

## 1.1 REQUIREMENTS & CONSTRAINTS

List all requirements for your project. Separate your requirements by type, which may include functional requirements (specification), resource requirements, physical requirements, aesthetic requirements, user experiential requirements, economic/market requirements, environmental requirements, UI requirements, and any others relevant to your project. When a requirement is also a quantitative constraint, either separate it into a list of constraints, or annotate at the end of requirement as “**(constraint)**.” Ensure your requirements are realistic, specific, reflective or in support of user needs, and comprehensive.

### Functional Requirements:

1. The temperature sensor can be applied to multiple areas of the body
2. The temperature sensor can withstand daily usage, including sweat and mild pressure
3. The temperature sensor communicates with an android application running on both the client's phone and the instructor's phone
4. The application communicates with a wearable sensor that can audibly/physically communicate to the user of changes to the temperature sensor
5. The application and/or temperature sensor must be able to communicate to the user if there is loss of connection
6. The temperature sensor must be able to communicate over at least 300 yards
7. The application must confirm accurate body temperature measurements
8. The application needs to be able to locally store data that can be uploaded to main data storage upon re-sync

### Resource Requirements:

1. The design has a maximum budget of \$5,000 [**constraint**]
- 2.

### Physical Requirements:

1. The temperature sensor will have a maximum size of 1”x 1”
2. No wires connecting the temperature sensor to any other device on a person's body
3. The temperature sensor and accompanying hardware must not produce pressure to any area of the user's body
4. The temperature sensor and accompanying hardware must not produce any friction or skin irritation to any area of the user's body

### Aesthetic Requirements:

1. The phone application must be simple/easy to navigate for a new user
- 2.

### User Experiential Requirements:

1. Temperature sensor can be easily applied by the user individually
2. The temperature sensor must be able to show the user whether their limb is at a safe temperature without looking at the application

### Economic/Market Requirements:

1. The device should be relatively inexpensive so that as many individuals as possible can utilize it

#### Environmental Requirements:

1. The temperature sensor must be able to withstand temperature ranges between -10F to 100F
2. The temperature sensor and accompanying hardware must be water/humidity resistant
3. The temperature sensor and accompanying hardware must be able to withstand temperature cycling (hot to cold, cold to hot, etc.)
4. The battery supplying power to the temperature sensor must be able to function under extreme temperatures
- 5.

#### 1.2 ENGINEERING STANDARDS

What Engineering standards are likely to apply to your project? Some standards might be built into your requirements (Use 802.11 ac wifi standard) and many others might fall out of design. For each standard listed, also provide a brief justification.

1. IEEE Standards
  - a. Our group will be utilizing IEEE standards for the use of designing consumer technology. These standards will help to determine certain design constraints and considerations in relation to electrical hardware.
2. ANSI Standards
  - a. Our group will be utilizing ANSI standards in regard to the design, process, testing methods, and other aspects of our design process.
3. ISO Standards
  - a. Our group will be utilizing ISO standards in conjunction with ANSI standards in order to dictate the best course of action for our design constraints and procedures.