**Task Description**

The pedal box is the system that holds the pedals and master cylinders and attaches them securely to the chassis of the vehicle. It is primarily a mechanical design project that requires focus on component relations to insure that the system will operate as intended. It will require some analysis of force and pressure to facilitate ideal braking. The final design should be low cost (most components should be fabricated in house or donated), in accord with FH, FE, and FN rules, account for regenerative braking, and provide enough force to lock the wheels as designated by the suspension team. Drivers will primarily be 25th – 75th percentile males. We expect the driver to exert 60 – 75 lbf on the brake pedal.

**Responsible Parties**

Holden is the sole designer of the project. He will consult with Dante Archangeli and Phil Piper during design reviews to get feedback and ideas. He may request assistance from other team members, if desired, for the fabrication stage.

**Deliverables**

The main deliverables will be an intermediate and final design review accompanied by relevant documentation and explanation, but specific deliverables for this project also include submitting the work package, ordering brake components and stock for the pedal box, a fabrication plan, and a finished product. The time frame for these deliverables can be seen below.

**Budget**

See detailed [budget](https://docs.google.com/a/yale.edu/spreadsheets/d/1iUGFWJo--p_6DHHQmXog4uB39sRl_pzuwLFmFRE0Jng/edit?usp=sharing).

**Resources (human and machine)**

See detailed resources [sheet](https://docs.google.com/a/yale.edu/spreadsheets/d/1iUGFWJo--p_6DHHQmXog4uB39sRl_pzuwLFmFRE0Jng/edit?usp=sharing).

**Time to complete**

The human resources have been itemized to a total of 37 hours of work necessary to complete this project, including planning and fabrication. Before continuing, the pedal box requires an input of the final selection of master cylinders, which depend on the choice of other brake components. As a result, the most important preliminary task for the pedal box project is finalizing the brake system so that planning and fabrication can begin.

The time frame on this project has slipped backward, but with the most recent rules request answered, there are no longer any hold ups in the process. With that in mind, I propose the following time frame and deliverables:

* 10/12/2015 - Submit work package.
* 10/15/2015 - Finish calculations on brake system and finalize component choices. Order components.
* 10/18/2015 - Intermediate design review.
* 10/20/2015 - Final design review.
* 10/26/2015 - Create plan for all aspects of fabrication.
* 10/29/2015 - Begin fabrication.
* 11/8/2015 - Finish fabrication.
* 11/12/2015 - Finish installation.

**Measures of Success**

* Pedal box can adjust to accommodate drivers ranging from a 95th percentile male to the smallest female driver on the team.
* Pedal box can fit a driver with a size 12 foot.
* Pedals can withstand the driver’s maximum braking force without significant deflection or failure (with a generous factor of safety).
* Pedal feel is stiff and easy for the driver to modulate.
* Pedal box is in compliance with Formula Hybrid 2016 Rule T4.2.1

**Required Inputs**

Final selection of brake master cylinders calipers, pads, and rotors.