El Camino College

COURSE OUTLINE OF RECORD - Official

I. GENERAL COURSE INFORMATION

Subject and Number: **Art 283**
Descriptive Title: **Bronze Casting**

Course Disciplines: **Art**

Division: **Fine Arts**

Catalog Description: This course is an introduction to the aesthetics and processes used in the making of bronze sculpture. Topics covered include the elements of sculptural design, wax formulation and fabrication, the spruing process, the investing of wax patterns, mold making, finishing techniques, and bronze foundry procedures.

Conditions of Enrollment: **Prerequisite**

Art 160

or

Art 161 or

Art 181 or

Art 173
with a minimum grade of C in prerequisite

Course Length: [X] **Full Term** [ ] **Other (Specify number of weeks):**
Hours Lecture: **2.00 hours per week** [ ] **TBA**
Hours Laboratory: **4.00 hours per week** [ ] **TBA**
Course Units: **3.00**

Grading Method: **Letter**
Credit Status **Associate Degree Credit**

Transfer CSU: [X] **Effective Date: Prior to July 1992**
Transfer UC: [ ] **No**

General Education:
El Camino College: _____
CSU GE: _____
IGETC: _____

II. OUTCOMES AND OBJECTIVES

A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)

1. SLO #1 Terminology and Processes
   Students will be able to understand and explain the terminology, processes, and historical and contemporary concepts related to bronze casting at an intermediate level.

2. SLO #2 Construction and Modeling
   Students will be able to show intermediate-level competency in the construction, modeling, mold making, and casting techniques of bronze casting.

3. SLO #3 Design, Manufacturing, and Finishing
   Students will be able to show intermediate-level competency in the design, manufacturing, and finishing techniques in bronze casting.

The above SLOs were the most recent available SLOs at the time of course review. For the most current SLO statements, visit the El Camino College SLO webpage at http://www.elcamino.edu/academics/slo/.

B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)

1. Translate original designs and form concepts into finished bronze metal sculptures.
   Other (specify)
   Project
2. Determine the feasibility for translating original designs and form concepts using cast bronze metal processes.
   Oral exams
3. Plan, design, and formulate wax pattern fabrications, spruing systems, flexible molds, and appropriate investments; demonstrate their applicability to the process of bronze metal casting.
   Other (specify)
   Diagrams
4. Plan, design, and cast bronze metal sculptures using solid and hollow core methods.
   Other (specify)
   Project
5. Finish cast bronze metal sculptures using the techniques of chasing, welding, and patination.
   Other (specify)
   Project
6. Analyze and critique bronze metal sculptures in relation to technique and process, aesthetics and presentation, and concepts and expression.
   Other (specify)

In-class critique

III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lecture	3	I	Studio and Foundry Orientation: A. Safety requirements/guidelines B. Tools and materials
Lab	3	II	Studio and Foundry Orientation: A. Safety requirements/guidelines B. Tools and materials
Lecture	6	III	Principles of Aesthetic Order A. Balance B. Harmony C. Economy D. Proportion
Lab	6	IV	Principles of Aesthetic Order A. Balance B. Harmony C. Economy D. Proportion
Lecture	9	V	Elements of Visual Communication A. Light B. Shape C. Negative/positive space D. Movement E. Texture F. Color G. Form H. Content
Lab	9	VI	Elements of Visual Communication A. Light B. Shape C. Negative/positive space D. Movement E. Texture F. Color G. Form H. Content
Lecture	12	VII	Techniques of Hollow and solid Core Bronze Metal Casting

			A. Wax Fabrication B. Spruing systems C. Silica/ceramic shell and calcined-gypsum investments D. Mold-making E. Chasing F. Welding G. Patination
Lab	8	VIII	Wax Fabrication A. Design B. Hand and Tool Modeling C. Spruing systems: A) Design B) Assembly of Sprues and Vents C) Design and Assembly of Pour Cup
Lab	8	IX	Silica/ceramic shell and calcined-gypsum investments A. Cleaning and preparation of work B. Application of surface coats C. Application of Investment/Ceramic Shell layers D. Wax burn out
Lab	8	X	Mold making: A) Design determine mold materials B) Sand Casting for simple relief sculptures C) 2 part plaster for simple 3D objects without undercuts D) Silicone mold for more complex shapes.
Lab	8	XI	Chasing: A) Break mold from cast work B) Clean, then Sand Blast Work C) Cut Sprues and Vents from Work D) Grind off Sprue and Vent stubs
Lab	8	XII	Welding: A) Fix an imperfection in the casting process, such as holes and freeze out areas. B) Weld addition casting parts together as necessary. C) Weld additional armature or mountings as needed.
Lab	8	XIII	Patination: A) Final Sandblast, fine sand B) Clean with Denatured Alcohol. C) Choose desired colors for Patinas. D) Mix patinas when necessary.

			E) Apply patinas in layers as required for specific results. F) Clean with Distilled Water G) Polish Finished Work.
Lecture	6	XIV	Analysis and Criticism A. Technique and process B. Aesthetics and presentation C. Concepts and expression
Lab	6	XV	Analysis and Criticism A. Technique and process B. Aesthetics and presentation C. Concepts and expression
Total Lecture Hours		36	
Total Laboratory Hours		72	
Total Hours		108	

IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

A. **PRIMARY METHOD OF EVALUATION:**

Skills demonstrations

B. **TYPICAL ASSIGNMENT USING PRIMARY METHOD OF EVALUATION:**

Form a sculpture pattern from wax and/or other organic materials to be cast in bronze metal using a calcined-gypsum investment. Make a sprue system that will allow the removal of the residual ash as well as the ventilation of the gasses formed in the process. Invest, cast, and chase the casting. If appropriate, complete the project with a mount and/or patina.

