Spring 2016 ARTS-5312.001 MFA Studio in Art: Ceramics

TR 3:30 – 6:20  CA 112B

Semester Information:

Dates /Times/Schedule 2016_01

Ceramics Lab Classes
•  Ceramics 1 Howard         Arts 2346 MW 12:30- 3:30
  Final Exam: Monday May 9, 11-1:30
•  Ceramics Intermediate Reuter         Arts 3324 MW 9:00-11:50
  Final Exam: Wednesday May 11, 8:00am
•  Advanced Ceramics Katz Arts 4324 TR 3:30- 6:20
  Final Exam: Monday May 10, 1:45-4:15
•  Graduate Ceramics 5302-5312 .001 MW 3:30-6:20
  Final Exam/Crit/ Monday May 9 1:45-4:15
•  Katz Office Hours MW 10:30 – 11:30 TR 1:15-2:45

Studio Schedule
•  January 20 Classes Begin
•  March 14-18 Spring Break
•  April 8 Last day to Drop
•  April 24 Last day to set out work for bisquing
•  May 2 Last time for glazing at noon.
•  May 4 Reading Day

Events
•  Feb 6 2016 Bountiful Bowls Rockport
•  MARCH 16-19, 2016 NCECA, 50th ANNUAL CONFERENCE, KANSAS CITY MO
•  Clay Week San Angelo Usually late April Early May

Instructor: Louis Katz, Office: CA 112C , Office Telephone: 825-5987, louis.katz@tamucc.edu

Final Exam (Critique):

Spring 2016
Like all other media in this "post modern" era the traditional boundaries of ceramics are melting, blending, and disappearing. Combined with this, all the traditional media now include their own take on an interface with kinetics (movement and video), installation, and performance art. This semester many of the students will be working with learning to use a microprocessor toolbox called an Arduino to control light, some sound, interaction and movement. This toolbox is of value to ceramics and all media. It is the instructor’s belief that the tools learned will soon be incorporated into many undergraduate art curricula, but an understanding is needed in graduate students now. This subject matter should be seen as new material that should soon be covered in most undergraduate ceramics curricula as well as other media.
Related to this the Arduino and the Maker Microprocessor Revolution has made 3D printing, scanning, and machining technology available at prices reasonable for visual artists and fine arts schools.

This class will include instruction in both of these sets of technologies as a part of ceramics, although they could just as easily be seen as a needed part of other media. Students will be given the opportunity to either focus on traditional clay, or these new technologies.

Because the material is new and there is a lot of it the student learning outcomes for people deciding this is what they need will be mostly internal to the section below for normal semester labeled," Technique." The primary outcome is that students will learn the skills needed to incorporate these techniques into their graduate level art work.

1. Students will learn to make aesthetic decisions involving timing of movement or light and a sculpture’s reaction to stimuli.
2. Students will learn to write simple programs for a simple microcontroller to control kinetic sculpture.
3. Students will learn to interface the microcontroller with a variety of output devices such as light emitting diodes, dc motors and stepper motors, solenoids and relays.
4. Students will learn to use the microcontroller with various input devices including proximity sensors, distance detectors, switches, and light sensors.
5. Students will learn to safely construct simple electronic circuits for low voltage DC, will begin to learn about safely interfacing with 110-volt AC devices.
6. Students will learn to solder.
7. Students will experience learning about the Arduino platform from books, and online support forums.
8. Students will begin to learn to teach this material to others.

Assignments and grading for students electing to learn this are contained at the bottom of this syllabus.

