

**ART 290 Section 5332**  
**Glass Fusing**

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**CALENDAR**

Wednesdays: 6:00-10:00 PM Room F 106  
Class meets from 1/19/05 through 5/11/05  
FINAL EXAM is on 5/11/05 from 6:30-8:00 PM

**RESOURCE BOOKS:**

Cummings, Keith. Techniques of Kiln-Formed Glass. Somewhat academic in tone, with an excellent historical overview and a wide-ranging discussion of techniques that can be used for various effects. Not really a tutorial, more of a survey. Excellent illustrations.

Eberle, Bettina. Creative Glass Techniques: Fusing, Painting, Lampwork. Translated from German. Project-oriented. Strongest on projects that combine glass painting with fusing, very sketchy on lampworking. Contains a few technical errors (translation problem?) and frustratingly lacks information on sources for supplies used.

Kaiser, Petra. Introduction to Glass Fusing. A comprehensive guide to glass fusing techniques with project-by-project guided lessons.

Kervin, Jim and Fenton, Dan. Pate de Verre and Kiln Casting of Glass. Most comprehensive tutorial on pate de verre and kiln casting available. Solid information on modeling, mold construction, casting techniques, kiln procedures, and safety. Highly recommended.

Lundstrom, Boyce. Kiln Firing Glass: Glass Fusing Book One. An excellent introduction to glass fusing and slumping, with good technical information and lots of worthwhile pictures. A little dated, but still the book to buy if you're only buying one book on fusing.

Paciello-Truty, Jackie. Dichroics. Explains the making of dichroic glass and show some completed projects.

Reynolds, Gil. The Fused Glass Handbook. Good cross-section of techniques, projects, and fusing information. Many of the projects are a bit hokey, but it's still worth reading. Less expensive (though not as comprehensive) than the Lundstrom books.

Stone, Graham. Firing Schedules for Glass: The Kiln Companion. Superb technical reference for anyone interested in fusing, slumping, and casting. In addition to a brief introduction to the fundamentals of firing glass in a kiln, this book has over 100 pages of firing schedules and another 100+ pages of other technical information for kiln workers, glassblowers, and lampworkers.

Walker, Brad. Contemporary Warm Glass: A Guide to Fusing, Slumping, and Kiln-Forming Techniques.

Web Reference: <http://www.warmglass.com>  
This site is excellent for finding out everything about fusing glass. Check it out.

**SUPPLIERS:**

Artistry Glass Studios 904 N. Scottsdale Rd,  
Tempe

The Stained Glass Shop 6344 W. Bell Rd.,  
Glendale

Delphi 3380 E. Jolly Rd, Lansing, MI  
[www.delphiglass.com](http://www.delphiglass.com)

Harbor Tools 35th Ave & Bethany Home  
Phoenix

Home Depot

**TOOLS AND SUPPLIES (approximate cost):**

Glasscutter (\$2.56 to 25.42)

Running or grozing pliers-breaking pliers (\$2.33 to 18.34)

Tweezers (\$2.95 to 10.95)

Elmer's Glue-all (\$.59 to 1.59) or

Klyr-Fire Glue (\$7.70) or

Glastac (\$3.45)

Toothpicks- Grocery store

Glass-same COE (coefficient of expansion) 90 (Bullseye, Uroboros, Wasser) or 96 (Spectrum, Uroboros) Price varies.

Dichroic Scrap .25 lb. (\$13.35) As needed.

Dichroic Sizzle Stix (\$98.55) As needed.

Stringer-Mardi Gras (\$12.40) As needed.  
 Safety goggles (\$2.20)  
 Toolbox to carry all the tools and supplies- Price varies.  
 Straight-edge/T-square (\$2.17)  
 Strip/circle cutter (\$40.00)  
 Grinding/polishing machine ((\$68.67 to 83.38)  
 Haik brush for applying shelf primer (\$6.20)  
 Metal spatula or Fabricut 100 or sand paper or sanding screen to remove shelf wash (Home Depot)  
 Evenheat Hot Box Mini Kiln (\$257.00 with viewing window (\$292.00))  
 Kiln shelf (\$6.00)  
 Kiln posts 4 (\$2.25)  
 Kiln shelf wash (\$4.50)  
 Bullseye "Thinfire" Shelf paper (\$2.75 linear foot)  
 Fiber Paper 1/16" thick (\$3.04 linear foot)

## SPRING 2005 SCHEDULE

### Date Activity

1/19. New Student: Discussion of tools, materials & sources, outline of course, and design. Brief demo for students. Presentation of the first project.

