

IPRO 337

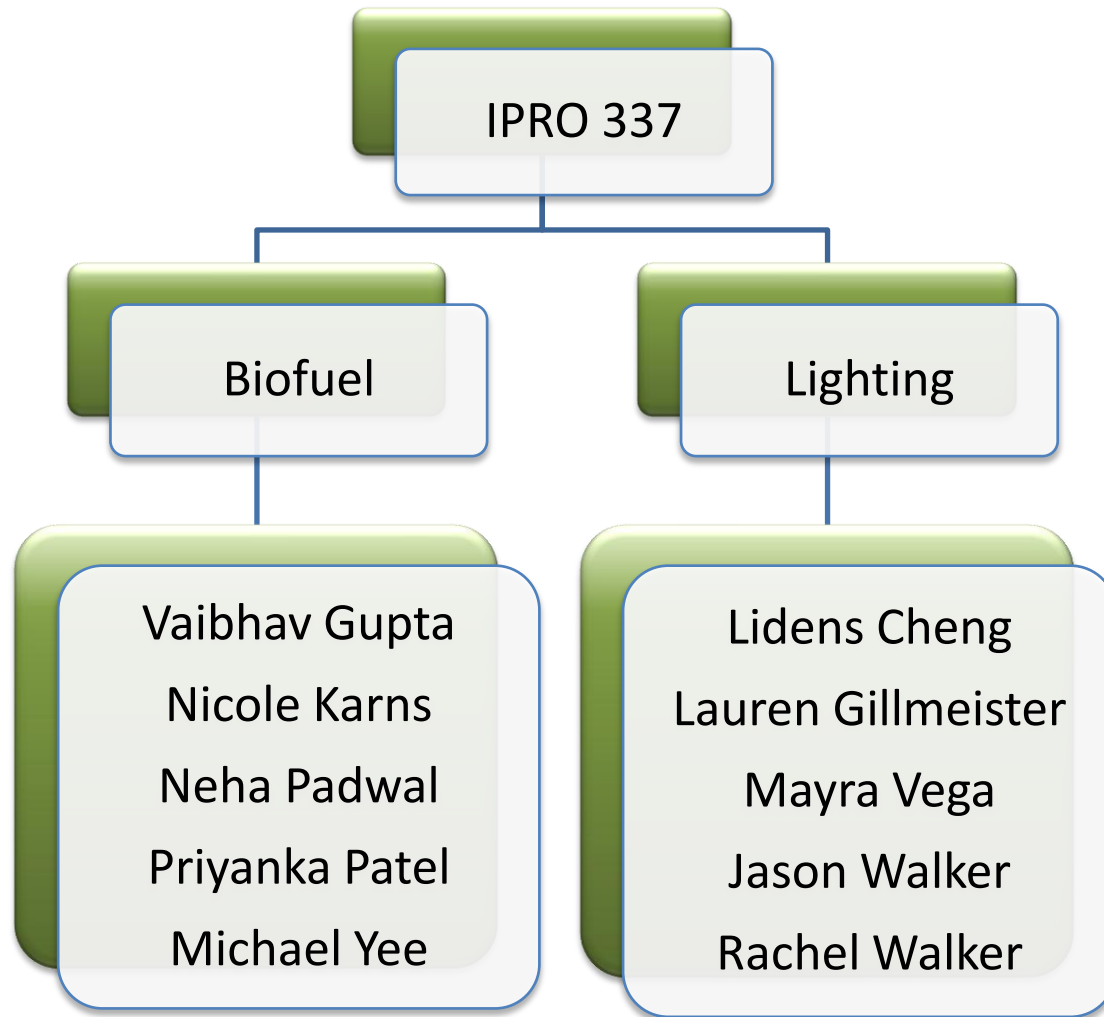
ZEROenergy Lab



Purpose

- To design a universal format for occupying laboratories that utilize the minimum amount of energy
 - Acquire knowledge of biofuel technology and design a biofuel system that will be used to supply additional energy to the established energy sources of the lab
 - Provide proper lighting for the lab space in order to make it usable at all hours of the day

Team Organization





Biofuel

- **Problem:**
 - Additional energy sources are needed.
- **Goals:**
 - To design a biofuel system that will supply additional power to the energy bank.
- **Progress:**
 - Observed Loyola's biofuel system.
 - Determined a rough design for a biofuel system
 - Designed a basic system that uses vegetable oil directly in a diesel generator

Biofuel

- **Obstacles:**
 - Determining a location for the biofuel lab
 - Deciding what to do with the by-products
- **Anticipated Challenges:**
 - Cost of materials
 - Transportation of oil and/or fuel
 - Heating the oil sufficiently
 - Clogging the generator



Lighting

- **Problem:**
 - There is no lighting system in the Zero Energy Lab
- **Goals:**
 - To install a lighting system in a section of the lab and use the results to expand system to the rest of the lab space



Lighting

- **Progress:**

- Built a model of a small section of the lab.
- Made 5 different model roofs
- Ran trials for 4 of the model roofs.

- **Obstacles:**

- Finding a dark place to run the trials
- Moving the model to the Zero Energy Lab
- Determining which material scatters light most efficiently

Lighting

- **Anticipated Challenges:**
 - Removing paint from the ceiling before applying the selected material
 - Where and how to install lights in the lab space
 - Accommodate for the fact that not all the spaces in the lab are the same
 - Avoiding energy waste due to over-lighting

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Questions