



UNC CHARLOTTE

The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	EPRI	Date Submitted	4/8/2018
Project Title	Development of a Data Acquisition System for Fiber Optic Sensors (EPRI_FIBER)	Planned Starting Semester	Fall 2018

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	3	Electrical	1
Computer		Systems	
Other ()			

Company and Project Overview:

The Electric Power Research Institute (EPRI) conducts research, development, and demonstration projects for the benefit of the public in the United States and internationally. As an independent, nonprofit organization for public interest energy and environmental research, we focus on electricity generation, delivery, and use in collaboration with the electricity sector, its stakeholders and others to enhance the quality of life by making electric power safe, reliable, affordable, and environmentally responsible.

Fiber optic sensors are increasingly being used for structural health monitoring of large civil structures in the energy industry. There is a need to develop a robust data acquisition system that can monitor and record data from various types of fiber optic sensors autonomously. This project will look to develop such a system and test its capabilities to continuously monitor a civil structure.

Project Requirements:

Design and develop a data acquisition and analysis system for long gauge fiber optic sensors. The sensors will be provided. We would like the students to develop a reading unit for the sensors as well as a database and graphical interface for analyzing the data on a connected computer. EPRI's thoughts are to do a MATLAB type program on a laptop connected via Ethernet to the reading unit. The system would need to continually collect and store readings from the sensors (measurements every 30 minutes to an hour)



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Expected Deliverables/Results:

- Working demonstration prototype which uses the sensors provided.

Disposition of Deliverables at the End of the Project:

Provide to EPRI technical supporter at conclusion of Expo

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

- For ME's, Strong interest in Matlab/Labview