

**Maine Department of Education
Career and Technical Education**

Machine Tool CIP: 48.0501
National Institute of Metalworking Skills (NIMS) Level 1
Intersections with
Maine College and Career Readiness-English Language Arts

Framework, Duties and Tasks	English Language Arts Standards (CCSS)	Criteria for Demonstration of Proficiency (possible but not required; must be determined at the District level)	Maine Learning Results – Guiding Principles And Career and Education Development (optional)
1. Job Planning and Management			
<p>a. Develop a process plan for a part requiring milling, drilling, turning, or grinding. Fill out an operation sheet detailing the process plan and required speeds and feeds.</p>	<p>WHST 2.11-12a: Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p>	<p>Process plan creation by student</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B6: A self-directed and lifelong learner who demonstrates reliability and concern for quality.</p> <p>C: A creative and practical problem solver who:</p> <p>1: Observes and evaluates situations to define problems</p> <p>2: Frames questions, makes predictions and designs data/information collection and analysis strategies</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p>
	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p>	<p>Reading plan and producing product</p>	

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			<ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
2. Manual Operations: Benchwork			
<ol style="list-style-type: none"> a. Hand drill and hand tap holes, using aluminum. b. Use hand drills, hand taps, tap wrench, files, scrapers, and coated abrasives to deburr parts. c. Use arbor presses to perform press fits. Use bench vises and hand tools appropriately. 	<p>RST 4.11.12: 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>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development,</p>	<p>Reading blueprint and understanding industry symbols for interpretation</p> <p>Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B: A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality

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	substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.		<p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	
3. Manual Operations: Layout			
a. Layout the location of hole centers and surfaces within an accuracy of +/- .015.	RST 4.11.12: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as	Reading blueprint and understanding industry symbols for interpretation	A2: A clear and effective communicator who uses evidence and logic appropriately in

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	<p>they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i>.</p> <p>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>	<p>Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation</p>	<p>communication</p> <p>B: A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality <p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines

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			4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
4. Turning Operations: Between Centers Turning			
a. Setup and carry out between centers turning operations for straight turning.	RST 4.11.12: 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> .	Reading blueprint and understanding industry symbols for interpretation	A2: A clear and effective communicator who uses evidence and logic appropriately in communication B: A self-directed and lifelong learner who: 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality C6: A creative and practical problem solver who uses information and technology to solve problems D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions E. An integrative and informed thinker who:
	SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.	Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation	
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	

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	information when possible.		<ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
5. Turning Operations: Chucking			
<p>a. Setup and carry out chucking operations for turning.</p>	<p>RST 4.11.12: 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>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development,</p>	<p>Reading blueprint and understanding industry symbols for interpretation</p> <p>Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B: A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality

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	<p>substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>	<p>Reading, demonstrating and testing on safety procedures associated with shop/tool operations</p>	<p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
6. Milling: Square Up a Block			
<p>a. Set up and perform squaring up the six surfaces of a block to within +/- .002 and .002 over 4.5" squareness.</p>	<p>RST 4.11.12: 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</p>	<p>Reading blueprint and understanding industry symbols for interpretation</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B: A self-directed and</p>

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	relevant to <i>grades 11-12 texts and topics</i> .		<p>lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality <p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction
	SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.	Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation	
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	

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			and influence of related parts on each other and on outcomes.
7. Vertical Milling			
a. Setup and operate vertical milling machines. Perform routine milling, and location of hole centers within +/- .005".	RST 4.11.12: 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> .	Reading blueprint and understanding industry symbols for interpretation	A2: A clear and effective communicator who uses evidence and logic appropriately in communication B: A self-directed and lifelong learner who: 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality C6: A creative and practical problem solver who uses information and technology to solve problems D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions E. An integrative and informed thinker who: 1. Gains and applies
	SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.	Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation	
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	

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			<p>knowledge across disciplines and learning context and to real-life situations with and without technology</p> <ol style="list-style-type: none"> 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
8. Surface Grinding, Grinding Wheel Safety			
<p>a. Ring test grinding wheels, perform visual safety inspection, mount and dress a grinding wheel in preparation for surface grinding.</p>	<p>RST 4.11.12: 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>Reading blueprint and understanding industry symbols for interpretation</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B: A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality
	<p>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development,</p>	<p>Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation</p>	

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	<p>substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>	<p>Reading, demonstrating and testing on safety procedures associated with shop/tool operations</p>	<p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
9. Surface Grinding, Horizontal Spindle, Reciprocating Table			
<p>a. Setup and operate manual surface grinders with a 8" and smaller diameter wheel. Perform routine surface grinding, location of surfaces, and squaring of</p>	<p>RST 4.11.12: 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</p>	<p>Reading blueprint and understanding industry symbols for interpretation</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B: A self-directed and</p>

