

VISA 242 Introductory Ceramics 2

Prerequisite: VISA 241

Summer 2010

June 22 - August 5, Tuesdays/Thursdays

4:30 - 8:30

OM 1565

Instructor: Susan Brandoli

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Phone: 250-542-0499

VISA 2420 Prerequisite: [VISA 2410](#)

Introductory Ceramics 2 (3,1,0)(L) Studio - 3 credits

In this semester students will study the chemistry of glazes and other surface finishes for ceramic ware as it is developed through the ages. Through slide lectures, videos, and discussions, students will be introduced to contemporary ceramic artists, their methods and firing techniques. Contemporary approaches for producing ceramic sculptures will be demonstrated and adaptations of traditional production methods for personal expression will be work-shopped. Students will need to reserve additional time in the studio to put what they learn from class demonstrations into practice.

Objectives:

The student will continue to develop basic hand-building techniques and wheel throwing skills along with safe studio practices, additional use of techniques, tools and materials, and basic glaze chemistry.

NO FOOD OR DRINK IS ALLOWED IN THE STUDIO.

Expectations:

- The student will be responsible for maintaining a clean and orderly working environment.
- Summer session classes are very condensed, therefore they require a minimum of 8 -12 hours of additional studio time outside of class per week.
- The studio is open from 8 am - 12 pm daily, Monday - Friday. 12 noon - 12 midnight on weekends.
- Students are expected to have work completed on time, in order to accommodate the drying and firing schedules.
- It is the responsibility of the student to sign the attendance sheet for each class.









Attendance

Attendance is mandatory. Any absences will diminish the final grade. Unless otherwise previously accommodated for, two absences without a doctor's certificate may result in failure.

- Please do not hesitate to consult with the instructor if you are experiencing any difficulties with the course in order to ensure that you achieve a successful outcome for the class.

Evaluation

The course will be evaluated using the following criteria:

-  Innovation and creative thinking
-  Personal development
-  Attendance and Participation
-  Presentation and Technique
-  Conceptual Knowledge
-  Work Habits and organization
-  Research
-  Seminar Presentations and/or Quizzes

Mark Breakdown

Studio Work	80%
Participation	10%
Research/Quizzes	10%

ACADEMIC/CAREER/DEVELOPMENTAL PROGRAMS - REGULATIONS

Letter Grade	Numerical Grade	Grade Points	Letter Grade Definitions
A+ A A-	90 - 100 85 - 89 80 - 84	4.33 4.00 3.67	Excellent. First Class Standing. Superior Performance showing comprehensive, in-depth understanding of subject matter. Demonstrates initiative and fluency of expression.
B+ B B-	77 - 79 73 - 76 70 - 72	3.33 3.00 2.67	Very Good. Second Class Standing. Clearly above average performance with knowledge of principles and facts generally complete and with no serious deficiencies.
C+ C	65 - 69 60 - 64	2.33 2.00	Satisfactory. Basic understanding with knowledge of principles and facts at least adequate to communicate intelligently in the discipline.
C-	55 - 59	1.67	Pass. Some understanding of principles and facts but with definite deficiencies.
D	50 - 54	1	Minimal Pass. A passing grade indicating marginal performance. Student not likely to succeed in subsequent courses in the subject.
F	0 - 49	0	Unsatisfactory. Fail. Knowledge of principles and facts is fragmentary; or student has failed to complete substantive course requirements.
DNC		0	Did not complete the course, less than 50% of course work completed or mandatory course component(s) not completed. No official withdrawal.

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WEEK 1 - dress appropriately, no jewellery, tie back long hair

June 22 INTRODUCTION, slide presentation, materials, studio safety, etc.

June 24 INTRODUCTION TO GLAZE CHEMISTRY, INTRODUCTION TO WHEEL THROWING - Cylinders

MATERIALS NEEDED



Box of F92 Clay - Available through Bookies

Pottery tool set - Available through Bookies

- ✓ Wire cutting tool
- ✓ Pin Tool
- ✓ Metal or wooden scraper tools
- ✓ Tooling loops
- ✓ Sponges, canvas (if working with white clay), scrapers, ice cream and industrial sized buckets, sketchbook or journal.

Clay Shrinkage & Absorption tests:

Shrinkage: Construct a 12 cm test tile. Draw a 10cm line on it.

Measure line when dry, then measure line again when fired.

Formula is $\frac{\text{Shrinkage Wet} - \text{Shrinkage Dry}}{X \times 100}$ $\frac{\text{Shrinkage Dry} - \text{Shrinkage Fired}}{X \times 100}$

X x 100

X x 100

Total Shrinkage = $\frac{\text{Shrinkage Wet} - \text{Shrinkage Fired}}{X \times 100}$

X x 100

Water Absorption Test: $\frac{\text{Fired weight wet} - \text{Fired weight dry}}{\text{Fired weight dry} \times 100}$

Fired weight dry x 100

= % of absorption of water by bar.

