

**ECE Capstone program
Spring 2018
Project Abstract & Info**

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number: S18-51

2. Project title (as will appear on the poster): ThermoSense: Digital Classroom Detection

3. Team members: Bryan Benalcazar, Osama Naim (POC), Carlos Quintero, and Emilio Dominiguez

4. Adviser(s) name(s): Hana Godrich

5. Up to 5 keywords that will help to classify the project scope:

Arduino, Thermal Sensors, Raspberry Pi, Data Collection, Efficiency, Sustainability

6. Project abstract (up to 250 words) to be shared with judges:

The purpose of our project is for students to be able to see what classrooms are available for studying, meetings, and much more. The way that we go about this is by increasing the sustainable practices within the classrooms that go on here at Rutgers University. We start by measuring the occupancy of the room. A network of thermal sensors will be mounted to the ceilings of the room in order to measure the temperature of a specific area of the room. In addition to temperature measurements, we will also attach a humidity and pressure sensor to increase the accuracy of the data. The specific location of the sensors will be determined based on the height and dimensions of the seating area in the classroom. With this information we are able to collect data and create a heat map and lighting simulation. Through this heat map and lighting simulation we are able to determine if the classroom is being occupied. Also, it helps us understand what classrooms to keep off in order to conserve energy, especially since Rutgers keeps most classrooms turned on with or without occupancy. If the classroom is being occupied we are able to take this information and create a website that allows us to track which classrooms are being occupied, which makes it easier for students to find a classroom.