



Spokane Public Schools Jewelry & Small Sculpture

Course: Jewelry and Small Sculpture	Total Framework Hours up to: 360 hours
CIP Code: 500713 <input checked="" type="checkbox"/> Exploratory <input type="checkbox"/> Preparatory	Date Last Modified: 5/14/2015
Career Cluster: Arts A/V Tech & Communications	Cluster Pathway: Visual Arts

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Elements of Art and Principles of Design

Students demonstrate their competency by: intentionally incorporating the elements of art and principles of design with metal working and fabrication to create “wearable art” with a minimum of 3 pieces of jewelry or small sculpture applying cutting, forming, fastening, and /or finishing processes.

Leadership Alignment:

- Implement Innovations
- Reason Effectively
- Communicate Clearly
- Access and Evaluate Information
- Use and Manage Information
- Manage Goals and Time

Classroom Focus:

- Design and engineer projects soldering, hand fabrication, enameling (Implement Innovations)
- Project evaluations on all completed work (Reason Effectively, Communicate Clearly)
- Articulation of the intentional use of elements of art and principles of design (Reason Effectively, Communicate Clearly)
- Critique Elements of art and principles of design in personal work as well as work of others (Use and Manage Information, Access and Evaluate Information)
- Apply knowledge about metal arts along with elements of art and principles of design (Use and Manage Information)
- Assist others in applying new knowledge of skills (Communicate Clearly)
- Develop project ideas for passing the torch and ink art space emerging artists gallery (Reason Effectively, Manage Goals and Time)

Community Focus:

- Passing the Torch state-level competition
Students manage goals and time when they plan and meet deadlines to prepare for and send work to competition
- Artist gallery show – Teen Emerging Art Show
Students implement innovations when they design and collaborate on projects for community art shows
Students reason effectively when they work through solutions to problems planning community projects
Students communicate effectively when they promote events and invite participants to display in shows
Students use and manage information when they document artwork and plan for shows

Standards and Competencies

Standard/Unit: C-3 Demonstrate art and design knowledge in jewelry and metals arts

Competencies

Total Learning Hours for Unit: 80 hours

- C-3.1 Students demonstrate knowledge of elements of art
- C-3.2 Students demonstrate knowledge of the principles of design.
- C-3.3 Students explore creativity through applying the various elements of art and principle of design in novel, but intentional ways.

Aligned Washington State Standards

Arts	GLE: 1.1.1 Creates, analyzes, and evaluates the element line when producing a work of art. GLE: 1.1.4 Creates, analyzes, and evaluates the element texture when producing a work of art. GLE: 1.1.5 Creates, analyzes, and evaluates the element space when producing a work of art. GLE: 1.1.7 Creates, analyzes, and evaluates repetition/pattern, contrast, variety, balance, movement/rhythm, proportion, emphasis/dominance, and harmony/unity in a work of art.
Educational Technology	1.1 Innovate: Demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology 1.3 Investigate and think critically: Research, manage and evaluate information and solve problems using digital tools and resources

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Students demonstrate their competency by: completing projects, exhibiting process purpose and function, and reflecting on personal growth through self/group evaluation both verbally and in writing.

Leadership Alignment:

- Work Creatively with Others
- Collaborate with Others
- Adapt to Change
- Interact Effectively with Others
- Work Effectively with Diverse Teams
- Produce Results
- Guide and Lead Others
- Work Independently

Classroom Focus:

- Lost Wax Casting (Work Creatively with Others, Adapt to Change, Work Effectively with Diverse Teams)
- Stone Setting (Work Independently, Produce Results)
- Hand Fabrication (Adapt to Change, Produce Results, Work Independently)

- Act as a team lead in guiding work in groups and shop management (Guide and Lead Others, Produce Results)
- Multi-task on more than one project at a time and work in a non-linear manner in all projects.
- Explore new ideas in connection with new tools and technologies.
- Completion of projects and assisting others to do the same on all projects, meet deadlines for projects and events.

Community Focus:

- Passing the Torch – state-level competition
Students work independently to plan and prepare work for competition
Students work effectively in diverse teams preparing designs and art for shows
Students produce results meeting deadlines and preparing work for competition
- Artists Gallery Show – Teen Emerging Art Show
Students work creatively, collaborate, and interact with others when they work with local businesses and community to plan and implement events

Standards and Competencies

Standard/Unit: C-4 Demonstrate positive work behaviors

Enduring Understanding for every jewelry lab student: “Understanding and correctly performing the processes and procedures in the jewelry lab make me a more confident job seeker and employee in the jewelry making industry.

