

School of Management, Engineering and Technology
Department of Electrical Engineering and Renewable Energy
REE 453: Power Systems Analysis

Catalogue Description (2010/2011):	Faults: symmetric, unsymmetric. Modeling system components using positive, negative, zero sequence networks. System admittance matrixes. Load flow computational methods such as Gauss-Seidel, Newton-Raphson. Power system transients. Voltage, frequency stability. Power system stabilization. Power system analysis using software, emphasizing renewable resources		
Hours/Credits: (Lecture-Lab-Total)	(3-0-3)		
Class Schedule:	Twice weekly 75 minute lecture, one term		
Prerequisites:	REE 243, ENGR 266		
Required Text:	J. Grainger, W. Stevenson, "Power Systems Analysis," McGraw-Hill, 1994		
Reference Text:	J. D. Glover, M.S. Sarma, T. Overbye, "Power Systems Analysis and Design," CL-Engineering, May 2007		
Course Coordinator:	Robert Bass, Ph.D.		
Regular Instructors:	Robert Bass, Ph.D.		
Course Objectives:	<p>Upon completion of the lecture, a student should be able to:</p> <ul style="list-style-type: none"> • Understand the fundamentals of power flow analysis and stability analysis • Analyze power systems in steady-state, transient and dynamic conditions • Perform power system analysis using classical computational methods and modern power analysis software • Design power system analysis procedures based on system-specific characteristics 		
Topics Covered:	<ul style="list-style-type: none"> • Modeling: transmission lines, generators, transformers • Admittance Matrices and Network Calculations • Power Flow Solutions: Gauss-Seidel, Newton-Raphson • Symmetric and Unsymmetric Faults • Power Systems Economics 		
Relevant Program Outcomes:	<p>(a) an ability to apply knowledge of mathematics, science, and engineering (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (e) an ability to identify, formulate, and solve engineering problems (j) a knowledge of contemporary issues (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (l) an ability to apply the fundamentals of energy conversion and applications</p>		
Required or Elective:	Elective		
Criterion 5:	Engineering Topics		
Prepared By:	Robert Bass, Ph.D.	Updated:	April 26, 2010