

EE109 Lab Policies

1 Introduction

This document supplements the information provided in the EE109 course syllabus. It provides additional information in more detail about how the lab sessions are handled, how assignments are turned in, and how the assignments are graded.

2 Lab Sessions

All students must be registered in one of the EE109 lab sessions and these all meet in the VHE 205 classroom. The VHE 205 classroom has workbenches with a variety of test equipment that will be used throughout the semester as part of the lab assignments. The room also stocks a number of other items, such as components used in the assignments and test leads needed for working with the test equipment.

Students may only attend the lab session they are registered in unless they have received prior permission from the instructor to attend a different session. Do not come to other lab sessions just because it looks like there are some empty seats and you need to work on an assignment.

3 Teaching Staff

The labs sessions are conducted by several members of the EE109 teaching staff.

- **Professor** – One of the professors who teaches one or more of the EE109 lecture sessions will normally be present for the lab session.
- **Teaching Assistant** – The TAs are graduate students assigned to the class. They usually have not taken EE109 but are very familiar with the course material due to their area of graduate study.
- **Course Producer** – The CPs are undergraduate students who have taken EE109 in the past are have been hired to help out in the lab sessions and hold online office hours.

4 Office Hours

When the VHE 205 classroom is not being used for a scheduled class, it will often be used by members of the teaching staff to hold office hours. The office hours are posted on the class web site, and a chart of the hours is posted on the wall near the door. During these office hours, students may come to the room and work on their lab assignments, and can request help from the teaching staff who are there at that time. If you did not finish a lab assignment during the lab session in which it was assigned, you can come to VHE 205 during any of the office hours and work on it. The teaching staff present can also do the assignment check offs during the office hours.

All students must be aware that VHE 205 **is not available** for working on assignments when the room is in use by a scheduled lecture or lab. Please to not enter the room to work on a lab assignment or pick up parts when a scheduled class, EE109 or any other class, is in session in there.

5 Project Box

During the first week of the semester, all students will be issued a project box containing several items that will be used in the lab assignments.

- A breadboard for building circuits
- Wire cutters/strippers
- Small screwdriver
- Arduino Uno microcontroller development board
- USB cable for connecting the Arduino to your laptop. If your laptop does not have a mating USB connector, you will have to purchase the appropriate adapter.
- LCD panel that will be connected to the Arduino
- Bag of 15 male-female jumper wires.
- A bag containing the electronic components required to do the semester's lab assignments.

The project box should be brought to all lab sessions for the rest of the semester. We do not stock extra project boxes that you can use if you forget to bring the one issued to you.

Students are responsible for the items provided in the project box, and all the items listed above must be returned at the end of the semester.

6 Components for Lab Assignments

Most lab assignments will involve building some sort of circuit on the breadboard that is provided in the project box. Most of the components necessary for doing the labs are provided in the bag included with the project box. Additional components may be required if the instructors decide to modify a lab assignment after the start of the semester. In that case, the additional components will be provided on the table in front of the podium. If you are missing a component, see one of the instructors about getting it replaced. It is recommended that students should first read about the lab assignment to get a general understanding of what they will be building and this will allow you to confirm that you have all the necessary components.

All components used in labs should be kept in the project box for the remainder of the semester. Do not return components to the classroom's stock unless told to do so by the instructors. Many components are used in multiple labs and students are expected to have the parts in their project box for the later labs.

7 Programming Software

Most of the lab assignments will involve writing programs that will run on the Arduino board and interface to various input and output devices. To do so, it's very important that all students have the necessary software installed on their laptops to do the program development and the downloading of the program to the Arduino board.

In the lab session during the first week of the semester, the teaching staff will work with the students to install the necessary software on their laptop to do the programming of the Arduino microcontroller development board. For more information on this, see the web page for the "Lab 0" assignment on the class web site.

Most of the work done during this first lab session to get the software installed can be done by students before attending that lab session. If you chose to do the installation yourself, you should still come to the first lab session to hear about any issues that the teaching staff feels you need to be aware of.

During the semester we strongly recommend that students confirm that their programming software is still working after they do any type of software update on their computer. Installing the latest version of macOS or Windows can often break the software that was installed for the class. This can usually be fixed but it often takes time to do so. We recommend not doing any major software updates just prior to the due date of an assignment. If your computer is set to automatically install updates you might want to disable this feature temporarily.

8 Lab Assignment Videos

For most of the labs, a video lecture is provided through the class web site that covers the material you will need to be familiar with in order to do the assignment. Most of these take about 20 minutes to watch, and it is very important that you **watch the video before coming to the lab session**.

9 Assignment Due Dates

Labs are assigned during the Wednesday and Friday lab sessions and are **due one week later** on the following Wednesday or Friday in the lab session you are registered in. By the due date you must demonstrate its functionality to one of the instructors or teaching assistants. The person checking your assignment will fill out a paper grading sheet indicating which parts of the lab assignment were working at that time. You do not have to have the whole assignment checked off at the same time. Labs demonstrated on after the student's registered lab session are subject to a point deduction as show below in Table 1.