Competencies

Total Learning Hours for Unit: 20 hours

- C-4.2 Explain the importance of following workplace etiquette/protocol
- C-4.3 Demonstrate willingness to learn and further develop skills
- C-4.4 Demonstrate self-management skills
- C-4.7 Show initiative by coming up with unique solutions and taking on extra responsibilities
- C-4.8 Explain the importance of setting goals and demonstrate the ability to set, reach, and evaluate goals
- C-4.9 Explain the importance of taking pride in work accomplished and extrinsic and intrinsic motivators that can be used to increase pride
- C-4.10 Value the importance of professionalism, including reliability, honesty, responsibility, and ethics

Aligned Washington State Standards

Speaking and Listening	SL 9-12.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
	SL 9-12.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grades 11–12 topics, texts, and issues</i> , building on others’ ideas and expressing their own clearly and persuasively. A. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. B. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Student will Demonstrate competency by: completing written and performance assessments on general lab safety as well as specific tool or procedural safety guidelines with 100% accuracy.

Leadership Alignment:

- Make Judgments and Decisions

Classroom Focus:

- Maintain product safety information
- Improve PPE practices

Standards and Competencies

Standard/Unit: C-6 Demonstrate health and safety practices

Safety Enduring Understandings – General and Specific Shop Procedures

Enduring Understanding for every jewelry lab user: “Conducting myself according to safety guidelines and training is the number 1 priority in the jewelry shop.”

Competencies

Total Learning Hours for Unit: 40 hours

C-6.1	Identify, describe and demonstrate the effective use of Material Safety Data Sheets (MSDS)
C-6.2	Read chemical, product, and equipment labels to determine appropriate health and safety considerations
C-6.3	Identify, describe and demonstrate personal, shop and job site safety practices and procedures
C-6.4	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
C-6.5	Illustrate appropriate safe body mechanics, including proper lifting techniques and ergonomics
C-6.6	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
C-6.7	Demonstrate the safe use, storage, and maintenance of every piece of equipment in the lab, shop, and classroom
C-6.8	Describe safety practices and procedures to be followed when working with and around electricity
C-6.10	Demonstrate proper workspace cleaning procedures (5S or other)
C-6.11 TL	Audit and update Material Safety Data Sheets (MSDS)
C-6.12 TL	Maintain and improve proper workspace cleaning procedures (5S or other)
C-6.13TL	Demonstrate the safe storage and maintenance of every piece of equipment in the lab.

Aligned Washington State Standards

Reading	RST 9-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
	RST 9-12.6	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
	RST 9-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
	RST 9-12.9	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.
Speaking and Listening	SL 9-12.1	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. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful,

	<p>well-reasoned exchange of ideas.</p> <p>b. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.</p>
SL 9-12.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
SL 9-12.4	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.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

The student will exhibit competence by creating business related documents (i.e. resumes, letter of introduction, personal information sheet, portfolios) and business records through assessments (formative and summative).

Leadership Alignment:

- Create Media Products
- Be Responsible to Others
- Use Systems Thinking
- Analyze Media (validity of online career information)

Classroom Focus:

- Students will be responsible to others when students accept the role of team lead in guiding, work in groups and shop management (Be Responsible to Others, Use Systems Thinking)
- Students will use systems thinking when they plan class production processes and continuous improvement projects (Be Responsible to Others, Use Systems Thinking)
- Students will create media products to promote community shows and celebrate competitions (Be Responsible to Others, Use Systems Thinking)
- Students will analyze media when they consider the validity of information obtained through research

Community Focus:

- Artists Gallery – Teen Emerging Art Show
Students create media products to promote shows in the community

Standards and Competencies

Standard/Unit: C-10 Careers/Business Practices

Enduring Understanding: *“Skills and competencies in business communication I learn in the present become the personal assets I have to offer employers in the future.”*

Competencies

Total Learning Hours for Unit: 40 hours

- C-10.1 Students receive an overview of career and post-secondary training in the jewelry/metals industry and the requirements and skills needed to pursue career options
- C-10.2 Students learn skills applicable to other industries (dental work, manufacturing, etc.)
- C-10.4 Understand business ethics
- C-10.6 Elements of art/principles of design

