**ECE 411 Practicum Project Proposal**

**Project Name:** Automated Blinds

**Project Group:**

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**Proposal Statement:**

This is a project proposal for the Practicum Project for the Fall 2016 ECE 411 course. Our final decision for a project is creating a printed circuit board that will automate a set of blinds based on daylight conditions and a remote control. The project would fit on a 2 layer board and would meet all of the project requirements.

**Project Objective:**

To obtain experience in designing, prototyping and building a microcontroller based printed circuit board device and to complete a full product design cycle. The final result of the project will be an automated blinds controller system on a PCB. A demo unit will be constructed that will demonstrate the device's features and functionality.

**Device Functionality:**

This will be a microcontroller unit (MCU) based 2-layer PCB project. The MCU will take in data from a light sensor that will determine of the sun is up or has set and open/close the blinds on a window. The default configuration that the project will have is that when the sun sets the blinds will close and vice versa. The user will also be able to manually override the open/close status of the blinds with local and remote controls. There will also be some safety features that are implemented, such as detecting if there is an obstacle in the way when the blinds are closing.

**Requirements:**

Processor

* A microcontroller will be used to control how the system behaves based on data acquired from the various sensors.

Inputs

* Light sensor to read data on outdoor daylight conditions
* IR sensor to read data from remote to control device remotely (possibly bluetooth module)
* Buttons on PCB for local manual control
* Power switch
* (Possibly) pressure sensor to detect if there are any obstacles in the way

Outputs

* Servo or stepper motor to open/close blinds
* Indicator LEDs

**Preliminary Schedule:**

Week 3:

* Project Proposal
* Determine “first pass” basic functions of device
* Pick IC that will meet our requirements
* Order IC Development kit/prototyping parts

Week 4:

* Start prototyping
* Write software for MCU
* Get basic prototype to work
* Add features if enough time

Week 5:

* Start designing final PCB
* Continue to verify prototype
* Build demo window/and blinds
* Prototype PCB (In capstone lab)

Week 6

* Order PCBs
* Assemble PCB
* Start testing PCBs
* Correct any mistakes

Week 8

* Prepare all documentation
* Prepare demo