

Senor Design Project Description

Company Name	MEES Motorsports	Date Submitted	05/01/2020
Project Title	Autocross Suspension (UNCC_AUTOCROSS)	Planned Starting Semester	Fall 2020

Personnel

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills:

Discipline	Number	Discipline	Number
Mechanical	6	Electrical	0
Computer	0	Systems	0
Other ()	0		

Project Overview and Requirements:

Background:

Autocross

Autocross and on paper it seems very simple – use traffic cones to make a mini-road course in a parking lot or airport and see who can the lowest time without hitting any cones or going off course.

Despite the low overall speeds attained during competition, it's one of the most intense, rapid-fire forms of motorsports you can enter, with barriers to entry low enough that many drivers are able to be quite competitive at it.

CAM S: The “S” stands for Sports and this class is where sports cars, sedans/coupes, and trucks with seating for 2 or more adults. (Minimum weight for 1984+ Corvettes and Vipers is 2900 lbs. Minimum weight for all other cars is 2500 lbs.)

Project

This project will design a suspension for a vehicle which will compete nationally in SCCA CAM S and Good guys autocross competitions. Students will design and evaluate suspension geometries using kinematic simulations then create structural designs and evaluate using FEA. A front subframe for an existing chassis will be designed to mount the suspension and evaluated using FEA. Finally, the front subframe and suspension will be constructed and tested to validate the FEA results

Expected Deliverables/Results:

Deliverables include:

- FEA Analysis of Chassis
- Complete Suspension System Analysis



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- Front Sub-Frame Design

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- SolidWorks, Vehicle Dynamics, FEA