MSE ENERGY CONCENTRATION

UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

MSE ENERGY CONCENTRATIONS

The Master of Science Engineering program with Energy Concentration at UNC Charlotte is a cooperative effort among all the engineering departments in the College of Engineering. It will be led by the Energy Production and Infrastructure Center (EPIC) with input from representatives from the energy companies that formed EPIC in 2010. The new energy concentration is open to all students with backgrounds in sciences and engineering. Pre-requisite courses will vary depending on applicant backgrounds, but the intent of the program is to have few, if any, pre-requisite courses to enroll.

CONCENTRATION GOALS

The MSE with energy concentration prepares students for leadership positions in the power industry that is transitioning to new ways of delivering demand through central and distributed resources and maintaining high reliability and availability at low costs. These skill sets will be developed:

- Understand the major engineering processes and challenges to generate , transmit and deliver electricity at lowest cost with high reliability
- Analyze energy industry problems in a systematic manner
- Evaluate impact of climate change and the various demands made on the electric power industry
- Address impacts and challenges of renewable energy generation
- Lead, influence and persuade through effective communications

PROGRAM STRUCTURE

The MSE Energy Concentration is a 30-credit hour program. All students are required to take four core courses (12 credits) on energy and environment, energy management, economics of energy generation and transmission and distribution, and applied energy systems for the power industry. In addition students will participate in an industry project (3 credits) and showcase results in a final report and presentation. An existing industrial advisory body will provide input to the project.

Required Core Courses (12 credit hours)

Energy and the Environment
Introduction to Energy Systems
Topics in Applied Energy
Energy and Environmental Economics

Industry Project (3 credit hours)

The project will be recommended and/or sponsored by the industry advisory board and would require each student to prepare final report

Elective Courses (15 credit hours)

The remaining 15 credits would involve electives from the various disciplines including the Electrical-, Mechanical-, Civil-Engineering, Departments, the College of Business, and the Engineering Management and Engineering Technology Departments. Possible courses include :

Renewable Energy
Environmental Risk Management
Green Building
Control Systems
Wireless Sensor Networks
Energy Markets
Case Studies in the Energy Industry
Capital Cost Estimating