1/26 Beads. Work on 1st project (Refrigerator magnet). Kilns and Firing Procedures.

2/2 Pins and Earrings.

2/9 Pendants. Inclusion of metal, rods and kiln blanket in glass.

2/16 Powder wafers.

2/23 Bending stringers and cutting circles.

3/2 Grinding and finishing glass

3/9 Tiles and coasters.

### SPRING BREAK

3/23 Candleholders and dishes (slumping, draping, and kiln-forming techniques).

3/30 Picture frames or Ikebana

4/6 Kiln Carving

4/13 Irid Sandwich Magnets-Sandblasting

4/20 Irid Sandwich Project-Sandblasting

4/27 Project of own choosing

5/4 Finish up!!!

5/11 Final Critique 6:30 - 8:00 p.m. Display projects. (Snacks,)

Evaluation will be on aesthetic quality, creativity, and craftsmanship of your work.

## MAKE-UP TIME:

FOUR four-hour periods of outside research are expected.

Please hand in a brief summary of whatever you do to fulfill the outside assignments whether on your own or on a field trip.

Following are some possibilities. Date, time, place to be arranged if not noted.

1. Marshall Way Galleries-Scottsdale, Thursday, 7:00 to 9:00 pm.
2. Other objects to combine with fused glass jewelry.
3. A Saturday classroom period. (If F106 is not occupied)
4. Phoenix Art Museum. FREE on Thursday.
5. Other Art Galleries
6. Jewelry Shops (Look for creative design vs. common everyday stuff.)
7. Book report on "GLASS FUSING".

THE STUDENT, WHEN TAKING PART IN A FIELD TRIP, SHOULD BE OBSERVING DESIGN, NEW IDEAS, METHODS EMPLOYED BY OTHER ARTISTS, MATERIALS USED IN CONSTRUCTION, ETC. Take notes and make sketches.

## BASIC EQUIPMENT AND MATERIALS

1. Fusing kiln
2. Kiln furniture
3. Shelf primer
4. Protective clothing
5. Glass

### Fusing kiln

The kiln should be able to reach a temperature of 950° - 1000° C, and should, ideally, be fitted with a programmable microprocessor controller.

Today there are a large number of purpose-manufactured kilns commercially available. Most are electrically powered. Kilns intended for general glass fusing including shallow slumping/bending are usually top fired and have an internal height of around 30 cm. Kilns intended for deeper slumping/bending and mould work are usually top and side fired and are much higher inside. Kilns which are only side fired can also be used for glass fusing, but are not ideally

suitable due to the fact that side firing necessarily slows down the firing cycle when working with glass. Kiln should go to 2000°.

### **Kiln furniture**

Kiln furniture is a general term given to items which will be used inside the kiln to position or hold the glass being fired, e.g. kiln shelves, kiln posts, etc.

### **Shelf primer**

This is used to form a non-stick barrier between the glass being fired and the kiln shelf, (or between the glass and the mould during slumping/bending) as at high temperatures, glass will become soft and sticky enough to adhere (permanently) to primer, dry primer, and "shelf paper". Liquid primer comes in powder form, and is mixed with water to the desired consistency. Dry primer can be obtained in fine powder or coarse granular form. Shelf paper is a relatively recent product, which is timesaving and simple to use, as there is no mixing, brushing-on or drying involved. A further primer, or separator, is boron nitride. The compound is used for priming the surface of metal moulds. Ideally, the mould should be warmed before the separator is applied in order to ensure rapid drying, thus giving a smooth, drip-free surface.

### **Protective clothing**

The importance of proper protective clothing cannot be over-emphasized. Heatproof gloves or mittens are a must for serious kiln work, Opening a kiln during firing will release a large volume of extremely hot air. Kiln lid handles or locks will become too hot to touch with the naked hand, so protection is required. Handling still-warm glass can also be hazardous, so light Terrycloth gloves are also advisable. Looking through a peephole during firing is sometimes also necessary, so protective glasses for the eyes are also a must. A heat resistant sleeve is also a good idea when combing or manipulating hot glass within the kiln. Respiratory protection should not be forgotten. Many activities associated with kiln working create heavy dust or set fibers free. Protective eyeglasses should be worn when cutting glass.

### **Glass**

Glass, which is intended to be fused together, must be compatible with each other. There are several factors, which determine compatibility, these being primarily coefficient of expansion, viscosity, and annealing temperature. Glass being slumped or formed without being melted together with other glass need not be tested compatible

There are several glass manufacturers producing tested compatible glass. There are Bullseye Glass Company, Spectrum, Uroboros, Schott-Desag, Moretti, and Wasser Glass.

### **NOTES:**