**This project is solving the Fit as a Moose challenge.**

**Description:**

The purpose of this project is to develop an application that ties astronauts on Space Station to health and exercise options as to minimize invasive data collection on Earth. This application would be recording multiple physiological measurements which are: body weight tracking, saliva pH, body temperature, blood pressure, hydration, heartbeats, blood analyzer, breathing control, bone density, safety system, hormone tracking, and sweat measurement.

As we advanced through our work for the project, we made use of numerous pieces of software which are the following: Microsoft Word, SQL Server (as a DBMS), Microsoft Visual Studio, and SketchUp.

Body weight tracking:

During the engineer’s stay in the spacecraft, his bodyweight will go through more or less of an evolution. The wearer is going to need to weigh himself/herself just before a workout session then right after so he/she can, for instance, know exactly how much water he/she should drink in order to get back the loss in water (through sweat).  
Another use of bodyweight tracking is to simply keep a record of the user’s bodyweight during his stay in the spacecraft. For that matter, weighing thyself should be done on a daily basis.

Saliva pH:

Relation to microgravity?

Body temperature:

The main purpose of this tool is to make sure that the suit wearer has a stable body temperature of 37 °C. If it’s not the case, medical care should be immediately brought to the subject.

Blood pressure:

This feature is incorporated to make sure that the pressure remains lower or equal to 120 over 80 millimeters of mercury. Otherwise, the blood pressure should be brought down as quickly as possible with intravenous blood pressure medications to prevent further organ damage.

Hydration:

It’s suggested that the average person should drink at least 8 cups per day to avoid dehydration. In fact, proper hydration is important for health, growth and development.

Heart rate:

We know that there is a certain maximal heart rate depending on the age of the person: this heart rate should be monitored accordingly. In case of abnormal monitoring, the subject should be diagnosed by a cardiologist.

Breathing control:

Monitoring the airflow, let it be inflow or outflow, of the suit wearer, including the intake of Oxygen and outtake of Carbon dioxide.

Bone density:

As time goes by, the engineer’s bones might be affected in a way or another. This means that, in case of a bone density that is lower than the average, the subject should be administered with sources of calcium and minerals to recover that lack of density.

Safety system:

To prevent the happening of unwanted scenarios, the patient’s status must be monitored in a constant manner. The wearer of the suit should be notified with a sort of warning in case of bleeding, significant lack of glucose in the bloodstream or sudden severe pain, discomfort or tightness.

Hormone tracking:

Due to exercise, the human body releases numerous hormones that contribute to one’s health such as testosterone, the human growth hormone and irisin. These should be monitored to keep an eye on whether or not the subject is in a healthy status.

Sweat measurement:

Linked to hydration, sweat measurement is an accurate way of knowing how much water is needed for the body to get its basic hydration level back: the more perspiration is released, the more water should be drank.