FOR THURSDAYS CLASS: Use the extruder to produce a minimum of 12 Glaze tiles for starting glaze testing. Have clay test tile also ready.

FOR NEXT WEEK

- Have 6 - 10 cylinders thrown and ready for looking at. Ensure that at least some of them are at a leather hard state, and not completely dry so that they can be handled.
- Choose simple items for one and two piece plaster casting and bring to class. Ensure that they do not have any undercuts.

REVIEW OF TERMINOLOGY

Plasticity - malleability, ability to be molded or formed

Porosity: percentage of absorption = degree to which a fired clay will absorb water

Clay: Aluminum, Silica and chemically combined water, $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 6\text{H}_2\text{O}$, shrinks up to 10% when fired

5 Clay categories

China Clay or Kaolin - most pure, least plastic, most heat resistant, rarest occurring, vitreous when fired to 1740 - 1785 °C

Ball Clay - next in purity, fine particle size, high shrinkage in drying and firing, dense at 1260 - 1370 °C,

Kaolins and Ball Clays are the usual components of porcelains

Fire Clays - resilient, strong, withstand heat better, coarser and flatter particles than Ball or Kaolins, beige, tan, gold, red, brown in colour, dense and vitreous at 1205 - 1260 °C

Stoneware Clays - Contain properties of both ball and fire clays, remarkable workable, dense, off-white - dark brown in colour.

Surface Clays - rich with impurities, very workable, used entirely by themselves with no flux or filler (i.e. indigenous clays)

Types of Clays

Earthenware: porous, relatively light, easily chipped, lower sound when struck, 10-15% moisture absorption, lower temperature firing,

Stoneware: hard, not easily broken, rings when struck, hold liquids, 2 - 5% moisture absorption, higher temperature firing,

Porcelain: vitreous, translucent if thin, 0 - 1% moisture absorption, high firing, usually white or off-white.

Clay Body = 50-80% CLAY + FILLER + FLUX

Filler: Ingredients added to natural clays to alter their basic properties, such as sand, dirt, ground-up particles of already fired clay (GROG), silica sand or pure silica. Some of these also add texture and colour.

Flux: Added to change the normal firing time of a given clay such as feldspar or bone ash, ground glass, soda ash.

Leather Hard: still slightly workable, cool to the touch, slightly pliable (like leather).

Bone Dry: may still be cool to the touch, lighter in colour than when wet. Most of the free water has evaporated. Dry enough to fire in a bisque.

KILN FIRING

Water Smoking: 175 - 205°C Drives off remaining free water that makes clay plastic. Heat slowly during this phase, open peep holes and prop kiln lid.

Dehydration: 510 - 705°C Drives off chemically combined water, high amount of shrinkage

Quartz Inversion - 575°C The temperature at which unfired clay becomes permanent and can't be broken down again. Alpha crystal > Beta > Alpha. $\pm 2\%$ change in size

Kiln Wash: 50% Kaolin, 50% Silica + water, paint on shelves

Kiln Sitter - cone and temperature watcher, if not computerized.

BISQUE FIRING

- ✓ Shelf on floor of kiln
- ✓ 1" free around edges to prevent hot spots, keep handles and appendages away from elements
- ✓ 6 - 8 hours average firing
- ✓ Ware must be bone dry, can be stacked but is very fragile, as long as ware is undecorated it can touch other items
- ✓ Stagger shelves for air circulation, if possible

Oxidation and Reduction Firings

Oxidation firings refers to the presence of oxygen in the kiln. All electric kilns are oxidation.

Reduction firings - When a fuel such as gas, oil or wood is burned the carbon contained in the fuel combines with the oxygen in the air to produce a chemical reaction of burning, and the products of this burning are heat and carbon dioxide. If not enough oxygen is present during the combustion, some free carbon is liberated as well as carbon monoxide. At high temperatures, $\Delta 8$ - $\Delta 12$, the carbon monoxide is chemically activated and will seize any available oxygen molecule from any source, such as the oxides in ceramic materials. This reduction in oxygen may affect the colours of the oxides, when the air supply is but down and the draft in the kiln diminished. Reduction occurs naturally with wood fueled firings. The range of colours are far less than in an oxidation firing.

CONE SYSTEMS

$\Delta 022$ - $\Delta 018$ Very low firing range, Lustres, china paints, enamels

$\Delta 06$ - $\Delta 04$ Low firing range, Average Bisque firing range, earthenwares, low fire glazing

$\Delta 06$ - $\Delta 2$ Low firing range, earthenwares, low fire glazing

$\Delta 3$ - $\Delta 12$ High firing range, Glazing temperatures