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[Ok, so here's another page that, even though it has nothing on it, it has something on it. These things happen ...]
I. About This Handbook

- This handbook is a compilation of ceramic studio policies, protocol, and general information concerning the physical aspects of the equipment and use of space in this studio. This handbook is designed for anyone enrolled as an undergraduate or graduate student in the University of Michigan School of Art and Design, as well as any faculty teaching in this studio.
- This handbook does not contain instructional materials specific to classes, and is not to be considered a substitute for showing up for classes.
- Things do change in the studio from year to year, from instructor to instructor and through modifications made by the coordinator to efficiently accommodate the students use of the facilities. Students who have been away from the studio for a semester or more should check with the coordinator regarding materials, equipment and studio use.
- This handbook is intended for use in conjunction with University of Michigan CourseTools pages developed for particular courses which use the Ceramics Studio. Please refer to the appropriate CourseTools pages within the CourseTools site (http://coursetools.ummu.umich.edu) for specific information for a given course.
- This handbook is not intended to be a "catch-all" and will not be applicable to any-and-all circumstances. Please discuss specific circumstances with those involved.
- Electronic versions of this handbook are located online at http://art-design.umich.edu.
- This handbook is written and maintained by John Leyland, Ceramics Studio Coordinator at the School of Art & Design, University of Michigan, Ann Arbor. Please send any suggestions or comments regarding this handbook or its contents to jleyland@umich.edu.
II. Student Guidelines for Studio Access & Usage

1. Regular class schedule and times will be posted on the main entrance door to the ceramic studio.

2. Student studio monitors may be chosen/assigned by the studio coordinator for after hours monitoring on an “as needed” basis for each academic term.

3. Access will be granted only for specific academic terms or, in the case of courses with durations different from an academic term, the length of the course. (Example: TMP Clay 7-week course vs. full 14-week course)

4. Students who are granted access to specific studios cannot bring in other unauthorized students / acquaintances in those studios anytime.

5. Authorized students need to go through and orientation regarding access, safety, security, and individual studio maintenance and supplies usage policies/practices.

6. Students involved with their course projects must clean up, after themselves at the end of their time in the studio.

7. 24/7 access is authorized to all students enrolled in a course held within the ceramics studio. This will only occur after the enrolled student signs and returns the After Hours Studio Access Agreement for the Ceramics studio found in this handbook.

8. Students needing access but not enrolled for a scheduled course (example: 4th year integrated projects, Independent study, or CFC), not only need to return the After Hours Studio Access Agreement, but also need to submit a signed (by you and your professor) a Project Proposal for Studio Access form, also supplied in this handbook.

9. Studio Coordinators can revoke access to any individual student found to be not in compliance with access, security, and maintenance policies, and will notify the Director of Finance and Facilities and the Associate dean for Academic Affairs.

10. Emergency/ non-emergency contact numbers are posted in the studio:
    - Police/Ambulance/Fire (emergency help) 911
    - Dept. of Public Safety (non-emergency) 763-1131
    - Occupational Safety & Environmental Health 647-1143
    - Studio Coordinator (John Leyland) 763-4199
    - Facilities Supervisor 763-3121
    - Custodial Supervisor 763-3121 (4 PM till 10 PM)
III. **Studio & Equipment Policies**

1. **Room Usage**
   You must be currently enrolled in a ceramics course or have arranged independent usage through the Studio Coordinator and a sponsoring Faculty member. This will be in the form of an Independent study, 4th Year Integrated projects, or a short term CFC project. You should have at least a prior TMP background and understanding of the facilities.

2. **Room security**
   Card Readers allow for 24/7 access. After posted studio hours where there is no longer a Coordinator, Faculty member, or a monitor available, you are responsible for the security of the Ceramics studio. The Kiln Room and Storage can be individually locked allowing access to the main studio work area only. The rear entrance is furnished with an alarm and should not be propped open and unauthorized people should not be given access through his door at any time.

3. **Food and Drink**
   During posted course times allowing food or drink will be the decision of the faculty having class. The Studio Coordinator has the right to stop all food and drink in the studios if students are not responsible for their containers and garbage. A microwave and refrigerator are available to students to encourage working after hours and weekends without having to leave to take a food break. This also needs to be used responsibly or they will be taken out.

4. **Storage Shelves**
   Each student having access to the ceramic studio will be assigned shelf storage space. Your full name should be put on your assigned shelf to help the Coordinator and Faculty in identifying your work. This should be used for work in progress or completed while enrolled in a class. Personal items should not be stored on these shelves as they are not lockable and secure.

