

Power Systems Engineering Program at The University of New Orleans College of Engineering

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Entergy Endowed Chair for Power Systems Engineering

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THE UNIVERSITY *of*
NEW ORLEANS

Power Systems Engineering (PSE)

PERL and Research Projects (Entergy – UNO Power & Energy Research Laboratory)

Power Systems Engineering (PSE)

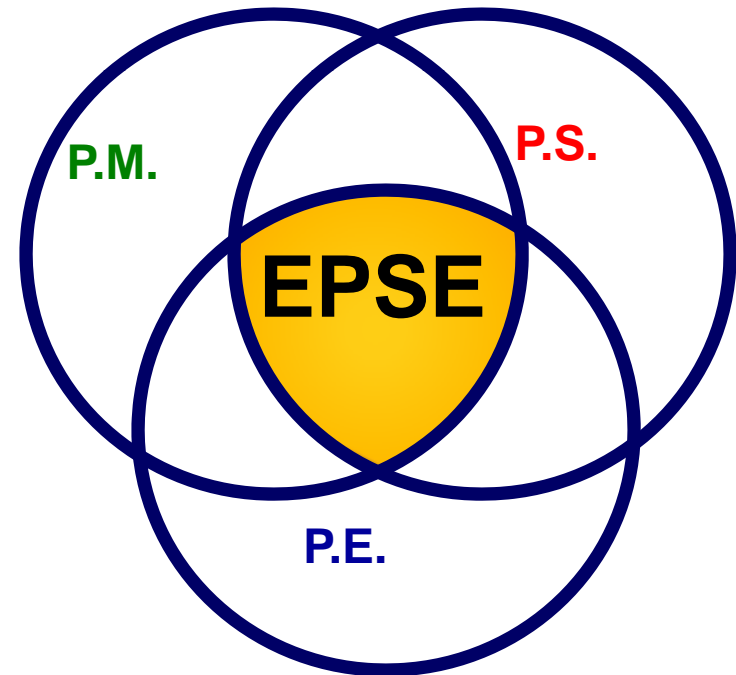
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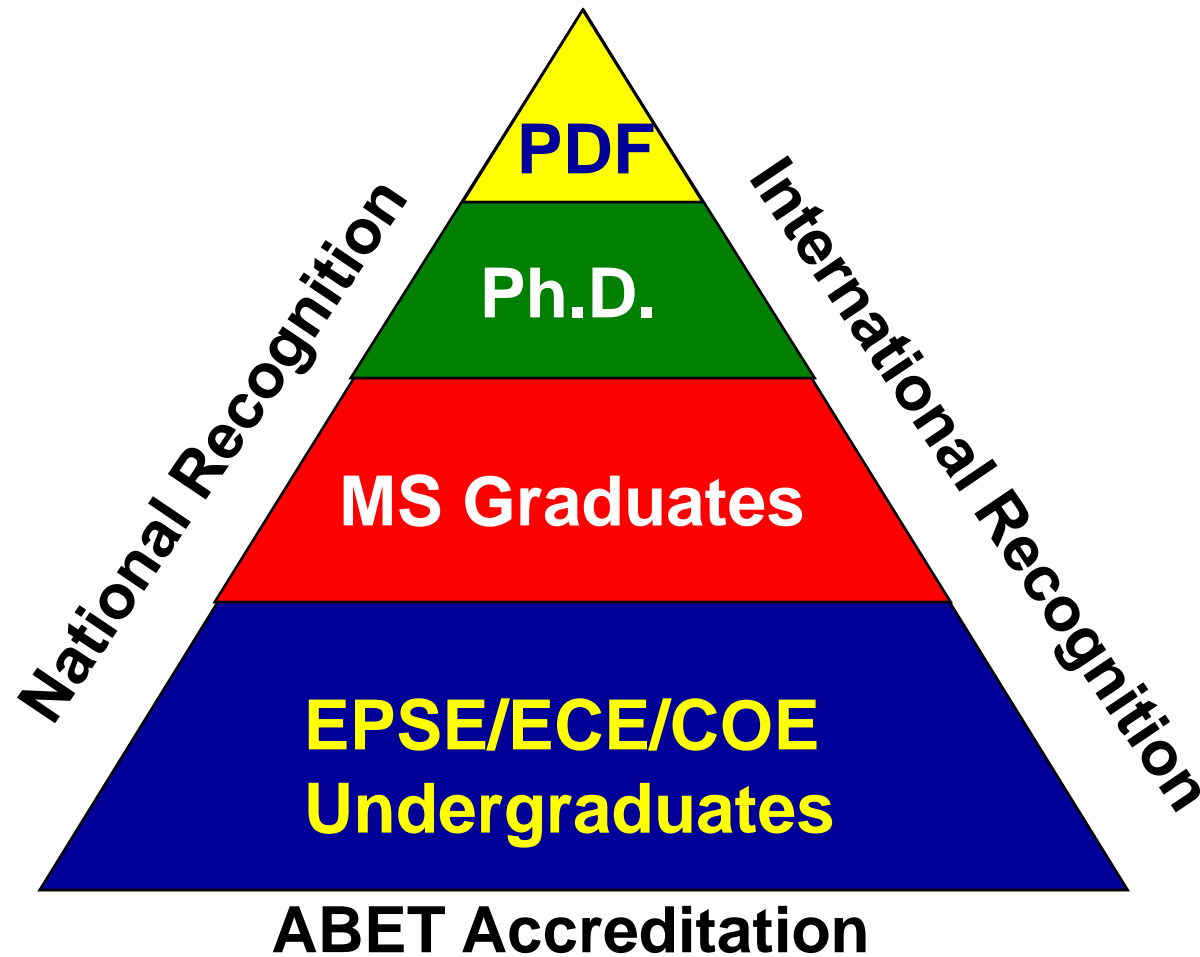
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Energy and Power Systems Engineering

