Students will perform proper drawings of different object views.	Students will understand that sketching is a useful tool. Students will understand how to define each view of an object.	Can sketching take the place of a working drawing? How critical is it to be able to define a given view? How can a sketch be use effectively?
Form and Function	Students will apply form and function to engineering projects.	Students will understand that form and function must be designed into a project. Students will understand the importance form and function play in project design.	Will a project be worth making without form and function? How important is form and function to design of a project?
Introduction to SolidWorks	Students will create projects through the use of a CAD program.	Students will understand how powerful a CAD program can be. Students will understand the importance of learning the many features of SolidWorks.	Is it critical to know every function of SolidWorks CAD program when designing projects? How do tutorials help in learning SolidWorks?
Modeling and Mockups	Students will design models and mockups of CAD designed projects.	Students will understand the importance of mockups and model in the design model. Students will understand how mockups and models can helps solve problems not recognized on the computer.	What do mockups or models allow designers to do? How do mockups and models aid in final production of a project?

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Engineering Architectural Design Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Lines	Students will perform effectively drawing all drafting lines.	<p>Students will understand how line types are used to define a drawing.</p> <p>Students will understand correct use of line types is essential in creating a working drawing.</p>	<p>How do line types affect the actual drawing?</p> <p>How important is it to use to correct line in the correct application?</p>
Architectural Styles	Students will apply architectural styles to home designs.	<p>Students that understand that different regions and different time periods created different architectural styles.</p> <p>Students will understand the differences between architectural styles.</p>	<p>Can architectural styles be combined on one project?</p> <p>Is one architectural style better than another?</p>
Space Planning and Layout	Students will apply proper room size and layout to a floor plan.	<p>Students will understand the importance of proper planning and layout.</p> <p>Students will understand that proper living space and flow to a home plan is essential.</p>	<p>How can poor layout effect a home?</p> <p>How will out of proportion room sizes affect the living space of a home?</p>
CAD Design	Students will design home floor plans and houses using CAD programs.	<p>Students will understand the benefits of using CAD design programs.</p> <p>Students will understand that different CAD program have different functions and features.</p>	<p>Is CAD design essential in designing a house?</p> <p>Why use CAD?</p>
Modeling	Students will design models of CAD designed projects.	Students will understand the importance modeling in the design model.	What do models allow designers to do?

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Materials and Processes Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Lab Safety	<p>Students will apply safety techniques to wood manufacturing projects.</p> <p>Students will self-assess possible safety hazards in the woods lab.</p>	<p>Students will understand that safety procedures are important.</p> <p>Students will understand the proper selection of a tool will affect safety and efficiency.</p>	<p>How does the proper selection and setup of a tool affect your health and well-being?</p>
Materials	<p>Students will apply knowledge to identify materials used in the manufacturing industries.</p>	<p>Students will understand how material are used in different industries.</p> <p>Students will understand materials can be altered to meet the needs of the application.</p>	<p>How can materials be used in improving product design?</p> <p>Do materials determine the product or does the product determine the material used?</p>
Woodworking Hand Tools	<p>Students will apply the use of the correct hand tool for a given application.</p> <p>Students will apply hand tool knowledge to complete projects.</p>	<p>Students will understand how to choose the correct hand tool for a given application.</p> <p>Students will understand that every hand tool has its limitations.</p>	<p>How important is it to choose the correct tool for the job at hand?</p> <p>How important is it to know the names of each hand tool?</p>
Woodworking Power Tools and Machines	<p>Students will apply the use of correct power tool and/or machine for a given application.</p> <p>Students will apply power tool or machine knowledge to complete projects.</p>	<p>Students will understand how to choose the correct power tool and/or machine for a given application.</p> <p>Students will understand that even power tools and or/machines have limitations.</p>	<p>How important is it to choose the correct tool for the job at hand?</p> <p>How important is it to know the names of each power tool and/or machine?</p>
Manufacturing Processes	<p>Students will demonstrate manufacturing processes while completing projects.</p> <p>Students will apply manufacturing processes used in industry.</p>	<p>Students will understand how manufacturing processes are essential to producing goods.</p> <p>Students will understand that manufacturing processes are continually changing.</p>	<p>How can manufacturing processes change the outcome of a product?</p> <p>What changes in manufacturing are in the foreseeable future?</p>

