

# COSC 480 – Small-Scale Computing

## Final Project

**Purpose:** You and your team will propose, budget, and execute a project based on Arduino or Raspberry Pi.

**Task:** Over the remainder of the semester, you and your team will be designing and then implementing that project. You will need to be creating something original, but it can be an improvement of a project already out there. You will need to leverage either a Raspberry Pi, or an Arduino for this project, and you will need to provide a proposal, budget, how-to guide (posted to the DIY page Instructables as well), YouTube demonstration video, and final presentation to the class. In order to earn an A, your project should be significant, well implemented, and awesome.

**Proposal Document (10%):** This minimum one-page document will describe your team's project, including basic mock-ups of the end product, a description of the steps your team believes will be necessary to design and implement the project, what topics your team will need to research for the project, and 4 weekly milestones. You will also need to describe 4 similar projects and how this project differs from those that you cite.

**Budget Document (10%):** This one-page document will include your proposed budget and parts list. Each part should be sourced, complete with a link to the online seller or catalog listing. For each part you should include a rationale for needing that part for your project.

Your document should be formatted in five columns. The first column is the name of the part. The second is the source of the part. The third is the rationale. The fourth is the quantity. The fifth is the per unit price. At the bottom, include your project total. You may use a spreadsheet for this.

Keep in mind that there is no specific limit on your budget, but that you will be footing the bill for any parts that we don't have on hand, and that higher budgets will have higher expectations. Even if you know that we have a particular part on hand, you must list that part as part of your budget, the source for the part, and the price.

**Specifications:** Your project will need to incorporate some extra components beyond the board itself. No simple Raspberry Pi + Application projects will be allowed. Components that we have available, but will be first-come, first-serve include 3 Kinect sensors, iRobot Create platforms, Legos, motors, and discrete sensors (temperature, flex, light, sound, etc.).

**Demo Days (15%):** During the last two class sessions, teams will demonstrate their projects to me privately. This will also involve a question and answer session. Teams will be given their appointment times at a later date.

**Final Turnins:** You will need to turn in (December 9<sup>th</sup>, 11:59pm) the following items:

- 1.) A how-to document describing the step-by-step implementation of your project.
- 2.) A link to your how-to posted to the Instructables website.
- 3.) A link to your minimum 2 minute YouTube video describing and demonstrating your project.
- 4.) Any code developed for this project.

**Final Presentation:** During the final period (December 17<sup>th</sup>, 2pm), teams will present their project to the class, including a demonstration of the project. This presentation should cover a “how-to”, budget, as well as any challenges the team encountered. This is a 15 minute minimum presentation, not to go over 20 minutes. There will be a Q&A afterwards, but should not be taken into account for the presentation time.

**Assessment Rubric:** The two documents, plus the demo day presentation make up 35% of your final project grade. 15% of your grade will be from team evaluations, and the remaining 50% is dependent on how well you execute your proposed project. As noted in the syllabus, the final presentation is a separate assessment.

**Team Evaluations:** By noon, December 13<sup>th</sup>, you need send a team evaluation to me via email. Included in that email should be a grade (out of 100) as well as a rationale for each grade given to your teammates. Do not grade yourself. Points will be deducted for late evaluation submissions.

**Learning Targets:** Direct application of skills learned in this class, creativity.

**DUE DATES:**

- \* Proposal document due November 8<sup>th</sup>, 11:59pm via Blackboard.
- \* Budget document due November 13<sup>th</sup>, 11:59pm via Blackboard.
- \* Any code deliverables, how-to document, link to your project on Instructables, and a link to your YouTube video of “proof of concept” due December 9<sup>th</sup>, 11:59pm via Blackboard.
- \* Team evaluations due December 13<sup>th</sup> by noon via email.