

University of Puerto Rico
 Mayagüez Campus
 College of Engineering
 Department of Electrical and Computer Engineering
 Bachelor of Science in Electrical Engineering

Course Syllabus

1. General Information:	
Alpha-numeric codification: INEL 5407 Course Title: COMPUTER AIDED POWER SYSTEM DESIGN Number of credits: 3 Contact Period: 45 Elective in INEL	
2. Course Description:	
English: Design of power systems using digital computers; load flow, economic load dispatch, symmetrical and unsymmetrical faults. Selection of breakers.	
Spanish: Diseño de sistemas de potencia haciendo uso de la computadora digital: flujo de potencia, despacho económico de generación, fallas simétricas y asimétricas, selección de interruptores.	
3. Pre/Co-requisites and other requirements:	
INEL 4415	
4. Course Objectives:	
This course is designed to give students in electric power engineering a comprehensive experience in the computer aided design of power systems. The students will apply knowledge gained from previous courses in the solution of practical problems.	
5. Instructional Strategies:	
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input type="checkbox"/> computation <input type="checkbox"/> laboratory <input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop <input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input checked="" type="checkbox"/> special problems <input type="checkbox"/> tutoring <input type="checkbox"/> research <input type="checkbox"/> other, please specify:	
6. Minimum or Required Resources Available:	
All students are expected to bring a solid background in electric power systems analysis. Students must work on projects by applying the algorithms discussed in class.	
7. Course time frame and thematic outline	
Outline	Contact Hours
Representation of power system components	2
Load flow solution using computers	11
Symmetrical and unsymmetrical fault analysis	11
Economic load dispatch	11
Calculation of interrupting duty of breakers	10
Total hours: (equivalent to contact period)	45

8. Grading System

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies: (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	Quantity	Percent
<input type="checkbox"/> Exams		
<input type="checkbox"/> Final Exam		
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects	4	100%
<input type="checkbox"/> Journals		
<input type="checkbox"/> Other, specify: Homework	_____	
TOTAL:		100%

10. Bibliography:

Glover, J.D., (2002) Power System Analysis and Design, (3rd Ed), Pacific Grove, CA, Brooks/Cole, Inc.

Arrillaga, J. (1991) Computer Analysis of Power Systems, New York, NY, John Wiley & Sons, Inc.

11. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
			√

12. Course Outcomes

Map to Program Outcomes

- Possess sufficient knowledge of power system analysis and operation, including short circuits to plan system expansion. (a)
- Be able to apply computer simulation and analysis to the solution of power system problems. (c)
- Students are able to compare different alternatives to present a suitable solution. Their solution shows their ability of physical thinking, approximation and simplification (e)
- Students are able to write a project report or paper for each mini-project. (g)
- Students prove their ability to find information related to the stated problems by including a reference list of articles related to their course work. The references are included and discussed in their report. (i)
- Students discuss different alternatives to solve their problem. (k)
- Students are able to make an appropriate choice and use of specialized tools, software, or hardware to complete a design or to collect and analyze data.

Person(s) who prepared this description and date of preparation: Lionel R. Orama.
Submitted by: Lionel R. Orama, Jun 2008

