1. Desired Needs for Project Design
    a. Fully portable electrocardiogram for student education.
    b. Affordable devices that can be provided to outreach programs.
2. Constraints on Design/Project
    a. The device needs to be completely isolated from electrical outputs to ensure student safety.
    b. ECG module cannot be too expensive, as the purpose of this device is to remain affordable for schools to provide to students and outreach programs.
    c. Portable device that doesn't need external power to operate.
3. Engineering Standards for the Design
    a. Following medical electrical equipment safety, ensuring that students/users are not exposed to leakage current and the device is electrically isolated.
    b. Performance standards to accurately measure the heart's electrical activity.
    c. Analog filtering to remove baseline drift and interfering noise, such as movement or other devices nearby.
4. Ethical, Environmental, and Societal Concerns
    a. Accurate explanations for what the device is to be used for (disclaimers that this ECG module cannot replace clinical ECG devices, or be used to diagnose arrhythmias).
    b. Ensuring user/student safety and privacy while recording ECG data during demonstrations; additionally, letting students know prior to demonstrating.
5. Active Teamwork and Leadership
    a. Collaboration and inclusion of opinions were accounted for during decision making; similarly when choosing roles for each sub-project.
    b. The group was split into five groups: hardware setup, software setup, filtering, enclosure, and student outreach portion.
    c. This allowed for each student to work alongside each other, instead of focusing on one point at all times; made the project transition smoothly between sub-groups.
6. Motivating Factors for the Project
    a. Students lack knowledge of bioengineering principles due to unaffordability, school restrictions, etc.
    b. Students typically learn about cardiac physiology through textbooks and lectures, but do not have hands-on learning opportunities; unable to build the bridge between theory and real world situations.
7. Innovative/Entrepreneurial Ideas
    a. Creating a portable, self contained electrocardiogram for student utilization that is affordable for school and outreach programs.
    b. Future design ideas to create custom printed circuit boards (PCB) that can be mass produced and distributed to schools that want to endure more hands-on learning experiences with the students.