Design Requirement Form		
Date:	3/10/2017	
Design Project Title:	The EV 2.0	
Team Name:	Dreamers	
Team Advisor	Dr Emmanuel Glakpe	
Team Assistant	David Quashie Jr	
Project's Long Term Goal	The goal of this project is to turn a hybrid General Motors EV 1 into a self-driving electric car	
Project's 2017-2018 Academic Year Goal	To design and install an electric propulsion system for the EV 1 and remove the gasoline dependent parts of the vehicle	
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Requirements	**Descriptions**	**Source**
Background (NEED)	The hybrid vehicle has an inefficient internal combustion engine (ICE) that emits greenhouse. The emission of greenhouse gases by combustion engines is one of the major causes of global warming. Replacing the combustion engine with an electric propulsion system will reduce the emission of greenhouse gases.	
Objective (Problem)	Design an electric propulsion system to replace the series hybrid system of the EV 1.0	
Performance	• Life span of battery pack - at least 2 years • Driving cycle range - 75 miles • 0 - 60 mph - 13-15 seconds. • Motor efficiency - 50% • Maximum motor torque - 149 Nm • Motor Power - 103 kW	

Cost	The cost for the electric propulsion system is estimated to be $8,750	
Safety	• The electric propulsion system in the car should meet the sound standards set by the NHTSA • The autonomous system put into the car must adhere to all NHTSA standards and not interfere with already pre existing standards	National Highway Transport Safety Administration
Compliance	The electric propulsion system should meet the electrical requirements as stated in most recent version of the following SAE standards: • SAE Standard J2293, "Energy Transfer System for Electrical Vehicles” • SAE Standard J2344, "Guidelines for Electric Vehicle Safety” • SAE Standard J1772, "SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler” • SAE Standard J1715, "Hybrid Electric Vehicle (HEV) and	SAE International
Energy, Power, and Environment	The electric propulsion system should meet the environmental requirements as stated in the most recent version of the following SAE standard: • SAE Standard J1455, “Joint SAE/ Technology and Maintenance Council (TMC) Recommended Environmental Practices for Electronic Equipment Design”. • SAE Standard J2293, "Energy Transfer System for Electrical Vehicles” • SAE Standard J2929, "Safety Standard for Electric and Hybrid Vehicle Propulsion Battery Systems Utilizing Lithium-based Rechargeable Cells”	SAE International
Intellectual Property	Our system will be based of a limited, open-source patent pool from EV manufacturing companies	
Size and Weight	• Battery pack weight - 1175 lbs • Payload - 500 lbs • Curb Weight - 3000 lbs • Gross Vehicle Weight - 3500 lbs	
Deliverables	A design and implementation plan to replace the existing series hybrid propulsion system with a fully electric drivetrain.	