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surfaces. Perform wheel dressing.	relevant to <i>grades 11-12 texts and topics</i> .		<p>lifelong learner who:</p> <ul style="list-style-type: none"> 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality <p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <ul style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction
	<p>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>	<p>Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation</p>	
	<p>RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>	<p>Reading, demonstrating and testing on safety procedures associated with shop/tool operations</p>	

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			and influence of related parts on each other and on outcomes.
10. Drill Press			
a. Setup and operate drill presses. Perform routine drill press operations.	RST 4.11.12: 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> .	Reading blueprint and understanding industry symbols for interpretation	A2: A clear and effective communicator who uses evidence and logic appropriately in communication B: A self-directed and lifelong learner who: 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality C6: A creative and practical problem solver who uses information and technology to solve problems D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions E. An integrative and informed thinker who: 1. Gains and applies
	SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.	Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation	
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	

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			<p>knowledge across disciplines and learning context and to real-life situations with and without technology</p> <ol style="list-style-type: none"> 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
11. CNC Programming			
<p>a. Using the principles of Cartesian coordinates develop a program for the manufacture of a simple part.</p>	<p>RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>	<p>Understanding technical writing (CAD, SolidWorks Master Cam, etc.)</p>	<p>A: A clear and effective communicator who:</p> <ol style="list-style-type: none"> 1. Demonstrates organized and purposeful communication in English and at least one other language. 2. uses evidence and logic appropriately in communication <p>B: A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 2. Applies knowledge to set goals and make informed
	<p>WHST 4.11-12: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>	<p>Writing script to produce a product</p>	

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	<p>L 6.11-12: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level: demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>	<p>Understanding code to write/ communicate in the industry</p>	<p>decisions</p> <p>3. Applies knowledge in new contexts</p> <p>5. Demonstrates flexibility including the ability to learn, unlearn and relearn</p> <p>6. Demonstrates reliability and concern for quality</p> <p>C. A creative and practical problem solver who:</p> <p>1: Observes and evaluates situations to define problems</p> <p>2. Frames questions, makes predictions and designs data/information collection and analysis strategies</p> <p>3. Identifies patterns, trends and relationships that apply to solutions</p> <p>4. Generates a variety of solutions, builds a case for a best response and critically evaluates the effectiveness of the response</p> <p>5. Sees opportunities, finds resources and seeks results</p> <p>6. Uses information and technology to solve problems</p> <p>7. Perseveres in challenging situations</p>
	<p>RST.2: Determine the central ideas or conclusions of a text: summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p>	<p>accuracy, and step by step coding using abbreviations</p>	
	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.</p>	<p>Referring to manuals for correct programming structure</p>	
	<p>WHST 5.11-12: Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>	<p>Editing and refining code to produce desired product</p>	

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			<p>D. A responsible and involved citizen who:</p> <ol style="list-style-type: none"> 1. Participates positively in the community and designs creative solutions to meet human needs and wants 2. Accepts responsibility for personal decisions and actions. <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines 4. Applies systems thinking to understand the interaction and influence of related parts on each other and on outcomes.
12. Part Inspection			
<p>a. Develop an inspection plan and inspect simple parts using precision tools and techniques. Prepare reports on the compliance of the parts.</p>	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results</p>	<p>Following inspection plan for</p>	<p>A: A clear and effective communicator who:</p> <ol style="list-style-type: none"> 1. Demonstrates organized and purposeful communication in English and at least one other

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	based on explanations in the text.		language. 2. uses evidence and logic appropriately in communication B: A self-directed and lifelong learner who: 1. Recognizes the need for information and locates and evaluates resources. 3. Applies knowledge in new contexts 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality C6: A creative and practical problem solver who uses information and technology to solve problems D3: A responsible and involved citizen who demonstrates ethical behavior and the moral courage to sustain it E. An integrative and informed thinker who: 2. Evaluates and synthesizes information from multiple sources 3. Applies ideas across disciplines
13. Process Control			
a. Follow a sampling plan. Inspect the samples for the required	N/A	N/A	N/A

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data. Enter the data on appropriate charts. Graph the data. Respond to the warning conditions indicated by the process charts.			
14. Process Adjustment – Single Part Production			
<p>a. Analyze the performance of a single-part production process. Formulate process adjustments or improvements where appropriate. Where appropriate, notify super-vision of the proposed adjustment and/or improvement. Where authorized, carry out the strategies for process adjustment and/or improvement</p>	<p>SL 1.11-12: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</p>	<p>Process of discovering mistakes and making improvement includes conversation and feedback from instructor and peers</p>	<p>A2: A clear and effective communicator who uses evidence and logic appropriately in communication</p> <p>B. A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 1. Recognizes the need for information and locates and evaluates resources 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 4. Demonstrates initiative and independence 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality <p>C. A creative and practical problem solver who:</p> <ol style="list-style-type: none"> 1. Observes and evaluates situations to define problems