5. **Clothing**
   The materials you will be working with in this studio, Clay, Glazes, and Slips all may contain strong colorants such as iron oxide or cobalt for example. These colorants can permanently stain clothing, so it is advised not to wear good clothes during class. Some Aprons are available to wear and/or you may bring an old shirt or apron of you own to use during class time. This can be kept on you shelf. All students who have been issued a Tool Bag when they started in the school of Art and Design have in that bag a set of ceramic tools. These tools should be brought to every class and when working outside class. Many other tools will be supplied by the studio for other purposes, but this kit has your basic tools necessary for completing projects assigned by your faculty.

6. **Lockers**
   To secure personal items, lockers are in the hallways outside all studios. A locker can be obtained through Helen Hoskins, Facilities Manager, in room #1106 A&A. A security
deposit of $5.00 will be collected and returned at the time you no longer need the locker. All lockers should be cleaned out at the end of the year or you will forfeit your deposit and any items that have been left in your locker. No ceramic materials (Clay & Glazes) should be taken out of the studio and stored in your locker.

7. **Sinks**
The ceramics studio has 4 sinks that as an enrolled student you will be using. These sinks all have sediment traps that collect clay and glaze sediment before going down the drain. It is extremely important to understand that whenever possible NO clay is put in the sinks. We have a clay recycling system that allows the studio to reclaim used clay to make new clay for studio usage. This will be explained during orientation and needs to be followed very strictly so that all sinks function correctly.

8. **First Aid**
All studios, ceramics included, have an extensive first aid kit available to the student. The location of the first aid kit is located just outside the coordinators office and its location will be made clear during orientation. If at any time this kit is needed, please make your Faculty and Coordinator aware so that the extent of the injury can be evaluated and further treatment can be obtained if necessary.

9. **Course Fees**
Course fees are automatically assessed to all scheduled courses. Course fees will be issued to all students who are working independently (independent study, 4 year integrated project, CFC) in the ceramics studio and will be assessed based on the length of time you will need to use the facility. (Example: full semester, 1/2 semester or 1/4 semester) The Studio Coordinator will issue lab fee forms that will be taken to the Bursars office and paid. This form comes in triplicate and the student will keep a copy and one returned to the studio coordinator before full usage of the studio will be allowed.

10. **Wireless studio**
All studios in the School of Art and Design are equipped with a wireless airport system that allows all students to use their computers within all of these spaces without concerns for a proper connection. You are asked to use your computer wisely in this area, as dust is a major concern. The front room, 1269a. is considered a clean room and more suitable for computer usage.
IV. Handbuilding Area

1. Worktables
These are the main work areas for all ceramic classes and can be utilized by up to 80 to 100 students a semester. This is why it is essential to maintain the work surfaces on these tables. All tables are covered with a heavy canvas cloth that allows for water absorption as well as easy cleaning. When working on these tables never use a sharp knife directly on the canvas surface. This will cut the cloth. When cleaning the tables the first step is always to scrape the excess clay from the surface using plastic scrapers supplied by the studio. Never brush the remaining clay off the table. This creates excess dust, which is very undesirable, especially when others are working. The second step to cleaning the table surface is to wet sponge any remaining clay from the canvas. Always clean up after yourself so that others may have a clean environment to work in, and never store your work on the tables so as not to limit work space for others.

2. Slab Roller
This piece of equipment is exclusive to hand building and is completely manual. Its purpose is to allow the user to make consistent and uniformly thick slabs of clay to use in construction of your project. Its usage will be covered during the studio orientation for TMP students. It is also expected to cleaned and maintained like all other components of the ceramic studio.

3. Extruder
Along with the slab roller the extruder is the other piece of equipment in the studio that is primary for the handbuilder. This is also a completely manual piece of equipment that’s purpose is to extrude simple shapes such as round or square coils with uniformity and consistency to complex hollow forms. The extruder comes with a standard set of dies to
be utilized, but is simple enough to make one of a kind dies to be experimented with by students.

4. **Hot Box**  
With the speed of the TMP classes it is important to be able to process work efficiently. The Hot Box allows the students to speed up the drying process by having an enclosed set of shelves that have heaters and blowers built into the unit. This will allow for work to be dried quicker or at least brought to a workable stage sooner than under normal studio conditions. The operation of these heaters and blowers has been operated manually or on timers and is currently being reworked to be used with minimal maintenance.

