Design Requirement List		
Design Project Title:	Lane Departure Warning System	
Team Name:	Team Pinnacle	
Team Members:	Chukwuemeka Ekeocha, Uchechukwuka Monu, Uzoma Nwagba, Peter Ramsumair	
Date:	11/4/2008	
Version:	3	
Requirements	**Descriptions**	**Source**
Overall Function	Should issue warning if car crosses or drifts towards lane boundaries	
Performance	LDWS should be able to track lane boundaries and issue warnings within ±0.1 meter (±4 inches) from the warning thresholds • Should also issue directional warning within 1 second if car departs from current lane, specifying the direction of drift/lane departure • Should not issue warning if the turn signal is activated and the car is moving at a speed less than 45mph • Should be able to detect vehicle position relative to following types of visible lane boundaries using an input data stream from 8 infrared sensors (4 on each side of car) o Solid and dashed painted lines o Single and double painted lines o Yellow and white painted lines • Control unit decisions will be based on the power of refracted beams and their different wavelengths and angles of reflection based on the color of the incident material.	Federal Motor Carrier Safety Administration
Cost	• Must cost less than $500 to install the device in a vehicle; manufacturing costs should be as low as possible • Maintenance costs for the LDWS should be less than $150 per year • LDWS design must be completed and ready for testing by 05/10/2009	
Safety	• Should perform a self-test that checks all major system sensors and components, operate within 30 seconds of starting the vehicle, and relay the results of the self-test to the driver indicating whether the system is operational • Must adhere to all NHTSA safety standards (crash avoidance, simplicity of use, etc) and not interfere with any of them • If warning signal is audible, it should not be louder than 130 Db so as not to significantly interfere with driver concentration	National Highway Transport Safety Administration
Compliance	• LDWS should meet the electrical requirements as stated in most recent version of the following SAE standards: 1. SAE Standard J1455, “Joint SAE/ TMC Recommended Environmental Practices for Electronic Equipment Design (Heavy-Duty Trucks)”. 2. SAE Standard J1113, “Electromagnetic Compatibility Measurement Procedures and Limits for Vehicle Components (Except Aircraft) (60 Hz to 18 GHz)”.	SAE International

Interfaces	• The LDWS interface should consist of audio sources of at least 1.5MW, indicator lights no brighter than 80candela, vibrational devices (3600 RPM), and controls for operation by the driver	
Energy, Power, and Environment	• LDWS should meet the environmental requirements as stated in the most recent version of the following SAE standard: o SAE Standard J1455, “Joint SAE/ Technology and Maintenance Council (TMC) Recommended Environmental Practices for Electronic Equipment Design”.	SAE International
Lifespan	The total system should last 3-5 years with a yearly maintenance	
Size and Weight	The total system should amount to no more than 10 lbs	