C. **COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:**

1. Design an original pattern from sheet wax that is appropriate for hollow casting. Design a sprue system that will deliver the molten bronze metal in a satisfactory manner. Mix from refractory materials the core necessary for hollow castings. Invest, cast, and chase and if appropriate, complete the project with a mount and/or patina.
2. Utilizing the principles of sculptural composition, complete an original wax sculpture pattern suitable for casting in solid bronze metal utilizing the ceramics shell process. Devise a sprue plan that accounts for the shrinkage problem associated with solid castings. Invest, cast, chase, and if appropriate, complete the project with a mount and/or patina.

D. **OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:**

Other exams

V. INSTRUCTIONAL METHODS

Demonstration
Laboratory
Lecture
Other (please specify)
critiques

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. WORK OUTSIDE OF CLASS

Skill practice
Problem solving activities
Observation of or participation in an activity related to course content

Estimated Independent Study Hours per Week: 4

VII. TEXTS AND MATERIALS

A. **UP-TO-DATE REPRESENTATIVE TEXTBOOKS**
David Q. Hodges. Creating Sculpture from Clay to Bronze . (discipline standard), 2002.
Olivier Duhamel . Bronze Casting Manual. CreateSpace Independent Publishing Platform , 2012.

B. **ALTERNATIVE TEXTBOOKS**

C. **REQUIRED SUPPLEMENTARY READINGS**

D. **OTHER REQUIRED MATERIALS**
Wax, clay, bronze, sculpting tools, metal finishing tools, mold materials, and other miscellaneous materials as identified by the instructor

VIII. CONDITIONS OF ENROLLMENT

A. Requisites (Course and Non-Course Prerequisites and Corequisites)

Requisites	Category and Justification
Course Prerequisite Art-160 or	Sequential
Course Prerequisite Art-161 or	Sequential
Course Prerequisite Art-181 or	Sequential

Course Prerequisite Art-173	Sequential

B. Requisite Skills

Requisite Skills
Design and create three-dimensional forms using clay relief, wood, plaster, and/or stone carving, sheet-material fabrication, and mold casting. ART 160 - Assess the material and technical requirements of three-dimensional design projects.ART 181 - Assess and determine the material and technical requirements of sculpture projects. ART 160 - Assess the material and technical requirements of three-dimensional design projects. ART 181 - Assess and determine the material and technical requirements of sculpture projects.ART 160 - Create preliminary drawings that indicate the scale, the construction process, and the material needs of proposed three-dimensional design problems. ART 181 - Create working drawings that indicate the scale, construction process, and material needs of proposed sculpture projects.ART 160 - Create preliminary drawings that indicate the scale, the construction process, and the material needs of proposed three-dimensional design problems.ART 181 - Create working drawings that indicate the scale, construction process, and material needs of proposed sculpture projects. ART 181 - Translate working drawings into models and prototypes. ART 181 - Translate working drawings into models and prototypes. ART 173 - Create finished jewelry employing sawing, filing, annealing, soldering, forming, surface embellishment, stone setting, casting, and polishing. ART 161 - Design, plan, construct, and finish entry-level ceramic projects. ART 173 - Create finished jewelry employing sawing, filing, annealing, soldering, forming, surface embellishment, stone setting, casting, and polishing. ART 161 - Design, plan, construct, and finish entry-level ceramic projects. ART 181 - Translate models and prototypes into finished sculpture. ART 181 - Translate models and prototypes into finished sculpture. ART 181 - Employ various materials such as clay, super sculpy, plaster, latex, polyurethane foam, wood and plastics to create sculpture forms. ART 181 - Employ various materials such as clay, super sculpy, plaster, latex, polyurethane foam, wood and plastics to create sculpture forms.ART 160 - Demonstrate construction techniques appropriate for use with wood, paper, plastic, and metal. ART 173 - Analyze and apply the technical processes necessary to produce finished jewelry objects. ART 173 - Analyze and apply the technical processes necessary to produce finished jewelry objects. ART 160 - Demonstrate construction techniques appropriate for use with wood, paper, plastic, and metal. ART 160 - Carve and assemble forms that contain positive and negative shapes. ART 160 - Carve and assemble forms that contain positive and negative shapes. ART 181 - Demonstrate assembly, modeling, and fabrication skills. ART 181 - Demonstrate assembly, modeling, and fabrication skills. ART 160 - Construct negative plaster molds to be used for casting relief forms. ART 160 - Construct negative plaster molds to be used for casting relief forms.

C. Recommended Preparations (Course and Non-Course)

Recommended Preparation	Category and Justification

D. Recommended Skills

Recommended Skills

E. Enrollment Limitations

Enrollment Limitations and Category	Enrollment Limitations Impact

Course created by Andrew Fagan on 04/01/1988.

BOARD APPROVAL DATE:

LAST BOARD APPROVAL DATE: 02/17/2015

Last Reviewed and/or Revised by Joyce Dallal on 09/10/2014

18839