

## 6.163 Strobe Project Laboratory – Spring 2009

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### *Obtaining Materials:*

REQUIRED	Duplicating Lab Notebook	MIT Coop at Kendall
OPTIONAL	Textbook	<u>Black and White Photography: A Basic Manual</u> Horenstein (at Quantum Books & The Coop)

**What is 6.163 about?** This is a laboratory experience course with a focus on photography, electronic imaging, and light measurement, much of it relating to events of short duration. In addition to teaching these techniques, the course provides students with experience working in a laboratory and teaches good work habits and techniques for approaching laboratory work. The major purpose of 6.163 are to help students learn how to plan and execute projects of modest scope, and to provide students with many opportunities to sharpen their communication skills; oral, written, and visual.

**Do I need to know photography?** Black and white photography will play an important role in the course. No prior knowledge of photography is assumed—all necessary techniques will be taught at the beginning of the semester.

**What about the labs and the Final Project?** Students will be assigned to lab groups of 4 students each. Each lab will meet once a week for three hours. Students will spend additional time completing their darkroom work. During the first six weeks, each group will complete 5 set-piece laboratories. For the balance of the term, lab time is spent working on a group project of the lab team's choosing. The first phase, called the Mark I project, is a feasibility study. It lasts for two weeks. The last four weeks of project work is the Final Project. Its topic may, or may not, be the same as investigated in the feasibility study.

**How are the lectures structured?** For the first several weeks the lectures will provide the detailed technical information required to carry out the laboratory exercises, and to prepare students for their group project. The next two to three weeks, the lectures will provide an overview of past group projects, and guide lab teams through the process of:

- Generating concepts for the group project
- Evaluating the concepts and selecting one to tackle
- Generating a project plan for the final project.

For the remainder of the term, the lectures will review on various applications of strobes and support the teams in executing their projects.

## **Grading & Course Expectations**

### **General Statement**

The point of this course is to provide students with experience in doing and thinking about experimental laboratory work. To achieve this, each student must become actively involved in laboratories and projects. Since you will be working in groups there will always be the possibility that some students will pick up points quicker, be more forceful with their opinions, or in some way tend to lead or dominate the group. It is the responsibility of each student to ensure that they are participating in and benefiting from course activities.

This is also a subject about communication: oral, written and visual. You will be expected to make several brief presentations in class regarding the previous week's lab or your group's project.

### **Grading**

The general distribution of grading between labs, quizzes, problem sets, etc. is shown below. Grading for the project is part objective, part subjective. The objective part is simply the numerical grade you receive for any given item. The subjective part arises from how the staff perceives your involvement with the course -- attendance, active participation in the project, preparation for lab work, etc.

You must submit all assigned work to receive a grade.

#### Grading

30%	Lab reports (1 oral, 4 written)
3%	Lab Effort (includes pre-lab exercises)
9%	Problem set, project planning exercise, and practical exercise
8%	Quiz
15%	Mark I Project work (subjective); Mark I Project presentation & report (objective)
35%	Final Project work (subjective); Final presentation & report (objective)

Each student must *have a bound laboratory notebook and use it* to record all lab work.

Lab reports are due one week after the work was commenced. Each lab is worth six percentage points. Late reports will lose 1 percentage point per day. While a lab submitted more than 5 days late has a numeric value of zero. Institute policy requires that all be submitted before I can issue a grade. I will read all reports, including those more than 5 days late, and their quality may affect the subjective portion of the grade. During the term, each student may have *one no-penalty extension* (of one week), applicable to any of the first five labs. *Weekly lab reports are an individual effort.*

The Mark I feasibility study closes with a 15-minute-long group presentation and a written report from your group. The Final Project closes with a final 15-minute-long group presentation of the

project in the last week of class, and a written report that is due on the last day of classes. The Mark I and Final Project reports and presentations are group efforts.

Again, you must hand in ***all*** assigned work to receive a grade.

### **Lectures**

Regular attendance is expected. The material in the lectures is designed to give you the background material relevant to the laboratory exercises or to further your understanding of experimental techniques or applications. There will be occasional guest speakers. As a simple courtesy, full attendance is expected. For some lectures, we will take attendance.

### **Quizzes**

There is one in-class quiz about midway through the term. The quiz will cover basic knowledge of photography and strobe illumination. It will also test your ability to apply that knowledge in new situations.