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Metals I Grades 9 -12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Lab Safety	<p>Students will apply safety techniques to metal manufacturing projects.</p> <p>Students will self-assess possible safety hazards in the metals lab.</p>	<p>Students will understand that safety procedures are important.</p> <p>Students will understand the proper selection of a tool will affect safety and efficiency.</p>	<p>How does the proper selection and setup of a tool affect your health and well-being?</p>
Measure and Layout	<p>Students will perform effectively measurements down to 1 one thousandths of an inch.</p> <p>Students will self-assess proper layout of several projects.</p>	<p>Students will understand that safety procedures are important.</p> <p>Students will understand the proper selection of a tool will affect safety and efficiency.</p>	<p>Why is proper measurement and layout the key to a project?</p> <p>What are the effects of not knowing how to properly lay a project out?</p>
Hand Tools	<p>Students will apply the correct hand tool to use for a given application.</p> <p>Students will apply hand tool use to projects.</p>	<p>Students will understand how to choose the correct hand tool for a given application.</p> <p>Students will understand that every hand tool has its limitations.</p>	<p>How important is it to choose the correct tool for the job at hand?</p> <p>How important is it to know the names of each hand tool?</p>
Machining	<p>Students will apply proper machining techniques to complete metalworking projects.</p> <p>Students will apply proper speeds, feeds, and cutting operations to various metal projects.</p>	<p>Students will understand proper machining of parts is essential to metal working.</p>	<p>What are the consequences of not adhering to proper machining rules?</p>
Welding Processes	<p>Students will apply welding skills and techniques while practicing on plate steel.</p>	<p>Students will understand safety must be followed while welding.</p> <p>Students will understand how proper setup of equipment key to successful welding.</p>	<p>How can improper use of welding equipment jeopardize the safety of the lab?</p> <p>What are the outcomes of not following proper welding practices?</p>
Cutting Operations	<p>Students will perform effectively, various cutting operations while completing metalworking projects.</p>	<p>Students will understand that the proper choice for cutting materials critical when metalworking.</p>	<p>How can the choice of a cutting technique change the outcome of a project?</p>

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Metals II Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Lab Safety	<p>Students will apply safety techniques to metal manufacturing projects.</p> <p>Students will identify possible safety hazards in the metals lab.</p>	<p>Students will understand that safety procedures are important.</p> <p>Students will understand the proper selection of a tool will affect safety and efficiency.</p>	<p>How does the proper selection and setup of a tool affect your health and well-being?</p>
Measuring and Layout	<p>Students will perform effectively measurements down to 1 one thousandths of an inch.</p> <p>Students will demonstrate proper layout of several projects.</p>	<p>Students will understand how using the calipers and micrometers is essential for accurate work.</p> <p>Students will understand that proper layout techniques will determine the success of a project.</p>	<p>Why is proper measurement and layout the key to a project?</p> <p>What are the effects of not knowing how to properly lay a project out?</p>
Forging and Forming	<p>Students will perform effectively forging and forming operations.</p>	<p>Students will understand how metal reacts in a forge.</p> <p>Students will understand how to operate a forge and produce a project.</p>	<p>How does temperature affect the forming of metal?</p> <p>How is the selection of the correct metal to the outcome of the intended project?</p>
Machining	<p>Students will apply machining techniques to complete various projects</p>	<p>Students will understand proper machining of parts is essential to metal working.</p>	<p>What are the consequences of not adhering to proper machining rules?</p>
Advanced Welding Processes	<p>Students will apply welding skills and techniques while practicing on plate steel.</p>	<p>Students will understand safety must be followed while welding.</p> <p>Students will understand how proper setup of equipment key to successful welding.</p>	<p>How can improper use of welding equipment jeopardize the safety of the lab?</p> <p>What are the outcomes of not following proper welding practices?</p>
Cutting	<p>Students will perform effectively, various cutting operations while completing metalworking projects.</p>	<p>Students will understand that the proper choice for cutting materials critical when metalworking.</p>	<p>How can the choice of a cutting technique change the outcome of a project?</p>

