EE 221 L CIRCUITS II

FINAL PROJECT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
UNIVERSITY OF NEVADA, LAS VEGAS

Introduction

All tutoring labs are completed, and you will start the final project from now on. A presentation followed with a circuit demonstration (either on breadboard for in-person, or simulation for online/remote instruction) is expected during study week.

The final project should be related to what you have learned in EE220/221 class and EE221L for certain purposes/applications. You can either pick one from the following topic examples, or come up with your own ideas. It should not be either too easy or too difficult to complete. TA's approval is required before implementing your final project.

Topic Examples

1. Bandpass and bandstop filters, with specific amplification magnitude and frequency range (i.e., passing and/or stopping band frequencies).
2. Adjustable voltage amplifier with over-voltage protection.
3. Low frequency 3-bit Analog-to-Digital Converter (hint: use Op Amp as comparator, and LEDs as output bits). Low pass filter may be needed.
4. Voltage configurable DC power supplier, with voltage regulator as surge protector.
5. Configurable waveform generator based on LM555 timer (for configurable freq.), transformers (for amplitude), filters (if applicable), etc.
    a. Piano key sound (3 keys)
    b. Count down/up timer
6. Tesla coil

Requirement

1. Project quality and implementation contribute 40% of the entire Final Project credits. 30% go to the presentation and demonstration in class/video, and 30% for the project report.
2. The project should be completed by no more than 3 students (on breadboard for in person labs) or single individual student (simulations for remote/online labs).
3. The presentation should take no more than 10 minutes, and 3~5 minutes for the demo and Q/A. The presentation ppt slides should be concise (use bullets, diagrams and tables, rather than text walls) but comprehensive and logical. Detailed requirements are as follows.
4. The presentation should include:
    1) Project title, and group members' roles in the project.
    2) Background introduction, and description of the project. e.g., what function does it include, its overall inputs/outputs, etc.
    3) Project function breakdown/circuit diagram. How do these circuits work? Necessary mathematic models and justifications/explanations.
    4) Description and explanations on schematics and simulations.
    5) Implementation on breadboards. Results and demonstrations.
    6) Problems encountered, and your solutions.
    7) Conclusions, followed by acknowledgement and references if applicable.
5. The **final project presentation slides** are required for each group (in person labs) or individual (online) by the **Thursday of the study week** (i.e., the day before presentation), including the content as listed above (1~7). **Final project report is due the day after (i.e., Friday study week midnight 11:59pm)**, with a more detail description and justification for the report. Please include the detailed content in your presentation and follow the **Postlab template** for the final project report.

REFERENCES

1. Previous EE lab instructions