### **Laboratory Work**

It is mandatory that you show up at your regularly scheduled lab time so that you have ongoing interaction with the course staff. You are required to have certain information (in essence, a work plan) written in your lab notebook when you arrive to start your lab. Your TA will collect the carbon copy of that plan.

### **Final Projects**

#### *Mark I Feasibility Study and Final Project written reports and in-class oral presentation*

The projects and their reports are joint efforts, with all members of the lab group receiving the same numerical grade for both the report and the presentation. The course staff will make a subjective assessment of each individual's effort and factor that into that student's grade. In a few cases, lab groups have had problems in sharing effort fairly and amicably. If there is any anticipation that this might be a problem, the group must make a clear written delineation of responsibilities for the various parts of the project so that individual efforts can be properly assessed.

#### *Laboratory work for final project*

We do not expect that you will be able to complete the project using only your regularly scheduled lab times. As the laboratory's resources will be needed at off-hours (nights, weekends) by all groups, there will be a need for mutual cooperation and courtesy between lab groups. If you need staff assistance at odd hours, you ***must*** arrange for the help ahead of time.

## **Laboratory Procedures**

### **General Procedures and Attendance**

You *must* attend all lab sessions. If for some reason you must miss your regularly scheduled lab session, it is your responsibility to inform your lab partners and lab instructor as soon as possible before the lab begins. You are also responsible for joining one of the other lab groups to conduct that experiment. Arrive on time and don't leave early unless the lab exercise is complete. Be prepared—read the laboratory memo in advance and have a good idea about what you will need to do. Expect to be asked questions about the laboratory exercise as soon as you walk into lab.

### **Notebooks**

You must maintain a laboratory notebook. Obtain the 'duplicating' type that has alternating white and yellow pages, and carbon paper. Record everything -- notes, calculations, sketches, etc. Write in black pen. Do not leave blank pages or spaces. Never 'go back' to fill in missing data. If necessary, prints and printouts can be taped into the notebook.

*Hand in the yellow carbon copies with your weekly lab reports.* All statements and conclusions in your report must be based on data that can be found in your notebook. The notebooks will be checked and will factor into grading.

### **Required Work Plan for Each Lab**

Read over the lab description well in advance of your scheduled lab session. Before you come to your lab session, you must write down in your lab notebook:

1. Your answers to all pre-lab questions
2. A list of the materials you will need to complete this lab.

In some cases you will not know exactly what you will be using – so a description will be fine (i.e. “something to pop the balloon”, “something to measure the time between the trigger event and the strobe flash”). You should think carefully about this, as by mid-term your TA will only allow you to use what is on your list. If you forget something fundamental, like “camera” or “lens”, this will be a problem.
3. A list of everything you will need to do during your lab session so that you will be able to write your lab report.

For example, what measurements must you take? Specify what pictures must be taken, and how many. Note what sort of analysis is going to be performed on these pictures – as well as what you should thus think about while setting up the shot. For example, if you are analyzing the reproducibility of a process – what would you want to be sure to keep as constant as possible?)

Hand in the carbon-copy pages when you come to lab.

These items are required of you each week at the start of your lab session. We understand that there may be some confusion or misunderstanding as to our expectations in the first, but are confident that within a few weeks you will have these requirements mastered.

### **Lab Reports**

Laboratory reports are individual efforts. You will share the data that you collect as a group, but the organization, interpretation, and presentation of that data in the report should be your own. This includes the preparation of graphs. Likewise, photographic negatives will be common to the group, but each individual *must* make their own prints for inclusion in their report. (This means that you must determine the enlarge settings, exposures, etc., for yourself.) Hand in the carbon copy of your lab notes with the lab report.

Reports are due one week following the day on which you performed the lab (usually at your next lab session). They must be turned in on time or you will lose points.

### **Laboratory Rules and Etiquette**

Report broken items immediately. If something is broken or running low, tell us. We will have the item repaired or restocked promptly. Similarly, if the print paper in the darkroom has been exposed, inform us at once.

Keep the lab clean and organized. Both the lab and the darkroom is shared by many students from both 6.163 and other activities. Clean up any mess you make in your experiments, put things back where you found them, and leave the lab cleaner than when you found it.

Food and drinks are allowed only on the counter by the door in Room 4-410.