Aligned Washington State Standards

Educational Technology	<p>1.2 Collaborate: Use digital media and environments to communicate and work collaboratively to support individual learning and contribute to the learning of others</p> <p>1.3 Investigate and think critically: Research, manage and evaluate information and solve problems using digital tools and resources</p> <p>2.4 Adapt to Change: Transfer current knowledge to new and emerging technologies</p>
Reading	<p>RST 9-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> <p>RST 9-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.</p> <p>RST 9-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST 9-12.9 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>
Speaking and Listening	<p>SL 9-12.1 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>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>b. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.</p> <p>d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.</p> <p>SL 9-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p>SL 9-12.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.</p> <p>SL 9-12.4 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>
Writing	<p>WHST 9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p>

COMPONENTS AND ASSESSMENTS

Performance Assessments:

As in other units, students will express their knowledge and understanding of the wide variety of manual and power tools through correctly performing the process for which the tools are used as well as explaining in written forms what tools are used for what process and how they are properly used. These written formats will consist of, but not necessarily be limited to: Formative: 1) self-evaluations of completed projects, Summative: 2) test and quizzes. Formative/Summative: 3) demonstration of proper use of hand and power tools to complete specific tasks and assigned projects.

Leadership Alignment:

- Be Self-Directed Learners

Classroom Focus:

- Explore new ideas in connection with new tools and technologies

Community Focus:

- Passing the Torch – state-level competition
Students will demonstrate self-directed learning when they prepare work for judged competitions
- Artists Gallery Show – Teen Emerging Artist
Students will demonstrate self-directed learning when they prepare work for community shows

Standards and Competencies

Standard/Unit: C-12 Tools

Competencies

Total Learning Hours for Unit: 60 hours

C-12.1 Hand tools – pliers, hammers, saws, files, etc.

C-12.2 Power tools – flexible shaft, polishing wheel, drill press, bench grinder, etc.

C-12.3 Heat source tools – torches, kiln, soldering iron, alcohol lamp, wax pen, etc.

C-12.4 Other tools – rolling mill, centrifugal caster

MNC10.01 Describe and employ technical skills and knowledge required for careers in manufacturing in order to perform basic workplace activities common to manufacturing activities common to manufacturing.

MNPB01.01 Recognize and correct production processes to assure that products meet production quality standards.

MNPB02.01 Maintain equipment, tools and workstations to provide a safe working environment and meet company regulations.

SCPA10.02 Develop processes and concepts for the use of technology which model technical competence.

SCPA10.02.03 Safely operate a variety of tools, machines, and equipment (e.g. milling machines, rapid prototyping machines, drill press, band saw, CNC machines, and hand tools).

SCPA10.02.04 Use, handle, and store tools and materials correctly, perform preventative maintenance, understanding the results of negligence and improper maintenance or improper calibration.

Aligned Washington State Standards

Reading

RST 9-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

RST 9-12.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

RST 9-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

Speaking and Listening

SL 9-12.1 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.

a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

b. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed.

d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Unit Assessment: Students will express their knowledge of safe soldering in writing through tests and quizzes. They will also demonstrate on request the proper procedure to solder metal safely. In addition, they will be able to explain by demonstration, verbally, and in writing the artistic value of knowing how to solder metal together.

Unit Assessment: Students will be able to identify and explain in writing and verbally the basic physical properties of metal such as: malleability, ductility, conductivity (thermal and electrical), density, melt point, tensile strength, work hardening and annealing, oxidation, plastic deformation, and alloying. Student will further demonstrate the ability to apply these properties in the creation of their projects.

Unit Assessment: As in other units, students will express their knowledge and understanding of several fabrication processes, and the wide variety of manual and power tools used to complete those processes through successful completion of projects, and in written forms that will consist of, but not necessarily be limited to: 1) self- evaluations of completed projects, and 2) test and quizzes. The assessment of this unit will be completed together with the assessment of Unit 3. While the assessment of Unit 3 focuses upon the safe use of manual and power tools, a portion of the assessment for this unit relates to the learner demonstrating understanding and application of using “the right tool for the right job” to successfully perform a task.

