Shell Team 3 - Urban Concept Vehicle Overview
The Urban Concept Car (UCC) team prepared a fuel-efficient vehicle for the annual Shell Eco-marathon competition. The competition consists of 99 different teams from North and South America competing to have the highest fuel economy. The UCC team will compete in the Urban Concept Vehicle division under internal combustion engine, ICE. The team will be tasked with continuing the work completed by last semester’s team to get the car ready for the competition that will be held at Sonoma, California from April 18th-22nd.

Objectives
The team was tasked with making the competing car ready by April 9th. The main goal was to ensure the car would operate, by tuning the engine; as well as passing the technical inspection, by changing subsystems such as the brakes, fuel system, and telemetry system.

Approach
- The team consulted with the sponsor, Ryan Moyer, and the previous semester’s members to assess the customer needs of the vehicle.
- The team developed an AHP matrix to accurately determine the major things needed to be worked on this semester.
- University Park Allocation Committee (UPAC) was consulted to cover the expenses of taking 5 team members to Sonoma, California.
- The team tuned the engine using the tuning software, EcoCAL. This was crucial to get the car to start consistently and be drivable for the competition.
- The brakes were changed from mountain bike brakes to hydraulic brakes as per the specifications from Shell Eco-marathon.
- The team improved the fuel system design that would hold the insulated glass fuel tank in place while the car was being operated.
- The team conducted the technical inspection on the car before going to the competition by following all competition regulations listed in the 2018 Shell Eco-marathon Americas handbook.
- The car was test driven in the Learning Factory parking lot to check for performance and fuel economy.
- New technical changes were made to the car after passing through the first round of inspection at the inspection stations in Sonoma Raceway.
- Team Worldwide provided shipping service to transport the car to Sonoma, California.

Outcomes
- The team finished technical inspection, improving on last year’s performance.
- The team had one recorded run of 93 miles per gallon.
- The car was preserved so that next year’s team can salvage parts for the new car.
- By visiting the competition, new ideas were developed for the new design of the Urban Car next year.

Figure 1: Competition Team. Left to Right: Gary Neal, Robert Duong, Joshua Campbell, Yash Date, Robert Snyder, Grant Fellenbaum