Homework: ES 50 Fall 2015 Final Project Proposal

This week's homework is proposal for your final projects.

The deadline is SATURDAY October 31st, 9 pm. This deadline is **firm** since we plan to review all proposals promptly and provide feedback by Tuesday 11/3. If you miss the deadline, we will have to take some points away from your final project grade.

Proposal submission checklist:

1. **Put together your dream team:** ideal team size is 3 or 4 students. Less than 3 are possible too, but make sure that you explain why you want to go with the smaller team. Teams larger than 4 are discouraged, unless there is VERY good reason;
    a. **Having trouble finding team members, or simply just want to join someone else's team?** No worries! Check https://goo.gl/kqbUUu for the teams looking for people, and contact them.
2. **Brainstorm:** discuss various ideas and implementations with your teammates.
    a. **Pick interesting and hard project** that you will be proud of once done. This will also enable you to learn a lot during the process! If teaching staff thinks that your ideas are too ambitious, we will help you simplify them and make them doable in 3-4 weeks.
    b. **Cannot come up with a good final project idea?** Get inspired by looking at previous years' projects (http://tinyurl.com/2014-ES50-Roster & https://goo.gl/LVb0L3), as well as final project resources that we posted on line.
3. **Get feedback from your lab TFs! Please attend your regular lab section this week**, and use that time to talk to your TFs. All of them have done these projects before and can tell you what is doable and what not, and what the best way forward is.
    a. **Your team members attend different lab sections?** No worries! Each of you should attend her/his regular section and obtain feedback from their TFs. In that way your team will collect feedback from multiple TFs, integrate the feedback, and come up with the best path forward.
4. **Register your team & idea:** fill out the on-line spread sheet available at http://goo.gl/forms/UGPHnBxsOZ
    a. **Once you are assigned a team number, Please remember it!!!** This will be VERY important number from now on ☺, and use it in all communications with us.
    b. You should register your idea ASAP before October 31st deadline. We will be monitoring the spreadsheet and providing instant feedback, which may be helpful with the proposal preparation.
5. **Prepare final project proposal - guidelines are given on the following pages.**

6. **Submit your proposal via canvas on ES 50 website. The deadline is October 31st, 9 PM.** Only one proposal should be submitted per team. Please name your files by starting with your team number (from the spreadsheet), followed by team members last names separated by underscore. For example: ***23_Lombardo_Wei_ Final Project Proposal.pdf***. If you don't currently have a team number, please make sure that all last names are in the file name
7. **Wait for feedback on your proposal.** Feedback will be provided via CANVAS and on-line spreadsheet. We will read all proposals promptly, and provide feedback by Tuesday 11/3. If we give you thumbs up, you can start ordering parts and having fun. Otherwise, we may ask you to refine the idea, plan, etc.

What happens next? Once approved by the teaching stuff, you can start working on the project! Yay!!! The success of your project will be measured by the effort that all members of your team put into the project. That is, your grade will not be based on the difficulty of the project (once approved, of course) but on the effort your team puts in towards reaching the goals and understanding of what you are doing. Having said that, keep in mind that we may request you to do additional stuff, before we approve the projects, if we feel that your project is too simple (that has never happened before, but we thought we should point it out ☺).

Final project proposal format: Your project proposals should contain ALL information requested below.

1. **Team Members:** list the names and email addresses of every participant in the project. Consider forming teams of 3-4 people.
2. **Project Information:**
    a. **Title of Project**
    b. **A brief discussion of the project, including why it interests you.**
    c. **What is the goal of your project?**
3. **Resources:** List any resources (on-line or otherwise) that have inspired you and/or that you will be consulting during your implementation of the final project. Remember that it is okay and encouraged to leverage a wealth of resources but your project cannot be a simple copy+paste of other people's work. Copy+paste+modify & improve is fine though!
4. **Schedule:** From Nov 1 to the Dec 9 (final project fair) spell out what your goals will be for each week and how you intend to achieve them.
5. **Block diagram for your project.** This should show how different parts are connected, what are their functionalities, etc. If you have any circuit diagrams you can include them too. If not, no worries. Also, if appropriate, please reference all resources (if any) that you based your diagram on.
6. **Team management:** discuss how do you intend to divide the work between your team members and who is going to do what? A pivotal component of engineering work is project management, which includes appropriately and evenly assigning tasks.
7. **Indicate if there is knowledge required to complete your project that your team does not currently possess.** Examples are: laser cutting, 3-D printing, machine shop, printed circuit board design, soldering (though we likely covered this one already), more Arduino programming, more programming in general, etc…
8. **Part list:** Please list all the parts that you will need to complete the project, along with the prices and sources. Good resources are sparkfun.com, adafruit.com, digikey.com, etc. You do not have to list parts such as resistors, capacitors, individual LEDs, and other stuff that we have in ES 50 lab. You do not have to list Arduino Unos either (if you are doing an Arduino-based project). If you need another type of microcontroller (nano, lillypad or anything else), please include it. Additionally, if you plan to laser cut acrylic, please include this on your parts list and the quantity.
In your part list please indicate if parts exist in ES 50 lab. For that you should go through every drawer in the lab and see what is there – we have a lot of motors, different kinds of sensors, actuators, etc…
9. **Budget:** Your project should operate within a budget of $75. If you absolutely feel that a component is necessary but outside your budget, please email Gu & Chris and they will determine the appropriate course of action. Also, remember that larger teams and more complicated projects may be allotted larger budgets.