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Woods I Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Wood Species	<p>Students will apply knowledge of wood species to their project.</p> <p>Students will self-assess what species is desired to complete a project.</p>	<p>Students will understand that different wood species will be affect the outcome a project.</p> <p>Students will understand that hardwood and softwood species come in a variety of grain types.</p>	<p>How does proper selection of wood species affect the outcome of a project?</p> <p>Can characteristics of different wood species be detrimental to certain projects?</p>
Woodworking Power Tools and Machinery	<p>Students will perform effectively the use of each power tool and machine.</p> <p>Students will apply safety rules to power tools and machines.</p>	<p>Students will understand that improper use of tool and machinery will have consequences.</p> <p>Students will understand that tools are designed for specific tasks.</p>	<p>How does the proper selection of a power or machine impact the safety of woodworking?</p> <p>Why is it important to completely understand the function and use of each machine?</p>
Joinery and Fasteners	<p>Students will apply the knowledge of joints and fasteners to their woodworking projects.</p> <p>Students will perform effectively the cutting process to create fine woodworking joints.</p>	<p>Students will understand how the use of the proper joint or fastener will affect the strength of their project.</p> <p>Students will understand that different joints are need in different situations.</p> <p>Students will understand that joints can enhance the strength and appearance of a project</p>	<p>How does the proper choice of a fastener affect the outcome of a project?</p> <p>If the wrong joint is used on a project what are the consequences?</p>
Finish and Staining	<p>Students will apply the proper techniques to stain and finish a project.</p>	<p>Students will understand that improper preparation to wood finishing can ruin a project.</p> <p>Students will understand that staining and applying finish takes technique.</p>	<p>How important is the preparation of the wood prior to finishing.</p> <p>What are the results of not knowing how to properly finish a project?</p>

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Woods II Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Project Design	<p>Students will apply knowledge of form and function of a project.</p> <p>Students will apply knowledge to project layout and material list.</p>	<p>Students will understand that project design and layout is the key to a project's success.</p>	<p>How can poor project design effect the outcome of a project?</p> <p>What is the consequences of not understanding project layout?</p>
Advanced Woodworking Techniques	<p>Students will apply previous learned techniques to advanced techniques.</p>	<p>Students will understand that there is more than one way to accomplish a finished project.</p> <p>Students will understand how to choose the proper technique for each situation.</p>	<p>How can knowing more than one technique to complete a step in a project aide in a better outcome on that project?</p>
Advanced Joinery	<p>Students will apply the knowledge of joints and fasteners to their woodworking projects.</p> <p>Students will perform effectively the cutting process to create fine woodworking joints.</p>	<p>Students will understand how the use of the proper joint or fastener will affect the strength and function of their project.</p> <p>Students will understand that different joints are need in different situations.</p> <p>Students will understand that joints can enhance the strength and appearance of a project.</p>	<p>How does the proper choice of a fastener affect the outcome of a project?</p> <p>If the wrong joint is used on a project what are the consequences?</p>

