



Course Syllabus

Course ID	0902407
Course Title	Power System Analysis
Prerequisite	0902311 Electric Machines
Time & Date	
Coordinator	-
Instructor	Dr. Faculty of Engineering E-mail: Telephone: ext.
Office hours	
Course Description	System Representation. Per Unit System-Components of Power Systems. Generators (Sequence Networks. Transient Performance. Operating Limits). Constants. Design. Insulation. Steady State and Transient Operational Problems. Crona Discharge). Symmetrical and asymmetrical Fault Analysis, principles of Power System protection, Computer applications (Load Flow).
Course Objectives	1.Review of power concepts in circuits 2..Ability to represent power system components individually in per unit system. 3Using representations of the components and linear algebra to build the admittance matrix and its modification 4-Learning to build impedance matrix and how to modify it.. 5-Introducing the Gauss-Seidel and Newton Raphson algorithms for load flow. 6.Introducing the problem of symmetric faults for a large system if time permits.
Course Outcomes	After successfully completing this course, the students should be able to: An ability to apply knowledge of mathematics, science, and engineering An ability to design and conduct experiments, to analyze and interpret data An ability to design a system, component, or process to meet desired needs An ability to function on multi-disciplinary teams (e) An ability to identify, formulate, and solve engineering problems (f) An understanding of professional and ethical responsibility (g) An ability to communicate effectively (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context

Course Topics	<ol style="list-style-type: none"> 1. Basic Concepts 2. Transformers 3. The synchronous machine 4. Series Impedance of transmission lines 5. Capacitance of transmission lines 6. Current and voltage relations on a transmission line 7. The admittance model and network calculations 8. The Impedance Model and network calculations 9. Load flow solutions 10. Symmetrical Faults
Course Text Book	J. Grainger,, W. Stevenson,, McGraw-Hill, 1994
Course References	<ol style="list-style-type: none"> 1-Hadi Saadat, Power System Analysis, McGraw-Hill 2002. 2- C. Gross, Power System Analysis, second edition ,Wiley & sons , 1986. J.D. Glover and M. Sarma, Power System Analysis and Design, PWS Publishing Company 2001. 4- A.R. Bergen and V. Vittal, Power Systems Analysis, Paperback 1999.
Course delivery	Lectures Tutorial Lab Homework Project Computer Internet Industrial Visit
Course Assessment	Assignments & short reports..... 10% 2 exams @ 20% each 40% Final exam 50%
Updated	Dr. Takiaddin AL-Smadi 10/2009

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12
CO1											
CO2											
CO3											
CO4											
CO5											
CO6											
CO7											
CO8											
CO9											

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CO1											
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CO6											
CO7											
CO8											
CO9											

ABET a-k Engineering and Technology program outcome

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs
- (d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

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Deliberate plagiarism is a serious act of academic misconduct. Students may be suspended from the University if they are found to have plagiarized their course work. Whether inadvertent or deliberate, plagiarism includes the following:

- (a) word-for-word copying of sentences or whole paragraphs or presenting of substantial extracts from either paper-based or electronic sources the work or data of others that are published or unpublished (such as books, internal reports, and lecture notes or tapes) without clearly indicating their origin;
- (b) using very close paraphrasing of sentences or whole paragraphs without due acknowledgement in the form of reference to the original work;
- (c) submitting another student's work in whole or in part;
- (d) using of another person's ideas, work or research data without acknowledgement;
- (e) copying computer files, algorithms or computer code without clearly indicating their origin;
- (f) submitting work that has been written by someone else on the student's behalf; and
- (g) submitting work that has been derived, in whole or in part, from another student's work by a process of mechanical transformation (e.g., changing variable names in computer programs).