5. **Miscellaneous Equipment**  
Many items are at the students disposal to aid in the making process along with some of the larger pieces of equipment. Plaster molds are available for slumping and draping. Rolling Pins of various sizes for making slabs, and wooden paddles for modifying shapes. Portable banding wheels allow projects to be rotated while still being worked on. Yard sticks and Squares for measuring purposes. And heat guns for speed drying or stiffening the clay when working. A note about these heat guns: They can get extremely hot, this is their function. They are not like a hair dryer/blowdryer, they create much more heat, consequently the ends of these heat guns should never be touched when using and they should never be left plugged in when not in use. As with all this equipment, the heat guns should be unplugged and hung up in their proper place.
V. Throwing/Wheel Area

1. Wheel Usage
This area is exclusive to students who are learning or already have experience in “throwing” or using the wheel. The ceramics studio has 15 electric wheels manufactured by 3 prominent ceramic equipment manufacturers, Brent, Soldner, and Pacifica. Most wheels are equipped with a splash pan to catch all the water and clay slip. Splash pans are easily removed for cleaning purposes and should be cleaned after every throwing session. The studio wheels are electric, as mentioned before and operate by moving a toggle switch on the side to the on position. Regulating the speed of the wheel head is done by the use of a foot pedal that is on the floor beside the wheel, in the same manner a person would operate a gas pedal in an automobile.

2. Bats
All wheel heads are supplied with pins that allow the thrower to use a bat as a throwing surface on the wheel. This allows for easy removal of the work made on the wheel. Bats are made of a hardened plastic material or are made out of a wood composite with a formica top. Bats come in many sizes, from 10” diameters to 18” diameters depending on the size of object you are making. It is unsafe and dangerous to use the wheel without a bat on the wheel head. Always put a throwing bat on the wheel head before operating the wheel.

2. Clean-up
This area of the studio has the potential to become the dirtiest area the quickest. Even though splash pans are equipped on most wheels, wet clay has the potential to be sprayed on the walls and end up all over the floors. This is why clean-up in this area needs to be strictly enforced or your privileges will be revoked. 15 wheels for the numbers of
students that use these facilities is not a lot, some wheels are used many times a day by several different students. This is why it is so important to keep your wheel, bats, tools and the area clean. Understanding how to clean and where to dispose of your scrap clay is discussed in the next section (Clay) under Recycle/Reuse.
VI. Clay

1. Types of Clay
   AL₂O₃;2SIO₂;6H₂O, This is the basic chemical formula for clay and basically means a hydrated (water) silicate of Alumina (decomposed igneous rock). For our class use we use a combination of different types of clays and chemicals in a recipe form to make our standard studio clay. The recipe for this studio clay is given at the end of this manual under Studio Materials. Our clay, as in most studio clays, is a mixture of Ball Clay for plasticity and Fire clay for refractory strength when fired in the Kilns. TMP students should learn how this clay is made and (2) 55 gallon containers of moist studio clay are kept for TMP use only. Upper level students can choose the type of clay necessary for their work and make their own accordingly.

2. Workable/Non-usable Clay
   Soon into your first experience with clay you will begin to understand that the different softness and hardness qualities allow the clay to do different things structurally and aesthetically. Each person's needs may require clay in various stages of workability. We keep all studio clay in closed plastic containers and under a moist towel to keep soft and workable. Keeping clay exposed to air allows it to dry out and become unusable. Understanding terms like leather hard and bone dry will lead to understanding when your clay is too soft to use or too hard to use and when it should be reclaimed.

3. Recycle/Reuse
   The ceramics studio at the School of Art and Design makes all its moist clay from dry clays in our bulk storage area and we recycle or reclaim all of our non-usable clay back into usable studio clay. What to do with your clay when it is no longer usable is the primary concern that sets the tone for how we clean and maintain the studio. We recycle three types of clay bodies: White stoneware (studio clay), Iron-bearing stoneware, and low fire Terra-cotta. Each of these clays has it’s own reclaim barrel and cross contamination is strictly monitored. Hand-builders will find that when a clay gets too dry/stiff to mold or manipulate then the best place for that clay is the reclaim barrel and throwers will usually end their session with clay that is too soft or wet to use also. Again, this clay goes to the reclaim barrel. No clay should go into the sinks. Only water should be poured in the sink. No floor sweepings should be put into the reclaim. Students should check to see that no tools end up in the reclaim also. It is important that only clay and the proper clay get put in the proper reclaim barrel.
VII. Clay Mixing/ Dry Storage Area

1. Dry Bulk Storage
This area allows us to store up to 10 different types of clay in bulk and 30 to 40 more chemicals for ceramic use and for sculpture. Within this room is a visual chart that allows beginning students the ability to identify basic clays and chemicals that are used in our clay recipes as well as the recipes posted by the mixing machines. **Students will only be in this room under supervision of the Studio Coordinator or a Faculty member.** Orientation in mixing clays should be done in TMP clay classes and nobody will be allowed to use mixers without an orientation.