Leadership Alignment:

- Think Creatively
- Solve Problems
- Adapt to Change
- Work Effectively with Diverse Teams
- Manage Projects
- Produce Results

Classroom Focus:

- Sawing Project, Soldering Project (Think Creatively, Solve Problems, Adapt to Change)
- Soldering and hand fabrication application of the property of metals (Think Creatively, Solve Problems, Adapt to Change)
- Multi-task on more than one project at a time and work in a non-linear manner in all projects (Adapt to Change)
- Completion of projects and assisting others to do the same on all projects meet deadlines for projects and events (Adapt to Change, Manage Projects, Produce Results)
- Students will work in teams to complete classroom projects (Work Effectively with Diverse Teams, Manage Projects, Produce Results)

Community Focus:

- Passing the Torch – state-level competition
Students will think creatively, solve problems, manage projects, produce results when the design projects for competition
- Artists Gallery Show – Teen Emerging Art Show
Students will think creatively, solve problems, manage projects, produce results when they design and develop work and plan displays for community shows

Standards and Competencies

Standard/Unit:

C-13 Engineering Design and Basic Fabrication Processes/Procedures

Soldering is a process that is very useful and versatile in making jewelry.

The soldering process is one that requires my constant attention to safety guidelines and procedural sequence to be successful

“Knowing the various properties of metal and how they interact will keep me safe as well as help prevent damage to pieces as I create jewelry projects.”

“Knowing the interaction of the physical properties of metal allows me to explore new artistic ways to express my ideas as I make jewelry.”

Fabrication, the direct manipulation of metal with the use of tools and equipment, is another 'entry point' for the creation of jewelry."

Competencies

Total Learning Hours for Unit: 40 hours

- C-13.1 Using hand tools – sawing, filing, sanding , burnishing
- C-13.2 Soldering – torch and iron
- C-13.3 Finishing – sanding, steel wool, buffing
- C-13.4 Forging
- C-13.5 Shaping & Forming – i.e. rolling mill, drawplate, stamping, disc cutting, dapping, doming
- C-13.6 Surface treatment – i.e. patinas, etching, texturing
- C-13.7 Cold joining – rivets, epoxy, etc.
- C-13.8 Bezel settings

MNC10.01 Describe and employ technical skills and knowledge required for careers in manufacturing in order to perform basic workplace activities common to manufacturing activities common to manufacturing.

MNPB01.01 Recognize and correct production processes to assure that products meet production quality standards.

MNPB02.01 Maintain equipment, tools and workstations to provide a safe working environment and meet company regulations.

SCPA10.01 Apply concepts and processes for the application of technology to engineering.

SCPA10.01.01 Use knowledge, techniques, skills, and modern tools necessary for engineering practice.

SCPA10.01.02 Describe the elements of good engineering practice

SCPA10.01.03 Demonstrate the ability to characterize a plan and identify the necessary engineering tools that will produce a technical solution when given a problem statement.

SCPA10 01 04 Effectively use project management techniques

SCPA10.02 Develop processes and concepts for the use of technology which model technical competence.

SCPA10.02.03 Safely operate a variety of tools, machines, and equipment (e.g. milling machines, rapid prototyping machines, drill press, band saw, CNC machines, and hand tools).

SCPA10.02.04 Use, handle, and store tools and materials correctly, perform preventative maintenance, understanding the results of negligence and improper maintenance or improper calibration.

SCPA11.01 Know the elements of the processes and concepts for understanding the design process.

SCPA11.01.01 Explain why and how the contributions of great innovators are important to society.

SCPA11.01.02 Explain the elements and steps of the design process and tools or techniques that can be used for each step.

SCPA11.01.03 Describe design constraints, criteria, and trade-offs in regard to variety of conditions

SCPA11.02 Develop processes and concepts to apply the design process.

SCPA11.02.01 Apply the design process, including understanding customer needs, interpreting and producing design constraints and criteria, planning and requirements analysis, brainstorming and idea generation, using appropriate modeling and prototyping, testing, verification, and implementation.

SCPA11.02.02 Demonstrate the ability to evaluate a design or product and improve the design using testing, modeling, and research.

SCPA11 02 03 Demonstrate the ability to record and organize information and test data Demonstrate the ability to record and organize information and test data during design evaluation.

