**Improved hinge system for coupe doors**

**Overview**
The current Chevrolet Camaro doors are approximately 54 inches long and when fully open, extend 49 inches out away from the car. This makes it very hard for the passengers of the vehicle to open the doors fully to enter and exit the vehicle without hitting the doors on neighbouring cars, walls, etc. Our team was given the task of developing a new hinge system reduced the open-door width of the vehicle while still allowing passengers to enter and exit the vehicle comfortably.

**Objectives**
- Develop kinematic model that moves the door to a desired open position using different mechanical components
- Develop working prototype and install on 2013 Chevrolet Camaro

**Approach**
- Gathered customer needs from General Motors
- Review existing patents and current designs of coupe door hinges
- Develop a number of designs and weighed each in a concept selection matrix
- Choose design based on selection matrix results
- Developed a working kinematic CAD model
- Proved CAD model via alpha prototype
- Performed structural analysis to determine components that will be used on beta prototype
- Fabricated beta prototype on the Camaro
- Performed structural, acoustic, ergonomic, leak tests

**Outcomes**
- Developed fully mechanical prototype and integrated it into a 2013 Chevrolet Camaro
- Open door width lessened by three feet
- Design allowed for easy access into and out of the vehicle