ENGR 201, Winter 2014 Design Project

Due March 14th 2014 at 11:59 PM

Turned into www.engr.orst.edu/teach

Design Project Objectives

This design project aims to deliver more depth to your ENGR 201 experience. The homework problems should each take under an hour to solve. At the end of the problem, there is a green $\checkmark$ for correct and red $\otimes$ for incorrect. That isn’t engineering. This project will be more open ended, but I will supply a checklist of features that will be used in the grading of these projects.

Project

This project involves designing, not building, a custom light system. This light system should have the following features.

1. Half a page of text describing what your project is intended to accomplish. Is it a nightlight for a child, a spotlight for a security guard, a red light in a video game console?

2. What battery will be used and why? What light element will be used (LEDs, incandescents, or other)? Use some chapter 1 topics to calculate how long the battery will run the device.

3. One of the following features:
   
   (a) An Op-Amp to create a dimmable light.
   (b) A RC or RL circuit to control the timing for the light to slowly turn on or slowly turn off.

4. A computer drawn schematic of the electrical components used in your project.
   
   (a) I recommend LTSpice, but any circuit drawing software program is acceptable.

5. A BOM, include enough detail so anyone reading it can buy all of the parts being used in the project. Total cost of the project needs to be included here.
6. Extra Credit Opportunity. Pick something extra to make your project unique from the other 300 projects submitted. Here are some ideas.

   (a) Design a PCB for your circuit. Here’s a free program to do it.\(^2\)
   (b) Design a physical model of your project. This could be done in Solid Works.
   (c) Make a advertisement for your project.
   (d) Pick something else that will take 3 to 4 hours to complete.

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\(^1\)http://eecs.oregonstate.edu/education/docs/dlogicboard/parts.xls
\(^2\)http://www.expresspcb.com/ExpressPCB.htm/Costs.htm