



Ceramic Materials Workshop

ART XXXX

Glaze Calculation Online

Matthew Eli Katz-Instructor

Class Meeting (Lecture): Online, Posted XX at XX

Live Hangouts: Biweekly, Google Hangout: Time TBD

Course Description

Lecture and lab assignments will explore the composition, properties and application of materials used in ceramics to aid in the development of clay and glaze compositions for pottery and sculpture.

Syllabus

The ceramic artist strives to work with materials that, as a component of concept and content, enhance their work. The functionality of ceramic materials comes from subtle nuances of chemistry, firing and particle to particle interaction. The intermingling of silicate bonds, crystallization, clay blending, and kiln atmospheres dictate the qualities of the fired materials. As we understand the physical properties of the materials we enhance making and decrease flaws in the final objects, and become better communicator through our art. A fundamental understanding of the principles and properties involved in ceramic science is essential if the ceramic artist can exert any control in the successful outcome of the work.

Glaze Calculation Online will take an intensive approach to the study and analysis of glazes, ceramic materials, formulas, firing and process. The focus of the course is to provide students with technical and empirical knowledge about the composition, application and fired effects of ceramic materials and ultimately, to aid them in making well informed materials decisions as they strive to realize their vision.

Lecture and Lab Topics

- Introduction to Ceramic Science
- Geology
- Chemistry
- Materials-Clays and Quartz
- Materials-Feldspars
- Materials-Fillers and Fluxes
- Glaze Chemistry
- UMF Calculations
- Glaze Durability
- Glaze Temperature
- Special Effect Glazes
- Glaze Flaws
- Colors

Assignments

Students complete one 4-5 page research paper on a technical topic. The paper will be due two weeks before the last class meeting of the term. A one paragraph topic proposal must be submitted by the fourth week of class.

Labs

Students will have weekly laboratory assignments to complete. Labs MUST be completed (made and fired) in the week assigned. This means that they will usually have 4-5 days to complete the project and 2 days for the firing. Late, sloppy or incomplete tests will effect the student's grade.

Documentation and Mounting

Documenting and mounting is a vital part of the research process. The week following the completion of a lab or other test, the student must document the test digitally, including high quality images, formula and analysis in a PowerPoint (.pptx) file. A video will be hosted online about documenting procedures. Documented experiments must be submitted two weeks after the distribution of the assignment

Students must also mount their physical samples for display onsite. A mounting standard will be provided at a future time.

Tardy completion of labs will effect the student's grade.

Calendar

Research Topic Due: End of the fourth week of the term

8th Week of Class: Mid-Term Examination

Research Paper Due: Two weeks before end of the term

Last Week of Class: Final Examination.

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|-----------------|---------------------|-----|
| Grading: | Lab Work | 40% |
| | Exams | 30% |
| | Research | 20% |
| | Class Participation | 10% |

Contact: info@ceramicmaterialsworkshop.com

<http://www.ceramicmaterialsworkshop.com/academic.html>

Phone: 347.878.2529 (CLAY)

Book List-No Books are required

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|-----|---|------------------------------------|
| 1) | Cushing's Handbook | Val Cushing |
| 2) | Clay and Glazes for the Potter | Daniel Rhodes |
| 3) | The Potter's Dictionary of Materials and Techniques | Frank and Janet Hamer |
| 4) | The Ceramic Process | Anton Reijnders |
| 5) | Rocks and Minerals | Charles Sorrell |
| 6) | The Potter's Palette | Christine Constant and Steve Ogden |
| 7) | A Handbook to Pottery Glazes | David Green |
| 8) | Ceramic Glazes | Cullen W. Parmelee |
| 9) | The Arcanum | Janet Gleason |
| 10) | A Short History of Nearly Everything | Bill Bryson |
| 11) | The Disappearing Spoon | Sam Kean |
| 12) | Industrial Ceramics | Singer, Felix and Singer, Sonja S |
| 13) | Glazes and Glass Coatings (Online) | Eppler and Eppler |
| 14) | Copper Red Glazes | Robert Tichane |
| 15) | Those Iron Blues | Robert Tichane |
| 16) | Ceramic Science for the Potter | W.G. Lawrence |
| 17) | The Chemistry and Physics of Clay and Other Ceramic Materials | Alexandre Brongniart |
| 18) | The Practice of Stoneware Glazes | Brother Daniel de Montmilin |

Required Supplies

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| 2 | 2 Gallon Buckets |
| 11 to 20 | Quart Containers |
| 1 | Black Underglaze Pencil |
| 2 | Ultra Fine Point Sharpies |
| 1 | Stick Mixer (Imersion Blender) |
| 1 | Cup Sieve |
| 5 | Large and Small Sponges |
| 2 | Weigh Boat |
| 1 | Scoop |
| 1 | Spoonula |
| 1 | Fettling Knife |
| 1 | 18" Metal Ruler |
| 1 | Needle Tool |
| 1 | Metal Rib |
| | Gloves |
| 1 | Saftey Glasses |
| 1 | Apron |
| 1 | Breathing Protection |
| 1 | Lab Notebook |
| 1 | Calculator |
| 1 | Bottle Wax Resist |
| 1 | Brush (for Wax) |
| 1 | Scale |

Safety

In the lab, you must wear safety glasses, gloves, respirator and an apron whenever handling materials. Alfred standard labeling procedures apply for all samples. Failure to meet labeling standards will result in disposal of samples.

House Keeping

The glaze lab is a common area used by all students. After class, lab counters must be cleared of class materials so that others can use the lab. Please leave the lab in a condition you would like to find it in (ie. clean tables, scales, sinks etc.).

Lab Fees

Lab Fees are to be utilized for materials used in testing.

Attendance

Lectures: As lectures are recorded, students are expected to have viewed all lectures within 1 week of their posting. No exceptions will be made, except in the case of family and documented medical emergency.

Online Hangout: Students are allowed one unexcused absence from live online hangouts. Additional absences will only be allowed in the case of family and documented medical emergency.

Readings: Reading must be completed within one week of posting.

Expectations for Students

- Be prepared for all classes, labs and discussions
- Submit well-written 4-5 page reports.
- Complete projects on schedule dictated by instructor. Delay of submission of projects will result in a loss of 1/3 of a grade level per ½ day late.
- Maintain a comprehensive and legible laboratory notebook to document experiments procedures, formula and results.
- Participate in firings and maintenance as requested.
- Maintain a clean and organized workspace.
- Document all tests physically and digitally.