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			<p>3. Identifies patterns, trends and relationships that apply to solutions</p> <p>6: Uses information and technology to solve problems</p> <p>D2: A responsible and involved citizen who accepts responsibility for personal decisions and actions</p> <p>E. An integrative and informed thinker who:</p> <p>1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology</p> <p>2. Evaluates and synthesizes information from multiple sources</p> <p>3. Applies ideas across disciplines.</p>
15. Participation in Process Improvement			
<p>a. Analyze as a member of a process team the performance of a production process. With the team formulate process adjustments or improvements where appropriate. Where appropriate, notify super-vision of the proposed adjustments and/or improvement. Where</p>	N/A	N/A	N/A

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authorized, carry out the strategies for process adjustment and/or improvement.			
16. General Housekeeping and Maintenance			
<p>a. Keep the duty station clean and safe for work. Keep the tools, workbenches, and manual equipment clean, maintained, and safe for work.</p>	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.</p> <p>RST 5.11-12: Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>RST 7.11-12: 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 10.11-12: By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.</p>	<p>Understanding OSHA safety rules and passing of test</p>	<p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D: A responsible and involved citizen who</p> <ol style="list-style-type: none"> 2. accepts responsibility for personal decisions and actions 3. Demonstrates ethical behavior and the moral courage to sustain it 6. Demonstrates awareness of personal and community health and wellness.

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17. Preventive Maintenance, Machine Tools			
<p>a. Inspect and assess the general condition of an assigned machine tool. Make routine adjustments as necessary and as authorized. Report problems to super-vision which are beyond the scope of authority. Carry out daily, weekly, and/ or monthly routine upkeep chores cited on checklists for a given machine tool.</p>	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.</p>	<p>Follows checklist and machine maintenance manuals for upkeep of shop area</p>	<p>B. A self-directed and lifelong learner who:</p> <p>4. Demonstrates initiative and independence</p> <p>C6: A creative and practical problem solver who uses information and technology to solve problems</p> <p>D: A responsible and involved citizen who</p> <p>2. accepts responsibility for personal decisions and actions</p> <p>3. Demonstrates ethical behavior and the moral courage to sustain it</p> <p>6. Demonstrates awareness of personal and community health and wellness.</p>
18. Tooling Maintenance			
<p>a. Inspect and assess the condition of tooling. Refurbish tooling where appropriate. Refer tooling for repair or regrind where appropriate.</p>	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.</p>	<p>Follows checklist and machine maintenance manuals for upkeep of shop area</p>	<p>B. A self-directed and lifelong learner who:</p> <p>4. Demonstrates initiative and independence</p> <p>C6: A creative and practical problem solver who uses information and technology to solve problems</p>
	<p>RST 4.11.12: Determine the meaning of symbols, key terms, and other domain-</p>	<p>Reading blueprint and understanding industry symbols for interpretation</p>	

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	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> .		D: A responsible and involved citizen who 2. accepts responsibility for personal decisions and actions 3. Demonstrates ethical behavior and the moral courage to sustain it 6. Demonstrates awareness of personal and community health and wellness.
	SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.	Taking classroom presentations (PPT) and teacher demonstrations then demonstrating the knowledge taught through project creation	
	RST 9.11-12: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	Reading, demonstrating and testing on safety procedures associated with shop/tool operations	
19. Machine Operations and Material Handling			
a. Carry out assigned responsibilities while adhering to safe practices in accordance with OSHA requirements and guidelines. Document safety activities as required.	RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.	Understanding OSHA safety rules and passing of test	C6: A creative and practical problem solver who uses information and technology to solve problems D: A responsible and involved citizen who 2. accepts responsibility for

Framework, Duties and Tasks	English Language Arts Standards (CCSS)	Criteria for Demonstration of Proficiency (possible but not required; must be determined at the District level)	Maine Learning Results – Guiding Principles And Career and Education Development (optional)
	<p>RST 5.11-12: Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p>RST 7.11-12: 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 10.11-12: By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.</p>		<p>personal decisions and actions</p> <p>3. Demonstrates ethical behavior and the moral courage to sustain it</p> <p>6. Demonstrates awareness of personal and community health and wellness.</p>
20. Hazardous Materials Handling and Storage			
<p>a. Handle and store hazardous materials as assigned while adhering to safe practices in accordance with OSHA and EPA requirements and guidelines. Document safety activities as required.</p>	<p>RST 3.11-12: Follow precisely a complex multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks: analyze the specific results based on explanations in the text.</p> <p>RST 5.11-12: Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p>	<p>Understanding OSHA safety rules and passing of test</p>	<p>B. A self-directed and lifelong learner who:</p> <p>3. Applies knowledge in new contexts</p> <p>4. Demonstrates initiative and independence</p> <p>7. Uses interpersonal skills to learn and work with individuals from diverse backgrounds.</p> <p>C. A creative and practical problem solver who:</p> <p>1: Observes and evaluates</p>