2. Understanding Materials
Students are not expected to understand a lot of the chemistry involved in ceramic arts as beginning students in the school of Art and Design. In the clay making process there a number of materials to become familiar with. A visual directory of these materials is supplied in this dry storage area. These are:
- Hawthorn bond Fire clay
- OM#4 Kentucky ball clay
- #6 Tile Clay
- G200 Custer Feldspar
- Silica/Flint
- Grog (Fine, Medium and Coarse)
- F-4 Soda feldspar
- Redart Clay
- Goldart Clay
- EPK (Edgars Plastic Kaolin)
- Plaster

3. Types of Mixers
   a. Soldner Mixer
The Soldner mixer is the main mixer for the clay studio. It has the capacity to mix up to 300 lbs. of clay at one time. It has a rotating concrete drum system and is top loaded. All materials are loaded through a screen part of the lid and for safety the mixer will only operate when the lid is closed.
b. **Peter Pugger**
The Peter Pugger is a combination mixer and pug mill, meaning it will mix a batch of clay in one chamber and then extrude the clay through an auger fed nozzle to produce a compressed clay body that is ready to use. We use this primarily with the studio reclaim.
VIII. Glaze Area

1. Understanding Materials (MSDS)
   For every chemical and chemical compound used in the ceramic studio there will be on file a Materials Safety Data Sheet (MSDS). It is the responsibility of the ceramics coordinator to locate this for all students and explain its purpose. A typical MSDS sheet will identify the product and importer or producer, the hazardous ingredients, health hazard data, and precautions for safe handling among other items covered. The MSDS binder is located in the glaze area, close at hand for all students working with glazes. Students interested in further understanding these materials and how to handle them safely are encouraged to read through this binder.

2. Storage and Labeling
   All chemicals used in the making of glazes are stored in this area or in the Dry Bulk materials storage room. Generally the larger quantities are stored there and moved to the glaze area in smaller quantities. Chemical storage bins store 35 glaze materials in this area and over 40 other chemical materials are stored in smaller quantities in lidded plastic containers. All bins and plastic containers are labeled for easy identification and maintenance.

3. Safety
   Although all students (TMP through advanced) will be utilizing this area, only more advanced students with further instruction from faculty and the coordinator will be allowed to make glazes. TMP students are not required and are not allowed to make glazes. Because handling and breathing are the easiest and most common way a person is exposed to these chemicals, students should never handle any material without a respirator or dust mask and rubber gloves. Eye protection is also available when necessary. All students are supplied with a dust mask in their tool bags and this should be brought to every class. The studio supplies dust masks and rubber gloves and goggles and they are located conveniently in this area.

4. Equipment
   - Scales – proper measuring equipment is essential for accurate glaze making. Triple Beam and Digital scales are available to use.
   - Mixing Tools – small hand held electric mixers are available for mixing small batches. A larger mixer attached to end of a drill is utilized for larger batches of glazes used by the studio. And a variety of manually use hand mixers are available and displayed on a peg board in the glaze area near the sink.
   - Spray Booth- The spray booth is centrally located in the glaze area. Because of its excellent ventilation, this area can be used for handling chemicals in their dry state.
Generally, this spray booth is used by students to spray glazes on the surface of their clay pieces. A simple on/off switch operates the fan, and compressed air is regulated by a valve on the side of each booth. **Students should always wear a dust mask/respirator when spraying glazes.**
IX. Kiln Room

1. Types of Kilns
   a. Electric
   The School of Art and Design has 6 electric kilns in their kiln room. Our oval Skutt kilns (2) are fully automatic programmable 18.5 cu/ft kilns. These kilns have the ability to be programmed to fire to specific temperatures without any manual involvement. The Evenheat electric kilns (4) are various sizes and require manual “turn ups” during the course of the firing to bring the kiln to its finished temperature.