(student learning outcomes)
This is a Graduate Level Course. Commitment, hard work, and responsibility are minimal expectations. Ceramics is a demanding media, requiring skill, technique, technical understanding, knowledge of an art history not widely taught, and an aesthetic different from other media. Students with concentrations in ceramics will be expected to gain expertise in all of these areas. Students will build a substantive body of work, cohesive yet broad. They will become the expert on their own work, its historical antecedents, and contemporary relatives, its formal characteristics, and content. (Undergraduate students usually find that the instructor knows more about the roots of the work and formal aspects than the student, sometimes this even includes content. By graduation the MFA student must be able to show that they are the preeminent expert on their work.)
(MFA Students concentrating in Ceramics) The Work. Work for this course must be reviewed by the instructor at least monthly, preferably less formally weekly (summer weekly). Partial pieces, sketches, typed verbal descriptions of ideas, and finished work may be presented. Firing or other finishing should take place throughout the semester unless the work demands otherwise. Working rhythm is important to all work, particularly ceramics which transforms radically in firing and normally requires drying time.

1. Writing.
   - At the beginning of the semester the student will outline their plans in writing conceptually rather than numerically. "I will investigate asymmetrical platter form" is better than "I will make 10 platters". Numerical goals never address quality sufficiently. These plans are not contracts for specific work. They are just tools to help provide quick focus at the start of a semester. Plans change.
   - Each semester in Ceramics the student will be asked to write a short document on some aspect of their work. Its roots, where it is headed, what it says, its conceptual stance etc. The statement is due the first day of finals week. Unless otherwise stated, the aspect of their work discussed is the student's choice. This statement may be identical or based on statements required in other courses during the same semester. This assignment is upgraded by itself but will add information for the evaluation below.

2. Technique. During graduate school the student will fill in any gaps in their undergraduate education. In terms of technique, the graduate student specializing in Ceramics should be able to work in all the basic handbuilding techniques, throwing (even if minimal), make molds and slipcast, and make extruder dies and use them. The graduate student should come with experience loading and firing oxidation and reduction kilns and should have experienced some form of vapor glazing or solid fuel firing.

3. Understanding of the students place in the body of contemporary ceramics and history roots.

Methods of Evaluation
The primary responsibility of the student is to work towards a successful thesis. It is not required that all areas of this are brought forward at the same time, just that timely proportional progress is made. Some semesters parts of the requirements will make more progress than other parts. This is expected. For more information see the MFA Thesis Requirements on this website and the separate departmental requirements.

A. These parts of the student's grade that are tied together and create a make or break criteria for a students grade.
   - Quality of work. A graduate student's work must be at or above the level of an undergraduate BFA. When admitted in the area of ceramics the student will have demonstrated the ability to do this.
• Effort. A student whose work has fallen from the quality demonstrated on admittance into the program must be working hard to improve the work irregardless of other criteria for a grade.

B. Each semester the student through critique, papers, discussions and the art work demonstrate substantive progress in:

• Clarity of work
• Cohesion of ideas
• Personal direction of work
• Formal understanding of aspects of the work
• Understanding of its content
• Understanding its place in the genre of ceramics and in the feild of art in general

Each of these areas will be marked as:

- no progress,
- limited progress,
- significant progress
- sufficient for thesis exhibition

• It is expected that at least three of these areas will have significant progress in order to be granted the grade of A
• Significant progress in two areas B.
• Significant progress in on area C. If progress is limited in all areas but the student is meeting minimal quality and time commitments a grade of C will be given.

Committe Meetings: Students will participate in an end of the semester critique with their committee. The student will negotiate and arrange the time. The committee decides if and when the student proceeds to Thesis and if the Thesis is approved. For more detail see the graduate art handbook and catalog.

**Ceramic History**

Ceramics Graduate students will be required to read Ceramic History Survey Texts during their time at TAMU- CC and will be required to study individual periods, countries or styles in addition. Serious online research will be accepted. PowerPoint HTML or slide presentations may be required each semester along with foot noted outlines. The presentations will be given to an undergraduate class. Subjects of these talks will be by mutual agreement or by assignment.

For example:

Fall 2001- A History of World Pottery- Emmanuel Cooper. Read the text , supplement with other texts as needed. Answer the following questions:

What contemporary or modern well known potters seem to make work closely descended from:

- Greek or Roman traditions,
- English traditions
- Chinese traditions
- Japanese traditions
- African Traditions
- Native American Traditions

What makes you draw these conclusions? Could someone else justifiably determine that these potter's major influence lies somewhere else?

