

Bioengineering Research Project Proposal: Winter 2020
Due Feb 18, 2020, 5pm

This assignment has a general and a specific aim. The general aim is for you to gain experience writing a real-world research proposal. These are formal written documents through which companies “bid” on projects, and how university and industry labs request/garner financial support from a variety of public (e.g., NSF, NIH, DARPA) and private (venture capital firms) funding agencies.

The specific aim of this document is to stimulate your thought processes for your BioE project in terms of the following:

- **Project Details and Strategy:** What do you propose to build or study? What is your biological species inspiring your design? Why build it—what are the potential practical applications of the proposed final product? What aspects of the biological species will you incorporate into your design? Which aspects will you purposefully *not* build in? What are the novel aspect(s) of your design? Project implementation: How exactly will you build it—what materials and equipment do you need? What are the construction/fabrication techniques you will use? How will you quantitatively analyze the performance of your proposed system? What equipment/instruments do you need to do so? Illustrate your ideas making good use of photos, drawings, etc. A good graphic really is worth 1000 words.
- **Literature Review:** Place your proposed work in proper context of previous work. Read and synthesize information from (at least) 5 journal articles, which serve as reference material and motivation for your project. For each article/reference material, provide a brief (few sentence) description of the relevant information contained therein, and specifically note how it applies to or informs your project.
- **Budget & Bill of Materials:** For the materials that you will need, how much will it cost, and from what sources/vendors will you obtain it? The allotted budget is approximately \$750 for the class, or about \$250 per project team. Ultimately, create a bill of materials in spreadsheet form, formatted per the example below:

Item/Part	Qty	Cost each (\$)	Total Cost (\$)	Vendor/Part Number	Link for Purchasing
Feather Microcontroller	2	30	60	Adafruit: 2829	https://www.adafruit.com/product/2829
Custom 3-D printed mold	1	50	50	IQ center	n/a

- **Timeline:** List goals you hope to accomplish on a **weekly** basis. The total time allotted for the research project is 6-7 weeks, including written and oral presentations. The **final written report will be due Thursday, Apr 16, 2020, 5pm. Final oral presentations—open to the public—will delivered in class during April 09, 2020.** Therefore, the vast majority of your project needs to be completed prior this time.

Your team should work together to submit **one** report. It should be organized according to the above sections (just as the NSF, NIH, DARPA require a rigid format for proposal submissions). There is no “correct” page count. It should be however long it needs to be to adequately address the sections above. Based on experiential wisdom, the entire report should be about 10-15 pages in length.

I recognize starting a true research project from the ground up is very likely new, unexplored, (and hopefully exciting) territory for most (all) of you. Venturing into uncharted territory can feel somewhere between daunting and overwhelming. There is strength and synergy in numbers—hence, why you work in a team. Please know that I am here to support your project to the maximal degree possible. As such, please feel free to consult with me at any time regarding any of the points above. I am very excited to work with all of you on your research projects—amazing things can and do happen!