**PROJECT OUTLINE**

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| PROJECT TITLE  Electric-Assist Bicycle | TEAM # (to be assigned)  4 | TEAM MEMBERS  Nick Kamarianakis  Jacob Hawley  Douglas Raymond  Neal Traynor  Will Rose |
| YOUR TEAM'S PROJECT FOCUS  Body | PEER MENTOR - Sarah Girgrah  SarahGirgrah@cmail.carleton.ca | Project partner or client:  Kaia Nightingale |
| BACKGROUND:  The Client is requesting an electric-assist bicycle that can be used in winter and rainy conditions. The bicycle must be fully electric with no fuel emission as well as fully enclosed.  Our team will be responsible for designing the body of the bike. This includes the frame, size, shape, materials, interior panels, and minor safety features.  Interim communication with   * Kaia Nightingale * Janet Hempstead * Sarah Girgrah, * Team 2, responsible for Energy and Power * Team 3, responsible for Handling * Team 4, responsible for Accessories * Team 5, responsible for Safety and Regulations | | |
| PROJECT TEAM GOALS:  **Nick Kamarianakis-** I will be Responsible for comparing different plastics and metals to decide on the ideal material to be used for the outer panels of the nike as well as housing its electrical components. The engineering principles I will be using are Durability and Strength to weight ratio The material must be durable as it is providing the driver safety from collisions and accidents. Strength to weight ration must be kept in mind because the driver’s legs are going to be the main source of power. The heavier the bike is the more effort needs to get put in and the more the electric-assist battery will have to kick in t help.  **Resources:** http://gopro.com/camera-accessories/replacement-housing  **Neal Traynor-** Responsible for designing a security and locking mechanism for the bike. The mechanism must be simple, durable, and above all, effective. One possible way to approach this would be to use the same locking devices that are equipped in automobiles. This is appealing because it's a product that is very tested, and very common. As a result, it will be cheap and easy to acquire, equip, and maintain. This approach also will allow the buyer to get additional locking options on their bike, as many do when they buy their automobile. Options could include keyless entry, an alarm system, or a more heavy duty locking mechanism.  **Resources:** <http://accessories.ford.com/actuator-asy.html>    **Will Rose** – I will be dealing with the interior of the vehicle and the associated ergonomics of its operation. The vehicle must be operable and comfortable for all shapes and sizes of people. This will affect the location of peddles, steering wheel, mirrors, windows and doors, and the seat. Another factor with ergonomics is the adaptability of those mentioned factors to allow for various size people to adjust them to their own suit of comfort.  **Resources:** www.ccohs.ca/oshanswers/**ergonomics**/driving.html‎  mreed.umtri.umich.edu/mreed/research\_**ergonomics**.html‎  **Jacob Hawley**- I will be looking at the design of the frame in order to effectively support anyone who rides the bike. Force distribution and centre of mass will be my main concerns. I will be looking at frames that already exist as they are proven to hold up under the weight of various individuals. I will look at 2 wheel recumbent bikes, 3 wheel recumbent bikes, and 3 wheeled motor cycles.  **Resources:** http://www.biketcba.org/TRICORR/compare.html  **Douglas Raymond –** I will be utilizing online resources, as well as the library to decide on the shape, size and dimensional requirements for the electric assist bicycle. I will need to design the frame of the bike in a way that allows it to travel with minimal amount of effort and a minimal amount of air resistance. I will look at various outer frames and comparatively decide on the frame which is the most aerodynamic.  **Resources:**http://www.evolo.us/architecture/trike-an-electric-assist-bike-with-weather-protection/ | | |
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