**Aesthetics**
Students will be required to read books on ceramic aesthetics during their coursework at TAMUCC. These will be discussed in weekly meetings.

Graduate Students Specializing in Other Media

Graduate students from other areas may use the class to advance the main body of their thesis work or may use the studio to develop work independent of their main body of work

Student learning objectives

- MFA This is THE major objective. To become the expert on their own work, its historical antecedents, and contemporary relatives, its formal characteristics, and content. (Undergraduate students usually find that the instructor knows more about the roots of the work and formal aspects than the student, sometimes this even includes content. By graduation the MFA student must be able to show that they are the preeminent expert on their work.)
- MA This is THE major objective. To become an expert on their own work, its historical antecedents, and contemporary relatives, its formal characteristics, and content. (Undergraduate students usually find that the instructor knows more about the roots of the work and formal aspects than the student, sometimes this even includes content. By graduation the MA student must be able to show that they are an expert on their work.)
- The student will fill in gaps in their undergraduate education learning, firing, forming techniques and other hands on knowledge necessary to become well rounded ceramists.
- The student will read books, learn about ceramic artists, and pursue research relevant to their _oeuvre_.

Firing, Advanced students are expected to actively participate in the firing, loading and maintenance of kilns. Washing shelves, cleaning burners and loading kilns are normal skills required in a studio. At the end of the semester you should be able to light our kilns, adjust them for reduction, load them and clean the kiln shelves properly. This will require out of class time.

Attend technical lectures.
Students will learn to identify the following styles, kilns, and artist's typical work:

Default Assignments for graduate students specializing in other media (other assignments may be given with mutual agreement)

For 2-D areas:
- Make a 3-D or Bas Relief version of your 2-D work. The piece (s) should reflect a semesters time, and before application of surface be finished to show quality. Bas murals are often most effective when perspective is forced, fisheyed or skewed. "Oriental" or vertical perspective techniques are often useful. The mural may have fully rendered components attached or in front of behind or to the side of the mural.
• Three D representations of the work. These are best when not considered as a cube but as objects in space. The objects do not need to be attached together and may be displayed on a pedestal table or floor or attached to a wall.
• The murals or 3-D renderings may be "surfaced" in any manner. However you should consider that you are making a surface, not necessarily a representation of a surface. Other techniques may be much more appropriate than brush and paint.
• You are responsible for firing your own work with assistance if needed.

For 3-D areas:
• Make a clay version of your work. Use the properties, concepts, and surface qualities of clay to their best advantage. The piece(s) should reflect a semester's time, and before application of surface be finished to show quality.
• Carefully consider how material and process affects you finished product. How can you use clay advantageously?
• You are responsible for firing your own work with assistance if needed.

Grading:
These pieces will be graded on the following criteria
• relationship to the students work 25%
• quality of workmanship 25%
• intendedness 25%
• the art of finishing 25%

Students working on development of skills with ceramic materials processes will be graded as follows.
• Development of skill 50%
• Use of skill for aesthetic ends 50%

The taking of a course outside ones area of expertise can have several goals.

The Studio
The Ceramics Studio is for students enrolled in ceramics courses to use.

End of the semester firing space is prioritized as follows:
1. test tiles
2. students will thesis shows within the next three months
3. The person loading the kilns work (within some limits)
4. beginning class work
5. undergraduate class work
6. graduate class work

The rest of the year priority will be granted as follows.
1. test tiles
2. The person loading the kilns work. This may not be done in consecutive kilns and other limits may be needed.
3. Students with thesis shows in the next three months
4. beginning class work
5. undergraduate work
6. graduate work

Studio space will be allotted for the use of graduate students. It will be treated as a privilege. Wheels will be made available for use in the spaces unless there is a shortage for the undergraduate classes. These spaces must be kept clean. Priority for these spaces will be as follows:
1. MFA's in their last year.
2. Other MFA's
3. MA's in their last semester
4. MA's in their last year
5. other MA's
6. All allotted space is at the discretion of the instructor for coursework. Ample space will be made available for all coursework unless none is available. The ability to store fired work in the studio is limited.