   

b. Natural Gas
   Where all the electric kilns are fired in an Oxidation atmosphere (clean burning, oxygen rich environment) the 4 gas kilns used to fire work in the ceramics area have the capability to fire work in a Reduction atmosphere (oxygen deprived environment). This is sometimes important in certain temperature ranges for the glazes used in these firings. These kilns are also categorized by the placement of the exhaust chimney. On the top of the kiln, Updraft, and in the back lower bottom of the kiln, Downdraft.
c. Alpine Kiln
Updraft, 2 burner kiln. Smallest of the 4 kilns. More of a personal size. Good for students learning how to fire reduction kilns.
d. **Blaauw Kiln**

Also an updraft kiln. **Car Kiln** – kiln style where the floor of the kiln is on wheels/track that allows it to be pulled out for ease of loading and unloading. Completely automatic, firing schedules are programmed into the kiln and no manual adjustments are necessary during the firing.
e. **Nodoor Kiln**  
Oldest of the schools kilns. 6 burner natural draft kiln. Traditional downdraft kiln, used most in the studio for firing student work.

![Nodoor Kiln](image1)

f. **Alban Kiln**  
This kiln is the largest of the schools kilns, with the capacity to fire pieces up to 7’ tall. This is also a Car Kiln which allows in ease of loading large work, and is a downdraft kiln.

![Alban Kiln](image2)
g. Specialty Kilns

1. Salt/Soda Kilns
   2 downdraft kilns are outside the ceramics studio proper in our outside kiln area. These kilns are for atmospheric firings requiring them to be outside for ventilation purposes. Soda or salt is added into the atmosphere at the end of the firing cycle to give the surface of the work inside the kiln specific characteristics.

2. Raku Kiln
   This is a portable kiln system that allows work inside the kiln to be pulled out of the kiln at the height of temperature and placed in containers full of combustible material (paper, sawdust, leaves, etc.). This gives the pieces a glazed surface loosely related to Japanese Raku Ware. This is a more immediate and primitive firing system and good experience for beginning students.

2. Equipment/ Safety
   Equipment associated with kilns and firings predominately involves safety from extreme heat. Appropriate flame retardant and heat resistant gloves and jackets are available for use and recommended for specific types of kiln work. Goggles and other protective eye ware as well as full-face shields are also recommended in specific instances. Again, no student will be allowed this level of involvement without proper orientation from Faculty or the Studio Coordinator.
X. Studio Clay and Glaze Recipes

White Stoneware Clay Body

Fire Clay 30
OM4 Ball clay 15
6T Tile clay 30
G200 Custer Feldspar 15
Silica/Flint 5
Fine grog 5

____________________________
100

White Slip  High fire

OM4 ball clay 20
EPK Kaolin 20
Nepheline Syenite 26
Silica/Flint 29
Borax 5

____________________________
100

Zircopax 10  optional for whiter base

Mason Stains 10  colorant marked on containers

Transparent Glaze  Cone 6

Custer Feldspar 12.5
Whiting 21.0
Gerstley Borate 12.5
EPK Kaolin 21.0
Silica/Flint 33.0

____________________________
100
XI. Ceramics Studio After-Hours Access Agreement

General Guidelines:
- All students must be approved for access at other than scheduled course meeting times.
- Only the Studio can approve after-hours access.
- Training for safety, security, individual studio maintenance, supplies usage, and the operation of studio equipment must be completed.
- Unauthorized students or acquaintances are not allowed in the studio.
- Alcohol and illegal drugs are prohibited in the studio.
- Residue from work must be cleaned up before leaving the studio.
- Studio coordinators may revoke access for non-compliance with these guidelines.

Key Card Procedure:
Students present this filled out After Hours Studio Access Agreement to the Studio Coordinator responsible for the Ceramics studio. Studio Coordinators then sign this form for qualified students, thereby approving M-Card access for one semester or the term of the course. Students need not give up their M-Cards for this process.

My signature means that I have read and agree to the above guidelines, and request access for A&D Studio, Room # 1269

___________________________  __________________________     __________
Student Name (Printed)    Course Instructor           Date

___________________________  __________________________     __________
Student Signature                                     Studio Coordinator, Signature

___________________________
Student Level:    Course type:   Course Length:

_____ Graduate    _____ TMP    _____ 7 Wks

_____ Undergrad    _____ Non-TMP    _____ 14 Wks

___________________________
Student UM ID #
XII. Project Proposal for Studio Access

Application to Studio # ________________________________

Name ________________________________________________

UMID # ____________________________________________________________________

Class ________________________________

Instructor ____________________________________________________________

Project Duration (1/4, 1/2, Full semester) _________________________________

Final Completion Date _____________________________________________

Project Description (Consider Size, Material, Construction Method):

Materials Needed: