1 THE TEAM

Team Name:	Sensor Network
Team Members:	Nick Morley Jonathan Richards Daniel Kline
Technical Advisor:	Dr. Hovannes Kulhandjian
Course Instructor:	Dr. Reza Raeisi

2 GOAL

- Create a system to collect, transport, analyze, store, and visualize sensor data
- Control external systems manually or automatically according to sensor inputs
- Access user interface anywhere with an internet connection

3 OBJECTIVES

- Build sensor modules built around existing sensors that interface and draw power from the wireless node
- Build wireless nodes that connect to the sensor module over a unified hardware interface. The nodes will form a mesh network to establish communication with the base station
- The base station will interface with the nodes and sensors, both reading sensor values and controlling modules. It will also host the database to store historic data and a server to interface with mobile apps
- The mobile app will allow the user to interface with our system; reading sensors, configuring nodes, and controlling nodes.

4 BACKGROUND

- Microcontroller Programming and Interfacing
- Wireless Communication and Networking
- Data Storage, Processing, and Serving
- Mobile App Development

5 FEASIBILITY

- ESP8266 Microcontroller
  - Economical ($15 Development Kit)

  - Integrated WiFi
  - Interface with multiple sensors
- WiFi Communication
  - Commonly available
  - Use mobile app to configure nodes via WiFi
  - Connect to existing network to access internet
  - Connect mobile device to local network to interface with sensors
- Data Storage, Processing, & Serving
  - Use Raspberry Pi or router running Linux
  - Store sensor data on USB Drive using SQL or similar
  - Perform analytics on data
  - Configure controllers
  - Send data to mobile device for viewing via websockets
- Mobile App Development
  - Do initial setup of sensor
  - View sensor data
  - Configure controllers
  - Connect locally or over the internet through online account

6 APPROVAL

I agree to build the above project throughout ECE 186A and 186B.

Team Member Signature	*Date*
Team Member Signature	*Date*
Team Member Signature	*Date*

I agree to be the formal, technical adivsor to this project.

Technical Advisor Signature	*Date*

I approve this project to be a viable capstone project.

Course Instructor Signature	*Date*