**Access to the ceramics studio after hours**
Graduate ceramics students may use the ceramic studio after hours when the building is closed. They must either stay or have keys. Doors may not be left open or propped. The studio and building must be left locked and secured. After hour access for graduate students is a privilege that has limits.

**Access to the ceramics studio between semesters.**
Graduate students are expected to remove materials from the common space between semesters. Work not removed from the common space may be thrown away without warning.
Graduate students specializing in ceramics may use the studio between semesters with the following limits:
The graduate student must be enrolled in ceramics the semester before and the semester after the break. During the break the students must be out of the building 15 minutes before closing time unless they have a key. Kiln firing except for electric bisquing requires approval by Louis each time (if between semesters). Graduate students working between semesters must not be a burden in any meaningful way on the custodial staff.
Graduate students must comply with all studio rules and inform Louis of all gas or wood firing between semesters.
Graduate students using the facility between semesters will be expected to participate in a cleanup the week after the end of the semester and the week before the next semester starts.
Graduate students are not to provide access to undergraduates to work between semesters without faculty permission.
Wheels owned by graduate students may be kept within the graduate space and will not be used by undergraduates. Wheels left in the common space will be available to anyone who wants to use them. Under no circumstances will TAMU-CC, Louis Katz, other students, or other members of the University faculty and staff be responsible for damage or theft of student owned wheels. Wheels must be kept in a safe condition or be removed.
Wheels must be removed before graduation. Hydraulic wheels are not allowed.
This syllabus is subject to change.

**Calendar**
Graduate students will attend lectures in the Advanced class and participate in Advanced Class Critiques. They will meet with the instructor at least weekly and show work at least monthly. Graduate students will arrange a meeting with their committee at the end of each semester except their first semester.

Required Notices
Required statements:

**ACADEMIC ADVISING**
The College of Liberal Arts requires that students meet with an Academic Advisor as soon as they are ready to declare a major. Degree plans are prepared in the CLA Academic Advising Center. The University uses an online Degree Audit system. Any amendment must be approved by the Department Chair and the Office of the Dean. All courses and requirements specified in the final degree plan audit must be completed before a degree will be granted. The CLA Academic Advising Office is located in Driftwood #203. For more information please call 361-825-3466.

**DISABILITY SERVICES**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall, Room 116. If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**GRADE APPEALS PROCESS:** Students who feel that they have not been held to appropriate academic standards as outlined in this class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process of submitting a formal grade appeal, please visit the College of Liberal Arts website, elatamucc.edu/students/studentinfo.html. For assistance and/or guidance in the grade appeal process, students may contact the Associate Dean’s Office.

**Attendance**
Attendance is mandatory for your success, will be recorded during each class session and is considered as part of the **professionalism** element of your final grade.

- You will lose a single letter grade on your fourth (4) absence.
- Five (5) absences will result in the drop of another letter grade.
- Six (6) absences will result in the failure of the course.
- Three (3) late arrivals or early departures will result in the recording of one (1) full absence.
- Students are required to attend class for the duration of the scheduled time or until the Professor dismisses the class.
- Attending critiques are mandatory.