For people in Wednesday Labs	For people in Friday Labs	Score
By end of your Wednesday lab session	By end of your Friday lab session	no deductions
Wednesday after your lab session or Thurs.	Friday after your lab session or Monday	-3 points
Friday	Tuesday	-6 points
After that	After that	no points

Table 1: Points deducted for late lab check offs.

10 Lab Grading Sheet

On the day the lab is assigned you will be able to pick up a copy of the grading sheet for that lab from the table in front of the podium. The sheet (a portion shown in Fig. 1) shows how points are allocated both for the in-class check off of the lab (what parts are working), and for the grading of any material that is later submitted, such as answers to review questions and program source code.

When your lab is checked off, the instructor will fill out the grading sheet with your score, and then enter that score in our online spreadsheet. **You should keep that paper copy of the grading sheet in your files** for the remainder of the semester to serve as a receipt to prove that your lab was checked off.

11 Submitting Source Code

All students will receive by email an invitation to enroll in the Vocareum web site for submitting assignments. This service is used for submitting material such as program source code files, and also text files that contain the answers to any questions that were part of the lab assignment. Any material to be turned via Vocareum must be uploaded to the web site and submitted for grading by **11:59 P.M. Friday** of the week the lab is due. All students need to be aware that the first step of uploading the material to Vocareum, **must be followed by submitting the items for grading**. Simply uploading material is not sufficient. The “Submit” button has to be clicked to make the material available to the graders.

For programming assignments, students should upload to Vocareum all source code files (.c and .h files) and also the “Makefile” that is used to compile and download the assignment. What is uploaded should be a complete set of all the files necessary to build and download the assignment to the Arduino. If there are any questions about whether the code can actually run, the graders have the option of compiling and downloading it to our test boards to confirm operation.

In addition to the source code files, with each lab you will be submitting a small text file that contains a statement that you are the sole author of the accompanying program. You will have to edit this file to add your name at the bottom to effectively “sign” the statement before submitting it and your program files.

TA/Instructor initials: _____

Item	Outcome	Score	Max.
LCD and Button Operation			
• Buttons change count direction correctly (doesn't reset to 0)	Yes/No		2
• Count sequence is correct	Yes/No		2
• Count rolls over at end of sequence	Yes/No		2
• Counter responds to short button presses	Yes/No		1
• Deduction for late check-off			
Review Questions (graded after submission)			
• Questions below (put answers in Lab4_Answers.txt file and submit on Vocareum)			3
Code Organization (Graded after submission)			
• Code is indented properly and includes comments			2
• DDR and PORT bits initialized			1
• LCD initialized			1
• Code to check buttons is correct			1
• State machine used for count direction			1
• Count values changed correctly			2
• lcd_writenable only changes PORTD[7:4] and PORTB[1:0]			2
Total			20

Figure 1: Typical assignment grading sheet

If you have issues uploading and submitting your assignment, do not just email your assignment to your professor or another member of the teaching staff. Contact one of the members of the teaching staff and ask them for help in submitting the files on Vocareum.

After assignments have been submitted to Vocareum, it will be graded by a member of the teaching staff and you will be able to see on the Vocareum web site what score you received and where any points were deducted.

12 Academic Integrity

All lab assignment that involve writing software to run on the Arduino boards are to be completed individually. Students are expected to write their own software. Copying (and then modification) of any portion of code from current or past EE109 students, or from Internet sources, is prohibited unless cleared with the instructor.

All code submissions are run through automated tools looking for similarities to current and previous student submissions. Any violation will result in submission to SJACS with a recommended sanction of F in the course. Some examples of behavior that violates the academic integrity policy:

Sharing code - You should not share any code you write with other students, nor should you ask other students to share their code with you. Helping friends by giving advice in general terms such as “You need to set bit 4 in the XYZ register.” is acceptable, but telling another students what code to write, or sending them a copy of your code is not.

Using code from Internet sites - You may not use code found on Internet sites in lab assignments. Code from sites like GitHub that does all or part of a lab assignment should not be used.

Stealing code from other students - Do not take code from other student’s computers without their knowledge.

13 Grade Appeals

After each lab assignment is completed, the members of the teaching staff will grade the submissions. Once the grading has been completed for a lab assignment, a posting will be made on Piazza stating that the grading for that assignment is complete and that the scores are now available for review on Vocareum. Starting at this time, students will have **two weeks** to request changes to their lab score. During that two week period, you should check on Vocareum how your assignment was graded and understand why points were deducted, if any. If you feel your score as shown on Vocareum is not correct you need to contact either the person who did the grading or your professor to request changes. Incorrect scores could be due to lab check-off not being recorded correctly, a mistake in interpreting your code or review question answers, etc. For each lab assignment, after the two week period is over, the scores as shown on Vocareum are frozen and not subject to further review or change. Be advised that if an assignment is re-graded, the person doing the re-grading will be checking the whole assignment for grading errors, and may find things wrong that were missed the first time. The result is that the new score could be higher, the same, or lower than the original score.