**ABET Criterion 3 <http://abet.org> Name\_\_Jacob Hanshaw\_\_**

**What components of your A3 research project illustrate – (not ALL are expected to apply)**

|  |
| --- |
| (a) an ability to apply knowledge of mathematics, science, and engineering |
| Example from project: During this project, I had to compute current loads, write software and algorithms, design board layouts, and create rock climbing hold mountings. |
| (b) an ability to design and conduct experiments, as well as to analyze and interpret data |
| Example from project: During this project, I conducted experiments to evaluate the success of algorithms and find hardware and software bugs. Finding bugs are specifically good experiments as there are many hypothesis about a problem that are individually tested until the bug is found. |
| (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability |
| Example from project: This entire project was about designing an interactive artificial rock wall. During the project we had to make considerations about the cost of the system, social interactions amongst users, manufacturability of the product and how to design a safe project. |
| (d) an ability to function on multi-disciplinary teams |
| Example from project: During this project, our team was composed of computer scientists and engineers, so the team was not significantly multi-disciplinary. However, we did play to our individual strengths including a member that used to be a mechanical engineer. |
| (e) an ability to identify, formulate, and solve engineering problems |
| Example from project: This project was the result of identifying a problem with how artificial rock walls are constructed and maintained and coming up with a novel solution. |
| (f) an understanding of professional and ethical responsibility |
| Example from project: This project had little professional or ethical responsibilities. However, we did strive for safety and quality in our product out of concern for the well being of our customers. |
| (g) an ability to communicate effectively |
| Example from project: I believe the construction of this paper and my presentations in class have demonstrated my ability to communicate effectively, |
| (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context |
| Example from project: I have not considered the global impact of this project as I feel it is likely minimal. |
| (i) a recognition of the need for, and an ability to engage in life-long learning |
| Example from project: During this project, I often engaged in activities that weren’t all together necessary for the sake of advancing my knowledge. A good example of this is the computer vision algorithm that I created despite a potential lack of practicality. |
| (j) a knowledge of contemporary issues |
| Example from project: This project did not involve any contemporary issues beyond the problems with current artificial rock walls. |
| (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice. |
| Example from project: During this project, we used schematic making software, board layout software, microcontroller programming tools, constructed polyurethane holds, and wrote a significant amount of software. |