**** Because art studios use materials and tools that could be dangerous, safe and cooperative behavior by students is absolutely necessary. The studio course instructor will be the ultimate judge of cooperative as well as safe and unsafe behavior. Individuals engaging in uncooperative and/or unsafe behavior will be cautioned and instructed once by the instructor. If a second occasion of uncooperative and/or unsafe behavior occurs, that student will be un-enrolled from the course and given a “wd” with no refund of tuition and fees. (per Dean Richard Gigliotti)

1. Spring 2016 planned graduate discussions
2. The nature of individual media
3. Separation and media postive and negative attributes of separation views on subject matter, content, process, philosophy that are or seem media specific.
4. Innovation, amalgamation, refinement are they one and the same or different?
5. Function and Ceramics, Industrial Design, is function a basic attribute of all media or just ceramics.
6. New Media, problems in the title, problems in the definitions Performance, Installation, Motion, are these basic attributes of all media,
The semester will be broken into assignments.

**Assignment One: Setup, Startup, Blink!**

**Student Learning Outcomes**
- Student will learn basic safety requirements for the class. Other safety issues will be discussed as the class progresses.
- Student will learn to set up the Arduino platform and send Sketches (programs) to the board.
- Student will learn to change timing settings on the board.

**Lectures and Demonstrations**
- Safety
- Setup
- Basic anatomy of a sketch (program)
- Comments, the “equals” sign and other basic statements.

**Tutorials and help sheets**
- Get familiar with the board [https://learn.sparkfun.com/tutorials/what-is-an-arduino](https://learn.sparkfun.com/tutorials/what-is-an-arduino)
- LadyAda Lesson 0 and Lesson 1 or [https://learn.adafruit.com/lesson-0-getting-started/the-lessons](https://learn.adafruit.com/lesson-0-getting-started/the-lessons)

**Description of Assignment: Blink!**
Set up the interface with the computer, read the tutorials above and get your microcontroller to blink at a rate of 5 times a minute for 100 milliseconds with a 100 millisecond rest between each blink. (Ignore the processing time.)

Take home test. Demonstrate that you can make the Arduino Blink to your instructor’s specifications.

**Test:** Simple in class test on paper to demonstrate gained knowledge.
Due Third Class period, test the same day.

**Assignment Two: Build out Blink.**

**Student Learning Outcomes**
- Student will learn basic sketch (program) components.
- Student will begin to learn about Ohms law.
- Student will learn to use LED’s and simple ways to find values for the ballast resistor.
- Student will learn to wire a switch and begin to learn about types of switches.
- Student will practice soldering for electronics.
- Student will learn to consider timing as an aesthetic parameter.
- Student will learn to load libraries and use serial communication between a computer and their Arduino.
- Student will learn to operate the CNC Router table specifically to make a translucent box for the project.

Tutorials for the XCarve CNC Router are at : [http://falcon.tamu.edu/wiki/Katz/CreativeEngineeringLab](http://falcon.tamu.edu/wiki/Katz/CreativeEngineeringLab)
- Steps, design, prepare the SVG file, Import to Easel, Print, Assemble,

**Lectures and Demonstrations**
- Lecture: Current, Voltage, Resistance Ohms law.
Lecture: Closer look at a sketch
Demonstration: Soldering
Demonstration: Using a breadboard
Demonstration: Determining the value of a ballast resistor for an LED using an online calculator.
Lecture/demo: Basic Sound with an Arduino and a speaker.

Tutorials and help sheets
LadyAda Tutorial lesson 2 and 3 http://www.ladyada.net/learn/arduino/lesson2.html
http://www.ladyada.net/learn/arduino/lesson3.html
http://www.ladyada.net/learn/arduino/lesson4.html Libraries, Serial Communication

LEDs
https://learn.adafruit.com/all-about-leds/what-are-leds-used-for We will continue to work through this tutorial as the semester progresses

Exercises
soldering a few practice joints.
Assembling the Breadboard Shield
Using a bread board
Learning about switches with test leads
Serial communication
Translucent Ceramics

