UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

Senior Design Project Description

Company Name	**Lowe's Companies**	**Date Submitted**	June 30, 2017
Project Title	Blade Design Quality Characterization and Improvement (LOWES_LAWN)	**Planned Semester**	Fall 2017

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person. Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	**Number**	**Discipline**	**Number**
Mechanical	4	Electrical	
Computer	0	Systems	1
Other ( )			

Project Overview:

A consumer's satisfaction with their lawnmower is the result of the aggregation of many different characteristics. One of these is their perception of the "cut-quality" of the mower. Currently, this is a subjective assessment. It would be useful if the qualitative assessment could be translated to a quantitative measurement system which could be used to design blades which increase satisfaction of the customer.

Initial Project Requirements:

The Project will focus on the blade design for the 40 and 80 volt electric lawnmower models. "Cut Quality" will be broken down into all the factors that make up this judgement. This would include sharpness of cut, clipping size (mulching), uniformity, suction, etc. The team will replace the qualitative assessment with a quantitative method that can be repeated on different designs and yields a score that can be used to represent "Cut Quality". The second part of the project will be to investigate concepts which could be used to develop future blade designs for each model which improve the Cut Quality. Improvement to be demonstrated using cut quality measurement system.

Expected Deliverables/Results:

The team will create:

1. Quantitative method to assess blade/mover performance in terms of cut quality

2. Baseline performance measurement for current blade designs – 40 and 80 volt models
3. Improved design for 40 volt model blade, manufacture and test
4. Improved design for 80 volt model blade, manufacture and test
5. Performance results for 40 volt new blade design
6. Performance results for 80 volt new blade design

Disposition of Deliverables at the End of the Project:

Provide blades and documentation to Lowes Tech rep after Expo

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

- Must have a working knowledge and operational experience with common outdoor power equipment, so that performance trade-offs can be critically considered.
- Must be able to travel client's location in Mooresville for testing or design review activities.