Aligned Washington State Standards

Arts	<p>A 1.1 Creates, experiences, analyzes, and evaluates artworks and/or performances in dance, music, theatre, and visual arts using arts concepts and vocabulary.</p> <p>A 1.2 Applies, examines, practices, analyzes, and refines arts skills and techniques in dance, music, theatre, and visual arts.</p> <p>A 1.3 Creates, experiences, examines, analyzes, and evaluates artworks and performances based on arts genres and styles of various artists, cultures, and times.</p> <p>A 2.3 Experiences, practices, analyzes, evaluates, and applies a responding process structure to an arts performance and/or presentation.</p>
Math	<p>HSN-QA.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.</p> <p>HSN-QA.2 Define appropriate quantities for the purpose of descriptive modeling.</p> <p>HSN-QA.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p>
Reading	<p>RST 9-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.</p> <p>RST 9-12.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.</p> <p>RST 9-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p> <p>RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</p> <p>RST.11-12.9 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>
Science	<p>HS-PS 1.1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.</p> <p>HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.</p>

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Unit Assessment: Because the Lost Wax Casting Process is a multi-staged process and takes time to complete, students will be assessed in the overall process at the completion of the various stages (Formative Assessment). Once they have gained a global understanding, they will be tested over the entire process (Summative Assessment). In most cases, assessments will be done with paper and pen, however, in some cases assessment will be done by demonstrating the proper procedure for performing a task. Always incorporated in any assessment will be the component of safe procedure (i.e. wearing safety glasses when performing the procedure).

Leadership Alignment:

- Apply Technology Effectively
- Manage Projects
- Produce Results

Classroom Focus:

- Use a variety of manual and power tools to effectively complete projects in casting computer aided design tooling and finishing various projects (Apply Technology Effectively)
- Completion of projects and assisting others to do the same on all projects meet deadlines for projects and events (Manage Projects, Produce Results)

Community Focus:

- Passing the Torch – state-level competition
Students will apply technology effectively to produce work for competition
Students will manage projects and produce results to complete work on time for competition
- Artists Gallery Show – Emerging Teen Artist
Students will manage projects and produce results when planning and preparing for shows in the community

Standards and Competencies**Standard/Unit: C-14 Basic Casting Processes and Procedures****Competencies****Total Learning Hours for Unit: 40 hours**

C-14.1 Techniques and processes

- MNC10.01 Describe and employ technical skills and knowledge required for careers in manufacturing in order to perform basic workplace activities common to manufacturing activities common to manufacturing.
- MNPB01.01 Recognize and correct production processes to assure that products meet production quality standards.
- MNPB02.01 Maintain equipment, tools and workstations to provide a safe working environment and meet company regulations.

Aligned Washington State Standards

Arts	A 1.2 Applies, examines, practices, analyzes, and refines arts skills and techniques in dance, music, theatre, and visual arts. A 1.3 Creates, experiences, examines, analyzes, and evaluates artworks and performances based on arts genres and styles of various artists, cultures, and times. A 2.3 Experiences, practices, analyzes, evaluates, and applies a responding process structure to an arts performance and/or presentation.
Math	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.
Reading	RST 9-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST 9-12.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved. RST 9-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
Science	HS-PS3-4 Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of

		different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).
Social Studies		
Speaking and Listening	SL 9-12.1	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. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
	SL 9-12.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
	SL 9-12.3	Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
	SL 9-12.4	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.

COMPONENTS AND ASSESSMENTS

Performance Assessments:

Unit Assessment: Because the Lost Wax Casting Process is a multi-staged process and takes time to complete, students will be assessed in the overall process at the completion of the various stages (Formative Assessment). Once they have gained a global understanding, they will be tested over the entire process (Summative Assessment). In most cases, assessments will be done with paper and pen, however, in some cases assessment will be done by demonstrating the proper procedure for performing a task. Always incorporated in any assessment will be the component of safe procedure (i.e. wearing safety glasses when performing the procedure).

Leadership Alignment:

- Apply Technology Effectively
- Produce Results
- Work Independently

Classroom Focus:

- Use a variety of manual and power tools to effectively complete projects in casting computer aided design tooling and finishing of various projects (Produce Results, Work Independently, Apply Technology Effectively)
- Completion of projects and assisting others to do the same on all projects meet deadlines for projects and events (Produce Results, Apply Technology Effectively)

Community Focus:

- Passing the Torch – state-level competition
Students will apply technology effectively when preparing work for competition
- Artists Gallery Show – Teen Emerging Art Show
Students will produce results when completing work for community shows

Standards and Competencies

Standard/Unit: A-4 Casting

There are many 'entry points' for creating jewelry, wearable works of art. Casting is one of those entry points.