Description of Assignment: Blink Build out
With your Arduino as the controller build a lightweight light that flashes, pulses or something. It is important that the timing be not just considered but seen as a crucial part of your design. Your device will need to operate on 4 AA batteries with a separate battery for the Arduino. AA Battery cases will be provided. So whatever it is, it will need to hold the AA battery case, the 9V Arduino battery case, and the Arduino. It is suggested that you build into some very lightweight plastic device or container. It could be a shampoo bottle with an interesting form or a very lightweight child's toy. It could be Tupperware®. It would probably be smart to get several identical objects. The light circuit must have a switch. The Arduino too must have a switch (the one on the battery case will work if it is accessible.
Consider the personality of your light. Can you make it edgy, coy, nervous, assertive, scared? How should its appearance affect its timing? What color should the LED's be?
This object should be a finished piece, even if simple, ready for display. I intend to display them in the hallway.
Due Class #8
The assignment projects all require that a copy of the code used to control the arduino be emailed to the professor. It must be turned in before the beginning of the class that it is due during.
All code must have a comment header with the Assignment Name, Student Name and email. All code should list sources even if they are not copyright protected. Licensing data should be preserved. If possible list the URL for the Code example:
// BlinkLouis- Louis Katz louis.katz@tamucc.edu
//Blink is based on an opensource program called Blink that is part of the Arduino IDE (Integrated Development Environment) software package. http://arduino.cc
//This software blinks the internal LED on the Arduino Board for ten minutes after the board is powered up

Assignment Three: Interaction.

Student Learning Outcomes
Student will learn to use conditional statements (if)
Student will learn to use functions.
Student will learn how to read a push button on your Arduino, and switch.
Student will learn how to use a proximity sensor.
Student will learn how to use a distance sensor.
Student will learn to wire an 8 ohm speaker (handout).
Learn how to make the speaker make a sound and how to vary it.

**Tutorials and help sheets**
LadyAda Lesson 5 Switches, conditional statements (if). Functions. [http://falcon.tamucc.edu/wiki/Katz/FunCtions](http://falcon.tamucc.edu/wiki/Katz/FunCtions)
Speaker Handout.

**Lectures and Demonstrations**
Comparison of conditional statements
Functions, Scope.
Proximity and distance sensors Problems and a partial solution

**Exercises**
1. Install the class libraries from Dropbox.
2. Learn how to read a push button on your Arduino, or switch.
   Demonstrate this in class to the instructor.
3. Learn how to use a proximity sensor. Demonstrate this in class to the instructor.
4. Learn how to use a distance sensor. Demonstrate this in class to the instructor.
5. Learn to wire an 8 ohm speaker (handout)
   Learn how to make the speaker make a sound and how to vary it.
   Demonstrate it in class to your instructor

**Assignment : Interaction**
Make your light from assignment 1 and 2 react to a person's presence with a proximity sensor or distance sensor. Make the timing decisions have meaning. You can use a push button in your design if you want but you must use a proximity or distance sensor. Somewhere in your sequence use sound from the speaker. There will be many devices in the same space. You may only have 250 milliseconds of sound in every 10 second. It should not be loud.

This object should be a finished piece, even if simple, ready for display. I intend to display them in the hallway.
Due Class 15

**Assignment Four. PWM and The Motor Shield.**

**Student Learning Outcomes**
Student will be able to apply Ohms law to simple circuits.
Student will learn how to pick a fuse for a simple circuit.
Student will learn to calculate Watts from amps and volts.
Student will learn to control simple DC motors including their speed and direction.
Student will learn to control Stepper Motors, and Hobby Servos.
Student will assemble a “motor shield” kit.
Student will learn about Pulse Width Modulation (PWM)
Student will integrate motors into their project.
Student will learn to consider types of movement as an aesthetic parameter
Tutorials
https://learn.adafruit.com/all-about-leds/what-are-leds-used-for  KVL (Kirchhoff's Voltage Law)
Relay control https://falcon.tamucc.edu/~wiki/uploads/Katz/arduinoandrelay2.gif
Transistor control https://falcon.tamucc.edu/~wiki/uploads/Katz/arduinoandmotor.gif

Lectures, Demonstrations
Relays and Transistors as Switches
Ohms Law, determining current, sizing fuses. Kirchhoff's law and simple LED circuits.
PWM

Assignment: Motor Shield
Build and test a motor shield for your Arduino. The motor shield kit will be provided. Two motors will also be provided.

