

# Art Metal 11

**District Name:** **Mission**  
**District Number:** 75

**Developed by:** Wolfgang Schrottner; Adapted by Dale Imlah  
**School Name:** Hatzic Secondary  
**Principal's Name:** Mike Malfesi

**Board/Authority Approval Date:** December 14, 2004

**Board/Authority Signature:** \_\_\_\_\_

**Course Name:** Art Metal  
**Grade Level of Course:** 11  
**Number of Course Credits:** 4  
**Number of Hours of Instruction:** 120

**Prerequisite(s):** None

**Special Training, Facilities, or Equipment Required:** Fully equipped metal shop including: foundry with accessories and safety suits, centrifugal caster, wax burn-out oven, and welding equipment (oxy-acetylene, stick, and wire feed). Lapidary and stained glass equipment is recommended to further enhance the course and opportunities for students. Teacher will need to possess qualifications from a training institute for technology education (BCIT).

## Rationale

This course has been developed to help students understand, appreciate and learn the use of metal to pursue various forms of artistic and aesthetic expressions through hands on applied learning. Students will learn to use and to apply sound problem solving practices, to design and to produce artistic and aesthetically pleasing artefacts, to appreciate the knowledge received from past generations, to research new techniques and design ideas. They will use the machines and hand tools found in a metal shop to express their individual originality while working with metals.

## Course Synopsis

Students will gain an understanding and an appreciation of the various forms of artistic and aesthetic expressions while using metals through hands on applied learning. Students will learn to apply problem-solving practices to produce artistic artefacts in the metal shop. Work procedures and shop routines will be taught and demonstrated as needed to ensure a safe work environment. Shop skills will be taught with an emphasis on safe procedures.

The course material is presented in six units, the last four being divided into three sections each:

- Research and Experiment
- Personal Development
- Documenting and Communicating about the final product

Each unit is based on different materials, skills, and procedures.

### Research and Experiment:

In this section students will experiment with the material or the processes. Experimentation will explore the formation of ideas based on the unit, which can then be transferred to the personal development stage.

### Personal Development:

This part of the unit will encourage the personal development of ideas previously brainstormed.

### Documenting and communicating the final product:

Students will be expected to put their projects into context. This can be achieved through a class discussion on the topic studied, an exhibition in the school, or other means of communicating about their artwork.

**Organizational Structure:**

Unit	Title	Time
Unit I	Safety	10
Unit II	Problem Solving, Design, and Material	10
Unit III	Sheet Metal (Copper, Silver)	20
Unit IV	Welding, Brazing	15
Unit V	Forging	30
Unit VI	Lost Wax Casting	35
	Total	120 hrs

**Unit I: Safety**

**Time:** 10 hours, and throughout the course as needed.

Students will become familiar with basic safety concepts, first as they pertain to the general shop, as well as topic specific safety considerations. Machines, tools and chemicals used in this course will receive detailed attention.

**Curriculum Organizer: Technology**

It is expected that students will:

- Maintain an orderly and safe environment when engaged in a variety of activities.
- Select and safely use hand or machine tools to complete assigned activities.
- In all shop activities demonstrate safe work procedures and routines.

**Curriculum Organizer: Self in Society**

It is expected that students will:

- Demonstrate a positive attitude toward lifelong health and well being.
- Demonstrate a proper identification (WHMIS) and handling of hazardous materials.

**Unit II: Problem solving, Design, and Materials**

**Time:** 10 hours, and throughout the course as needed.

Students will become familiar with design parameters set by the limits of each metal encountered. They will follow an open ended design process which allows for improvement and change at almost every step. This unit also gives an opportunity to address different learning styles and intelligences.

**Curriculum Organizer: Elements and Principles**

It is expected that students will:

- Develop a vocabulary for the metal shop.
- Identify, describe, analyze, interpret, and make judgments about the basic elements and principles while using metal in the arts.

**Curriculum Organizer: Applied Problem Solving**

It is expected that students will:

- Analyze and use appropriate problem solving strategies and critical thinking when resolving the problems assigned.
- Use appropriate criteria and standards based on the project to assess and evaluate products, systems, and ideas.

**Curriculum Organizer: Personal, Social, cultural, and Historical Context**

It is expected that students will:

- Identify, describe, and analyze cultural and historical styles as represented by artists using metals in art.
- Critique a selected work of metal art, relating its content to the context in which it was created.
- Describe how a specific work of art supports/challenges specific beliefs, traditions, or responds to historical/contemporary issues.

**Unit III: Sheet Metal (Copper, Silver)**

**Time:** 20 hours

Students will become familiar with contemporary methods of hand forming silver, copper, and other related metals into useful and decorative objects. They will develop an appreciation for form and function. Concepts of time tested methods as well as more modern techniques will be explored. Students will produce artefacts that are functional and pleasing to the eye. At the end of the unit students will be expected to analyze and respond to sheet metal as an art form.

**Curriculum Organizer: Elements and Principles**

It is expected that students will:

- Create a sheet metal object that demonstrates awareness of the basic elements and principles of working with metal.
- Create a sheet metal object that demonstrates the use of strategies for developing an artistic image or idea.

**Curriculum Organizer: Technology**

It is expected that students will:

- Use appropriate technologies to explore sheet metal.
- Maintain an orderly and safe environment when working with sheet metal.
- Understand the properties of materials that come in sheet form i.e.: what happens when forces such as compression or tension is applied.