Competencies

Total Learning Hours for Unit: 40 hours

- A-4.1 Cast in place gems
- A-4.2 Sand/Cuttlefish casting
- A-4.3 Vacuum lost wax casting
- A-4.4 Centrifugal casting
- A-4.5 Investment techniques
- A-4.6 Proper sprucing
- A-4.7 Reproduction techniques

MNPB04.01 Employ production process audits and inspections to maintain quality and encourage continuous improvement.

MNPB04.01.01 Perform periodic internal quality audits using company audit procedures.

MNPB04.01.02 Check calibration of gauges and other data collection equipment.

MNPB04.01.03 Recommend process improvements based upon audits and inspections.

MNPB04.01.04 Inspect materials at all stages of process to determine quality or condition.

MNPB04.01.05 Document the results of quality testing using reliable data.

MNPB04.01.06 Adjust processes to restore or maintain quality based on data from audit or inspection reports.

MNPB08.01 Produce a product that satisfies a customer's desires to demonstrate the relationship between production processes and meeting customer needs.

MNPB08.01.02 Verify that needed resources are available for the production process.

MNPB08.01.04 Monitor fabrication of the product using process control data.

MNPB08.01.05 Inspect the product to verify that it meets specifications

Aligned Washington State Standards

Arts	A 1.2 Applies, examines, practices, analyzes, and refines arts skills and techniques in dance, music, theatre, and visual arts.
Educational Technology	1.1 Innovate: Demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology 1.3 Investigate and think critically: Research, manage and evaluate information and solve problems using digital tools and resources 2.4 Adapt to Change: Transfer current knowledge to new and emerging technologies
Math	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.
Reading	RST 9-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics. RST 9-12.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

	RST 9-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
Science	HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).
Speaking and Listening	SL 9-12.1	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. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision making, set clear goals and deadlines, and establish individual roles as needed. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
	SL 9-12.2	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
	SL 9-12.4	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.

21st Century Skills

Check those that students will demonstrate in this course:

<p>LEARNING & INNOVATION</p> <p>Creativity and Innovation</p> <p><input checked="" type="checkbox"/> Think Creatively</p> <p><input checked="" type="checkbox"/> Work Creatively with Others</p> <p><input checked="" type="checkbox"/> Implement Innovations</p> <p>Critical Thinking and Problem Solving</p> <p><input checked="" type="checkbox"/> Reason Effectively</p> <p><input checked="" type="checkbox"/> Use Systems Thinking</p> <p><input checked="" type="checkbox"/> Make Judgments and Decisions</p> <p><input checked="" type="checkbox"/> Solve Problems</p> <p>Communication and Collaboration</p> <p><input checked="" type="checkbox"/> Communicate Clearly</p> <p><input checked="" type="checkbox"/> Collaborate with Others</p>	<p>INFORMATION, MEDIA & TECHNOLOGY SKILLS</p> <p>Information Literacy</p> <p><input checked="" type="checkbox"/> Access and /evaluate Information</p> <p><input checked="" type="checkbox"/> Use and Manage Information</p> <p>Media Literacy</p> <p><input checked="" type="checkbox"/> Analyze Media</p> <p><input checked="" type="checkbox"/> Create Media Products</p> <p>Information, Communications and Technology (ICT Literacy)</p> <p><input checked="" type="checkbox"/> Apply Technology Effectively</p>	<p>LIFE & CAREER SKILLS</p> <p>Flexibility and Adaptability</p> <p><input checked="" type="checkbox"/> Adapt to Change</p> <p><input checked="" type="checkbox"/> Be Flexible</p> <p>Initiative and Self-Direction</p> <p><input checked="" type="checkbox"/> Manage Goals and Time</p> <p><input checked="" type="checkbox"/> Work Independently</p> <p><input checked="" type="checkbox"/> Be Self-Directed Learners</p> <p>Social and Cross-Cultural</p> <p><input checked="" type="checkbox"/> Interact Effectively with Others</p> <p><input checked="" type="checkbox"/> Work Effectively in Diverse Teams</p> <p>Productivity and Accountability</p> <p><input checked="" type="checkbox"/> Manage Projects</p> <p><input checked="" type="checkbox"/> Produce Results</p> <p>Leadership and Responsibility</p> <p><input checked="" type="checkbox"/> Guide and Lead Others</p> <p><input checked="" type="checkbox"/> Be Responsible to Others</p>
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