Exercises
1. Learn to control speed and direction of your DC motors. Demonstrate this in class
2. Learn to use a hobby servo. Demonstrate this in class.
3. Learn to use a stepper motor. Demonstrate this in class. Stepper motors will be available.
Motor Shield is do class number 17 Exercises on class 19

Assignment Five. Motor Build out All Together.

Student Learning Outcomes
Student will learn to put it all together.
Student will learn to produce relatively clean code with functions where they are helpful.

Lectures, demonstrations,
LCD Board
Real Time Clock
Thermocouple Sensor
Storage in EPROM

Assignment: Motor Build out All Together
Make your light move on wheels. Use a proximity sensor to detect walls and react to them. Just like your light, how the object moves gives it personality, you can control in pulses, accelerate, decelerate, use soft turns or rotational turns.
Due class 27

Class 28 Trial with all devices in one space.
Class 29 Performance.
Final Exam Clean up, evaluation, discussion.

Required materials:
Soldering iron.
Adafruit Starter kit.
Safety glasses.
Access to a computer
Notebook and writing implement or equivalent
assorted materials for projects
The Arduino Cookbook by Michael Margolis 2nd Edition

Grading Assuming that the graduate student is learning to use Arduinos

Skills
Student has demonstrated that they can wire any of the simple devices from the Arduino Cookbook, LED's, motors, stepper motors, transistors, relays, distance and proximity sensors, switches etc.
Student has built out the projects and demonstrated that they can combine sensors and output devices in a program using conditional statements.
Student has learned to use one of the three D printers.
Student can find a way to troubleshoot Arduino programs.
Student can explain how their software works
Student will pass the tests

Participation
Graduate Student will participate in discussions about the aesthetic limitations and possibilities of each assignment.
Graduate Student will help other graduate students work out troubles with their projects and understand their programming.
Graduate Student will display their work and solicit feedback.

Excellence
Excellent code is neatly indented to be easily readable.
Excellent code has comments labeling variables and sections of the code so that it is easy to understand. It also has a section explaining what it does and if necessary how it does it. It lists what pins are used or explains this with comments next to pin variables.
Excellent Code works.

An Excellent Assignment works the way it is intended and demonstrates the concepts and equipment listed in the project description.
An Excellent Assignment looks like it was intended to be built the way it is. Details are intended or at least look intended.
An Excellent assignment has a cohesive personality.

Demonstration
Student will be able to demonstrate that they can understand code.
Student will be able to demonstrate that they can wire their Arduino with a simple wiring diagram.

Letter Grade of A
Student has acquired the skills,
substantively participated
has excellent code
at least two of three of the definitions of an excellent assignment
With a copy of the Arduino book the student can wire an example of a simple sensor or output device and get it working.
Student understands how to link input to output in a program and has or can demonstrate it.

Letter Grade of B
Student fails at more than two parts of excellence
and or student fails to demonstrate all the skills
Student turns in the assignments.

Letter Grade of C
Student fails at more than two parts of excellence.
Student fails to do Assignment Motor Build Out or software for this does not work.
Student fails to demonstrate most of the skills.

Letter Grade of D
Student does not put in enough effort to get a a C.

Academic Honesty for Arduino use in my class.

Unless the instructions call it a test, code and wiring diagrams can be copied among students, online sources, anywhere. If you are using code from another source that is substantial (say more than 5 lines) list the source in comments in your code. If there is a URL include it. Failing to do this is academic dishonesty, it can also be theft, and it also makes it hard if you need further information from the codes author.
That said, you must be able to understand the code well enough to alter it for your own use so that it can be worked on in class. If the teacher believes that you do not understand it, you will be asked to explain it. If you cannot, it will be considered not turned in until you can explain it.