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Building Trades I Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Safety	Students will apply safety techniques to construction projects.	<p>Students will understand that safety procedures are important.</p> <p>Students will understand the proper selection of a tool will affect safety and efficiency.</p>	How does the proper selection and setup of a tool affect your health and well-being?
Project management	Students will self- assess the importance of math, project plans, and building regulations.	<p>Students will understand how math concepts and calculation affect the construction project.</p> <p>Students will understand that a project plan will determine the outcome of the project.</p> <p>Students will understand the impact of building regulation on a construction project.</p>	<p>If the concepts of construction project management is not adhered to how will this affect the outcome of the project?</p> <p>How important is math in a building project?</p>
Rough Carpentry	Students will identify and apply the proper techniques of rough carpentry	Students will understand rough carpentry is the foundation to all building projects.	How can mistakes on rough carpentry impact a building project?
Electrical	Students will apply electrical wiring concepts and skill to a building project.	Students will understand that proper wiring of a building project will affect the safety and function of the building.	How important is proper wiring to the safety and function of a building?
Plumbing/ HVAC	Students will apply plumbing and HVAC concepts and skills to a building project.	<p>Students will understand that plumbing and HVAC are essential components to the rough-in and finish of a construction project.</p> <p>Students will understand that if done improperly, plumbing and HVAC can be dangerous and incur large expenses to fix after the project is completed.</p>	<p>How important is plumbing and HVAC to the function and safety of the building?</p> <p>What are the ramification of an improperly plumbed building?</p> <p>What are the ramification of an improperly calculated HVAC unit?</p>
Finish Carpentry	Students will identify and apply the proper techniques of finish carpentry.	<p>Students will understand that finish carpentry takes technique.</p> <p>Students will understand that finish carpentry is a form of art.</p>	<p>How would a project turn out if the finish carpentry was improperly applied?</p> <p>What are the results of poor finish carpentry?</p>

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Building Trades II Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Cabinetry	Students will apply cabinetry skills to construction project.	Students will understand that a career in construction can mean many things.	Can wall application effect the style of the house?
Wall Applications	Students will select and apply wall treatments to a wall section	Students will understand that there are many different way to finish a wall. Students will understand how important technique is when finishing a wall.	Can wall application effect the style of the house?
Flooring Applications	Students will select and apply flooring treatments to a model wall section.	Students will understand that flooring can be applied in many different ways. Students will understand that not all floorings will work in all environments.	Can construction location determine flooring selection?
Careers	Students will self-assess that a career in construction can mean many things.	Students will understand what a career in construction can bring to them. Students will understand career in construction can be rewarding.	How does the economy affect a career in construction? What are the various careers in the construction industry? What is the advantages and disadvantages of a registered apprenticeship in the construction industry?

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Small Power Equipment Grades 9-12

Unit Theme	Unit Goal	Enduring Understandings For the Unit	Essential Questions For the Unit
Shop Safety and Orientation	Students will self-assess safety hazards that exist in the small power equipment lab and where to find equipment and tools.	Students will understand that safety procedures are important. Students will understand the hazards that exist in the while working in the lab.	How does the proper use of a tool affect your health and well-being? What are the ramifications of not following safety procedures?
Tool Identification	Students will perform effectively selecting the proper tool and using it in the small engines lab to perform a procedure.	Students will understand how to select the correct tool for a given application. Students will understand that every tool has a specific task it can perform.	How important is it to choose the correct tool for the job at hand? How important is it to know the names of each hand tool?
Operation Principles	Students will self-assess the principle of what makes an engine operate.	Students will understand why it takes a certain number of strokes to complete a cycle. Students will understand the primary differences between a 2 cycle and 4 cycle engine.	Is there an advantage of one type of engine over another?
Overhaul Procedures	Students will apply knowledge of an internal combustion engine to overhaul them.	Students will understand knowledge of specific measurements is crucial to overhauling an engine. Students will understand that following specific procedures in an order is necessary to complete and engine overhaul.	Why is it important to know specifics about and engine before overhauling it.
Troubleshooting and Tune-up Procedures	Students apply knowledge of engine and utilize troubleshooting techniques to assess what is the cause for an engine to run poorly.	Students will understand that troubleshooting leads to correct diagnosis. Students will understand that a complete understanding of an engine is necessary to troubleshooting a problem.	Why is it crucial to know all facets of an engine when troubleshooting engine problems?