Memorandum

Patrick Bowlds EE - 41440 Spring 2013

**To**: Dr. Schafer

**From**: Light Bike

**Date**: Monday, January 21, 2013

**Subject**: Timetable

1. For the first design review, our team will demonstrate the following four goals: stripping the bike and removing a single existing battery, a single battery charger consisting of a current source and sensor, researching the motor controller and discerning how to control it and use regenerative braking, and make some headway into the LED display.

a) Stripping the bike of existing hardware is scheduled to be completed by the

end of the week and will be completed by the entire team.

b) The largest challenge is charging the battery. For this we need to design hardware that can accurately read a large current, read the voltage of the battery and produce variable current levels. There will be software that connects these systems by using the feedback from the current sensor to adjust the current source based on the charge level and battery specifications.

i.) Current Source - one of the larger challenges will be constructing both the hardware and software components of a current source. This will be controlled by a microcontroller and adjust based upon the readings given by the sensor.

ii.) Voltage Sensor - part of the charger that can read the current charge on the battery.

iii.) Current Sensor - as part of the charger, a sensor will need to be built that responds to the current through the battery. This will direct the feedback that controls the current source.

c) The motor controls and batteries is one of the biggest unknowns for the

project. We will need to look into these components and design a theoretical

subsystem.

d) Working with the LED display will also be demonstrated. For the first review this system will remain independent and only display preset numbers.

2. Stripping of the bike will be completed as a team. Ben Coffey will be heading the research on the motor controller as well as the LED display. Since the motor controller will primarily be inquiring and the LED display is merely just getting a working display, he will tackle both of these subsets. The remaining members will work on the battery charger. This will require the most work so having four members work on this subset of the project is appropriate. Patrick Bowlds will work on the hardware side of the current source while Alex Toombs works on the software of the current source. Jacob Thordahl will work on the hardware of the current sensor and Mike Mellitt will work on the software side of the sensor.