- **2 Courses in Each of P.M., P.S. and P.E.**
- **EE Supporting Courses in Communications, Signal Processing, Control, Computer, Systems**
- **EE Required Courses**
- **Courses Offered By Other Departments in COE and in The UNO**



Research Objectives of the UNO EPSE



EE Courses

Undergraduate Courses

- ENEE-2550 Circuits I
- ENEE-2551 Circuits II
- ENEE-2510 Circuits Laboratory
- ENEE-3091 Senior Design I
- ENEE-3092 Senior Design II
- ENEE-3511 Energy Conversion Laboratory
- ENEE-3521 Electric Machinery
- ENEE-3522 Electrical Power Systems

EE Courses

Graduate and Undergraduate Courses

- ENEE-4097 Power Systems Analysis and Power Markets
- ENEE-4522 Power System Analysis and Design
- ENEE-4524 Power System Dynamics and Oscillations
- ENEE-6098 Advanced Power Systems Dynamics and Control
- ENEE-6098 Power System Economics and Power Markets
- ENEE-6097 Pattern Recognition
- ENEE 6521 High Voltage Engineering
- ENEE 6522 Computer Aided Analysis of Large Power Systems
- ENEE 6525 Optimization and Control Methods in Power Systems
- Independent Studies on Alternative Energy
- Approximately 10 independent studies offered to date

Entergy-UNO Lecture Series

- Provide a forum for the University of New Orleans students and faculty to interact with practicing engineers
- Close the gap between industry and academia by identifying the industry **NEEDS** and the university's **EXPERTISE** in solving complex practical problems
- Focus on introducing and identifying the state-of-the-art practical and theoretical technological development for solving large-scale systems problems
- Provide appropriate channel for students to link with industry for **internships**, **Co-op**, and **future employment**.

PERL and Research Projects

(Entergy- UNO Power & Energy Research Laboratory)

Research Team

- **Faculty:** Parviz Rastgoufard, Ittiphong Leevongwat, Edit Bourgeios, Dimitrios Charalampidis
- **Supported MS RA's:** Aashay Nandedkar, Nagendrakumar Beeravolu, Naveen Bokka, Ramu Gokarapu, Spandana Balani, Suruchi Verma
- **Supported MS TA's:** Varun Togiti
- **Unsupported MS GA's:** Hussain Al Marhoon, Rogers Whitlock
- **Unsupported Ph.D Student:** Edward Payne, Nagendrakumar Beeravolu
- **Prospective Ph.D. and Post-Doctoral Fellows:** Five Applicants
- **Entergy Research Support Team**

Equipment and Licenses

- 12-Processor Real-Time Simulator (SGI hardware / Hypersim software) at UNO
 - Used for modeling and simulating power system and certain components in real time)
 - UNO/Entergy are the only pair of University Industry using the equipment in USA
- 24-Processor Real Time Simulator (SGI/Hypersim) at Entergy
- Hypersim Licensed to UNO in January 2008
- Three EMTP-RV, Licensed March 2009
- PowerWorld Simulator; 100,000-bus capability with OPF, PVQV, and SCOPF; Licensed April 2009 (with unlimited use of 50-bus version)
- PSS/E, 4 Concurrent Users, Licensed May 2009
- Entergy-UNO Research Agreement, November 2009

Ongoing Research Projects

- Real-Time Modeling and Simulation for Blackout Studies
- Impact Study for Integrating Smart Grid and Alternative Sources of Energy to Transmission Systems
- EPIC: Entergy and Exxon Mobil Hurricane Preparedness
- DOE: The University of New Orleans Phasor Data Sharing and Visualization
- ITRS: Development of PC-Based Distributed System Real-Time Simulator for Robust Design and Operation of Louisiana Electric Grid (Pending)
- (EPIC Stands for Energy & Power Industry Consortium)
- (ITRS Stands for Industrial Ties Research Subprogram)

Selected Graduate Student Research Topics

- Real-Time Modeling and Simulation: On-Line Operation Planning for Prediction and Prevention of Blackouts
- Impact of Integration of Alternative Sources of Energy to Electric Grid
- Smart Grid Technologies for Efficiency Improvement of Integrated Industrial Electric Systems
- Risk – Reward Analysis Techniques for planning and Operation of Regulated and Deregulated Power Systems
- Fast Optimal Power Flow Algorithms for On-Line Operation of Power Systems
- Generation of Clean Electric Energy from Landfill Gases