**Curriculum Organizer: Personal, Social, Cultural, and Historical Context**

It is expected that students will:

- Identify, describe, and analyze cultural and historical styles present in selected sheet metal artefacts.
- Critique a selected work of sheet metal art relating its content to the context in which it was created.
- Describe how a specific work made of sheet metal supports/challenges specific beliefs/traditions, or responds to historical/contemporary issues.

**Unit IV: Welding, Brazing**

**Time:** 15 hours

Students will become familiar with metal techniques that require surfaces to be fused together by welding or joined together by brazing. To conclude the unit, students will research trades that use welding and brazing as an every day skill.

**Curriculum Organizer: Technology**

It is expected that students will:

- Maintain an orderly and safe environment while welding
- Use appropriate techniques and technology when joining metals using an external heat source.

**Curriculum Organizer: Self in Society**

It is expected that students will:

- Demonstrate the willingness to work alone or in a group setting to produce an artefact which will require welding.
- Be able to understand how a skill learned in school can help them in the future.

**Curriculum Organizer: Personal, Social, Cultural, and Historical Context**

It is expected that students will:

- Create a welded structure that communicates their ideas.
- Identify, describe, and analyze cultural and historical styles as represented by selected metal artefacts.
- Critique a selected work of art relating its content to the context in which it was created.
- Describe how a specific work of art supports/ challenges specific beliefs/traditions, or responds to historical/contemporary issues.

**Curriculum Organizer: Communication**

It is expected that students will:

- Use effective communication skills when gathering and sharing information independently and in groups.
- Select appropriate information gathering and communication tools when solving problems related to welding and/or brazing.
- Use appropriate multimedia and information technology in presentations.

**Unit V: Forging**

**Time:** 30 hours

Students will become familiar in the art of manipulating and forming mild steel that is brought to a plastic state in a gas fired furnace. They will consider historical and contemporary styles to design their own project. They will also have a chance to take part in a class discussion addressing various aspects or messages expressed in selected forged metal artefacts.

**Curriculum Organizer: Technology**

It is expected that students will:

- Identify and evaluate the impact of forging on how problems were/are solved and work was/is done in a historical context.
- Maintain an orderly and safe environment when working with hot metals.

**Curriculum Organizer: Applied Problem Solving**

It is expected that students will:

- Identify and apply appropriate knowledge, skills, and attitudes when making choices while designing and working hot steel.
- Use appropriate criteria and standards to assess and evaluate selected forged artefacts.

**Curriculum Organizer: Expressing our Humanity**

It is expected that students will:

- Create a forged object expressing his/her ideas.
- Create a practical forged object to be used in a school setting.
- Examine the tension between public acceptance and personal expression in contemporary forgings.
- Identify, describe, analyze, interpret, and make judgments about how ideas, thoughts, feelings, or messages are communicated by a variety of artisans using forging.

**Unit VI: Lost Wax Casting**

**Time:** 35 hours

Students will become familiar with the ancient process of using a dispensable wax pattern to produce one of a kind artefact. Students will also study cultural and historic variations on the topic.

**Curriculum Organizer: Technology**

It is expected that students will:

- Use appropriate technologies when designing and producing cast rings, bracelets, etc.
- Maintain an orderly and safe environment when working with molten metals.

**Curriculum Organizer: Personal, Social, Cultural, and Historical Context**

It is expected that students will:

- Create a cast piece of jewelry that reflects an understanding of their culture.
- Identify, describe, and analyze cultural and historical styles as present in cast metal artefacts.
- Critique a selected work of art relating its content to the context in which it was created.
- Describe how a specific work of art supports/ challenges specific beliefs/traditions, or responds to historical/contemporary issues.
- Identify, describe, and analyze cultural or historical styles as present in selected cast jewelry.

**Instructional Components:**

- Direct instruction
- Indirect instruction
- Problem solving
- Brainstorming
- Video tapes
- Glossary of terms
- Analysis of historic and contemporary metal artefacts
- Unit specific analysis of artefacts
- Group projects
- Analysis of own and classmates' projects

**Assessment Components**

Forty percent (40%) of the final grade will be based on the instructor's evaluation in consultation with the student. This evaluation will be conducted throughout the course. It will focus mainly on developing personal ideas and getting to know new materials and skills.

Sixty percent (60%) of the grade will be based on the evaluation of the projects submitted by students, personal research projects, and the preparation required in exhibiting their work in the school.

**Formative Assessment (40%)**

Research and Experiment Review	10%
Personal Development Review	10%
End of Unit Quiz	10%
Safety Tests	10%

**Summative Assessment (60%)**

Unit Projects	30%
Research Assignment	15%
Documenting and Communicating Projects	<u>15%</u>
	100%

## Performance Assessment

- Project proposals
- Sketches
- Projects
- Portfolio
- Exhibition
- Research
- Quizzes
- Tests

## **Personal Communication**

- Group discussion
- Student/Teacher dialog
- Self Evaluation

## **Other**

- Weekly Assessment
- Teacher anecdotal records
- Teacher log

## **Learning Resources**

- Videos
- Art Metal Project Binder
- Books
  - General Metals, John L. Feirer
  - Machinery's Handbook, Industrial Press
  - Basic Metalwork Procedures, D.D. Casperson
  - The Complete Metalsmith, Tim McCreight