

Collaborative Senior Design: Partnerships Powering the Carolinas



Terry Jordan, Director
Industrial Solutions Laboratory
Lee College of Engineering
University of North Carolina at Charlotte

Current Senior Design Comparison

Clemson	NCSU	UNC Charlotte
Two semester course	MAE one and ECE two semesters	Two semester course
Single discipline	Single discipline	Multi discipline
Team project	Team project	Team project
4 to 7 students per team	MAE: 4 to 5 students; ECE: 2 to 4 students	4 to 7 students per team
Separate projects each semester	One project	One project over two semesters
Faculty and industry involvement	Faculty and industry involvement	Faculty and industry involvement
Smart grid lab	Smart grid lab	Smart grid lab

Current/Recent UNC Charlotte Energy Projects

- Implementation of IDMS for Volt/VAR Optimization and Testing (Duke Energy)
- Automatic Reconfiguration Scheme and Load Management for UNC Charlotte Campus (Duke/SEL)
- Several manufacturing/fabrication projects (Siemens)
- Self Charging Electric Vehicle (UNC Charlotte Facilities Management)
- Pneumatic Pump Energy Harvesting System (Ingersoll Rand)
- 100 MW Battery Storage Facility Design (CB&I)
- Innovation in Energy Production & Utilization for Disaster Response (CMC)

Collaborative Energy Senior Design Project

- Project chosen by industry
- Minimum two schools involved
- Minimum two students per school on project team
- Minimum team size – 5 students
- Faculty mentor from each participating school
- Single industry representative

Project Implementation: Non-Academic

- Each school works on different part of project
- One student is overall project lead
- Regular communication via phone, Skype, etc.
- In person meetings twice per semester
- Each school has fabrication budget

Project Implementation: Academic

- Academic requirements separate for each school
- Grading separate for each school
- First semester is design
- Second semester is fabrication and testing

NCSU Mechanical Engineering Involvement

- One semester capstone must be addressed
- MAE 496? (student project, senior elective)
- UNC Charlotte Civil Engineering and Computer Science students used technical elective course second semester