ECE231 Lab Policies and Marking Scheme

The purpose of the ECE231 laboratories is to help students to gain a better understanding of the theory learned in the lecture, while also nurturing important electronics design and debugging skills. During the PRA sessions, students will

1. get familiar with circuit simulation software (in this course, we use Multisim) and
2. develop experimental skills, including building circuits with real electronic components on bread-boards, recording measurements/results from lab equipment, and systematically debugging problems. There is simply no time for the 'trial-and-error' approach in the labs. You should not rely on everything to function perfectly the first time.

Each lab handout describes the detailed operation of several circuits. To get full marks, students must finish the preparation part before lab starts, conduct and complete the experiments during the lab, show TAs the results by the end of each lab.

Marking Scheme

The total lab mark is 15% of the final grade. The distribution will be 1%, 2%, 3%, 3%, 3%, 3% for the 6 labs, respectively. Note that the lab knowledge will be tested also in the final exam.

1. For lab 1 (10 points)
   Make sure your team bring at least one laptop **pre-installed with Multisim** to the lab room.
   3 pts for preparation + 3 pts for in-lab performance + 3 pts for reports + 1 pt for turning off power
2. For lab 2
   This is an **in-lab simulation quiz to test your understanding of circuit simulation**. There is no lab preparation. Please ensure that you are comfortable running circuit simulations and extracting relevant data based on Lab #1.
   Lab handouts will be given to students at the beginning of the lab2. Each team should finish the lab and submit answers in 150 mins.
3. For lab 3 to lab 6 (10 points each)
   3 pts for preparation + 3 pts for in-lab performance + 3 pts for reports + 1 pt for turning off power and cleaning up the station.

Rubric for Each Lab Component

Preparation

These points are awarded at the beginning of the lab session. Students must complete the preparation in before the start of the lab session, we cannot award points later on in the lab.

2 points are awarded for completing the preparation questions correctly and showing the work done (ie. calculations or circuit analysis) to obtain the solutions. These should be presented to the TA in their lab notebook. Partial marks will be awarded for incorrect or incomplete solutions. Students are expected to complete this individually; full marks cannot be awarded if one preparation is submitted by a single team.

1 point is awarded for demonstrating understanding of the lab preparation. Students are expected to come into the lab sessions prepared to answer questions from the assigned lab TA. This is also an individual mark, we expect each member of the team to participate in answering these questions.

In-Lab Performance

2 points are awarded for completing all sections of the lab as described by the lab handout. Partial marks will be awarded if the experimental setup is incorrect.

1 point is awarded for understanding and demonstrating problem solving skills in the lab. TAs may ask some questions related to your circuit or results of your experiment. We expect students to demonstrate their debugging skills to resolve the issues. TAs will be there to guide students with tips and to discuss debugging plans, but it is up to students to do the work to get the experiment setup correctly.

Report

2 points are awarded for completing the lab instructions correctly, recording measurements, and showing some work (i.e. calculations or circuit analysis) to obtain the solutions to answer questions in the lab handout. These results should be clearly documented in student's lab notebook. Partial marks will be awarded for incorrect or incomplete solutions.

1 point is awarded for demonstrating understanding of the lab results. Students are expected to answer lab related questions from the assigned lab TA in the last 30 minutes of the lab session, or before that if students complete the lab early. This is an individual mark, we expect each member of the team to participate in answering these questions.

General Guidelines

1. **Switching lab PRA sessions is not allowed**. Please consult the undergraduate office directly.
2. Each student should keep a separate, bounded lab book through the whole semester. It is used to write lab preparations, document measurement results.
3. Students are expected to show up on time. Being 10-20 minutes late will result in a deduction of in-lab marks. Being more than 20 minutes late will not receive any in-lab marks. Any issues with missing or rescheduling labs must be consulted with course instructor beforehand.
4. Each student will work with his/her partner at the assigned same station through the whole semester. You must let the head TA know before breaking-up your lab team.
5. Each student should write pre-labs **individually and independently**. It is NOT group work. If one team submits the lab-prep together, then the marks will be shared between the two students.
6. Pre-labs need to be completed before lab starts. If simulation setup/waveforms are required, please **PRINT and TAPE** them to your own lab book. Running simulations to generate waveforms when being checked by the TA is not allowed. Hand-drawn waveforms for simulations are not allowed either.
7. Performance marks depend on your understanding of circuit operation, attitude during lab, and debugging skills shown when problems occur. In order to get efficient help from TA, please write down a brief debugging strategy, record key observations when you encounter a problem.
8. All parts and equipment are tested prior to the lab. Please report damaged equipment to your TA. Repeatedly misreporting malfunction issues in fully functional equipment without adequate reason, could result in a deduction of performance marks.
9. The report marks depend on your written results in the lab-book, and your answers to the relevant questions asked by your TA. Two people in the same team may receive different marks.
10. Please clean up the station and turn off the power before leaving the lab room.