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	<p>RST 7.11-12: 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 10.11-12: By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.</p>		<p>situations to define problems</p> <ol style="list-style-type: none"> 3. Identifies patterns, trends and relationships that apply to solutions 5. Sees opportunities, finds resources and seeks results 6. Uses information and technology to solve problems 7. Perseveres in challenging situations <p>D: A responsible and involved citizen who</p> <ol style="list-style-type: none"> 1. Participates positively in the community and designs creative solutions to meet human needs and wants 2. accepts responsibility for personal decisions and actions 3. Demonstrates ethical behavior and the moral courage to sustain it 6. Demonstrates awareness of personal and community health and wellness. <p>E3: An integrative and informed thinker who applies ideas across disciplines</p>

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21. Career Planning			
<ul style="list-style-type: none"> a. Develop and explain a short-term career plan and résumé. b. Complete job application form and demonstrate interviewing skills. c. Demonstrate appropriate interpersonal skills in job performance evaluations, group communication and decision-making, and conflict resolution. d. Identify and explain the major departments or functions in a metalworking company and how they affect production units. e. Understand and explain employment rights and responsibilities in metalworking companies. 	<p>SL 1.11-12: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</p>	<p>Group projects, classroom collaboration and helping fellow students</p>	<p>A: A clear and effective communicator who:</p> <ul style="list-style-type: none"> 2. Uses evidence and logic appropriately in communication 3. Adjusts communication based on the audience <p>B. A self-directed and lifelong learner who:</p> <ul style="list-style-type: none"> 1. Recognizes the need for information and locates and evaluates resources 2. Applies knowledge to set goals and make informed decisions 3. Applies knowledge in new contexts 4. Demonstrates initiative and independence 5. Demonstrates flexibility including the ability to learn, unlearn and relearn 6. Demonstrates reliability and concern for quality 7. Uses interpersonal skills to learn and work with individuals from diverse backgrounds. <p>C. A creative and practical problem solver who:</p> <ul style="list-style-type: none"> 4. Generates a variety of solutions, builds a case for
	<p>WHST 4.11-12: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>	<p>Resume/cover letter writing</p>	
	<p>WHST 5.11-12: Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>	<p>Resume/cover letter writing</p>	

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			<p>a best response and critically evaluates the effectiveness of the response</p> <ol style="list-style-type: none"> 5. Sees opportunities, finds resources and seeks results 6. Uses information and technology to solve problems 7. Perseveres in challenging situations <p>D. A responsible and involved citizen who:</p> <ol style="list-style-type: none"> 2. Accepts responsibility for personal decisions and actions 3. Demonstrates ethical behavior and the moral courage to sustain it 4. Understands and respects diversity 6. Demonstrates awareness of personal and community health and wellness <p>E. An integrative and informed thinker who:</p> <ol style="list-style-type: none"> 1. Gains and applies knowledge across disciplines and learning context and to real-life situations with and without technology 3. Applies ideas across disciplines

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Other Overarching Potential Intersections			
	<p>WHST 10.11-12: By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.</p>	<p>Daily journal of activities maintained by each student</p>	<p>A: A clear and effective communicator who:</p> <ol style="list-style-type: none"> 1. Demonstrates organized and purposeful communication in English and at least one other language. 3. Adjusts communication based on the audience
	<p>WHST 2.b.11-12: Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p>	<p>Daily journal of activities maintained by each student</p>	
	<p>SL 4.11.12: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>	<p>Students complete inspections of work, discuss challenges w/ instructor or in group, and take corrective action for next time</p>	<p>B. A self-directed and lifelong learner who:</p> <ol style="list-style-type: none"> 4. Demonstrates initiative and independence 5. Demonstrates flexibility including the ability to learn, unlearn and relearn
	<p>SL 5.11-12: Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance</p>	<p>Students create plans and then defend/articulate them to the instructor or class</p>	

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	understanding of findings, reasoning, and evidence and to add interest.		
	SL 1.c.11-12: Propel conversations by posing and responding to questions that probe reasoning and evidence: ensure a hearing for a full range of positions on a topic or issue: clarify, verify or challenge ideas and conclusions: and promote divergent and creative perspectives.	Students complete inspections of work, discuss challenges w/ instructor, and take corrective action for next time	