

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 all or part of 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.
- **Lab Assistant** – The LAs are undergraduate students who have taken EE109 in the past and have been hired to help out in the lab sessions.

4 Open Lab Hours

When the VHE 205 classroom is not being used for a scheduled class, it will often be available for students to work on their lab assignments. Members of the teaching staff (TAs and/or LAs) will be present in the room to provide help to the students. The schedule for these open lab hours are posted on the class web site, and a chart of the hours is posted on the wall near the door. During these times, 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 open lab hours and work on it. The teaching staff present can also do the assignment check offs during these times.

All students must be aware that the **open lab hours can get very busy** as the due date for lab assignments approaches. If you wait until the morning that an assignment is due to start working on the lab, and go to VHE 205 assuming a TA or LA will be available to help you, it's very likely there will be 30 other people there all trying to get help from one TA or LA, and you may not be able to get any help at all.

VHE 205 is not available for working on assignments when the room is in use by a scheduled lecture or lab. Please do 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 most of the electronic components required to do the semester's lab assignments. Additional components will be provided when needed.

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. When the software has been successfully installed, it must be demonstrated to one of the teaching staff in order to get credit for completing the lab assignment. 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 and also to receive credit for completing the assignment.

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. TAs and LAs are available during open lab hours to provide help with an assignment until the start of the lab session one week after the lab was assigned. Assignments can be checked off during the lab session one week after the lab was assigned, but the TAs and LAs will only do checkoffs for that lab. They will not provide any help for getting the assignment working.

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. Students who complete the “Checkpoint” portion of the assignment during the lab session in which it was assigned will receive one bonus point that adds to the lab score. The bonus points can offset grading deductions in other parts of this lab or in other labs.

Once the lab session one week after the start of the assignment has ended no further checkoffs will be done and no credit will be given for work done after that lab session has ended.

Because you may complete labs during any open lab hours for a full week after it is started, **no extensions of the due date will be granted**. If you delay working on your lab, you implicitly accept the risk you may get sick or not finish in time to perform an in-person demo, which will result in a 0 for the demo points. Exceptional circumstances may be reported to your registered lecture instructor, but at most 1 exception will be made during the semester, and an extension for that one lab is not grounds to request extensions for subsequent labs (i.e. you must get back on track in the subsequent week).

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 proof that your lab was checked off.

Item	Outcome	Score	Max.
Checkpoint <ul style="list-style-type: none"> • Showed correct LCD enable (“E”) signal on oscilloscope 	Yes/No		1
LCD and Button Operation <ul style="list-style-type: none"> • UP and DOWN buttons change count direction correctly (doesn't reset to 0) • Count sequence is correct • Count rolls over at end of sequence • PAUSE button works correctly • Counter responds to short button presses 	Yes/No Yes/No Yes/No Yes/No Yes/No	2 1 1 1 2	
Review Questions (graded after submission) <ul style="list-style-type: none"> • Questions below (put answers in Lab4_Answers.txt file and submit on Vocareum) 			3
Code Organization (Graded after submission) <ul style="list-style-type: none"> • Code is indented properly and includes comments • DDR and PORT bits initialized • LCD initialized • Code to check buttons is correct • State machine used for count direction • Count values changed correctly • lcd_writenibble only changes PORTD[7:4] and PORTB[1:0] 		2 1 1 1 1 2 2	
Total			21

Figure 1: Typical assignment grading sheet

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 the Vocareum web site must be uploaded 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. Be aware that a deadline of 11:59 P.M. means 11:59:00. If you submit the code 30 seconds later at 11:59:30 it will be flagged as a late submission.

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.

If you have made a submission of an assignment and wish to change something in the submission, you can make the necessary changes to the uploaded files and resubmit the files a second (or more) times. The graders will only look at the material in the last submission.

Labs submitted late are subject to a -1 point deduction for one day late and -2 deduction for two days late. Labs submitted after 11:59 P.M. Sunday night will not be accepted. If an incorrect file(s) was submitted and found at the time of grading, it is a -4 deduction if a correct replacement file is provided promptly; no credit otherwise

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 the Office of Academic Integrity (OAI) 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 **one week** to request changes to their lab score. During that one 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 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 one 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.