ART A244: METAL CASTING AND FORMING

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	100220 - Sculpture
Units	3 Total Units
Hours	108 Total Hours (Lecture Hours 27; Lab Hours 81)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

An introduction to various processes in metalworking for sculpture and industry. Activities will include direct and indirect techniques of developing wax models to be used in the lost wax metal casting process. Students will design unique sculptural forms which will be cast in metal using either plaster investment or ceramic shell molds. Students will fabricate metal forms using techniques of forging and forming. Course emphasis will be placed on the safe and proper use of hand and power tools and upon a variety of foundry and metal-forming practices such as: mold making, sprue and gating systems, mold dewaxing, metal pouring procedures, forging, fastening, cold finishing, metal finishing, and coloring techniques. PREREQUISITE: ART A141. ADVISORY: ART A241. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Students will be able to create a bronze sculpture from concept to pattern to mold making to finished work.
2. Students will be able to synthesize ideas and concepts and adapt same in order to solve novel visual and physical challenges in metal casting while maintaining quality of the created object, both in terms of craftsmanship and concept.
3. Students will be able to critically assess the success of one's own work and that of others in terms of design, finish, craftsmanship

Course Objectives

- 1. Analyze concepts and technical maneuvers necessary in metal casting and apply the same to create finished cast metal objects.
- 2. Synthesize ideas in order to solve novel visual problems in metal casting.
- 3. Critically assess the progress of one's own work and that of others.
- 4. Create a successful cast metal object from the student's own pattern and mold.

Lecture Content

1. Introduction to class, safety information, safety test, slides,projects, tools and materials 2. History of metal casting and forming globally 3. Careers in metal casting and forming and new technologies in metal working 4. Chemistry of metals and changes of same through casting or forming 5 Casting A. Wax modeling, tools, construction and techniques B. Mold making to produce a wax model or wax element for construction C. Gate and vent systems I. direct pour system II. indirect pour system D. Methods of investing I. ceramic shell method II. plaster investment E. Investment procedures F. wax preparation G. flask construction H. face coat application I. investment mixing and pouring J. Burnout procedures K. Melting metal and pouring procedures L. Cooling and de-vesting procedures M. De-gating and finishing 6. Recycling and Metal Casting 7. Historic and third world methods and uses of metal working 8. Patinas and finishes 9. Presentation

Lab Content

1. Tour of studio, safety information, introduction to tools and materials 2. Wax modeling, tools, construction and techniques 3. Mold making to produce a wax model or wax element for construction 4. Gate and vent systems A. Direct pour system B. Indirect pour system 5. Methods of investing A. ceramic shell method B. plaster investment 6. Investment procedures A. wax preparation B. flask construction C. face coat application D. shell building 7. Burnout procedures 8. Melting metal and pouring procedures ? A. wax removal ? B. mold testing 9. De-vesting procedures 10. De-gating and finishing A. cutting and grinding B. filing and chasing C. sand blasting D. patinas I. hot patinas II. cold patinas III. Paint, enameling and other finishes E. bases and presentation 11. Aesthetic Differences in Cast and Forged Metal Objects

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- Lab (04)
- DE Live Online Lab (04S)

Instructional Techniques

Subject is leaned through lecture, physical demonstrations and direct experience.

Reading Assignments

Reading assignments iclude instructional handouts and mothod based excerpts from technical manuals.

Writing Assignments

Students keep a journel/sketch book. This includes method description and reference notes.

Out-of-class Assignments

Visitations to other founderies and art studios/galleries.

Demonstration of Critical Thinking

In the strictest sense, critical thinking is demonstrated by the successful completion of a cast object in which certain steps must be followed (are therefore true) in order for the object to be created. The cast or fabricated object is, then, the proof.

Required Writing, Problem Solving, Skills Demonstration

Writing is minimal for this class. Successful problem solving and skills demonstration is evident in the completion of the physical object (the final sculpture(s).

Eligible Disciplines

Art: Master's degree in fine arts, art, or art history OR bachelor's degree in any of the above AND master's degree in humanities OR the equivalent. Note: 'master's degree in fine arts' as used here refers to any master's degree in the subject matter of fine arts, which is defined to include visual studio arts such as drawing, painting, sculpture, printmaking, ceramics, textiles, and metal and jewelry art; and also, art education and art therapy. It does not refer to the 'Master of Fine Arts' (MFA) degree when that degree is based on specialization in performing arts or dance, film, video, photography, creative writing, or other non-plastic arts. Master's degree required.

Textbooks Resources

1. Required Hurst, Steve. Metal Casting, Latest ed. Intermediate Technology Publications, 1996 Rationale: Excellent resource for information about small scale metal casting 2. Required McCreight, Tim. Practical Casting, Latest ed. Cape Elizabeth Maine: Brynmorgen Press, 2004 Rationale: Resource for alternate methods, i.e. jewelry scale, casting.