

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: INEL4085 Course Title: Fundamentals of Transformers and Electric Machinery Number of credits: 3 Contact Period: 45 Elective course in INEL		
2. Course Description:		
English: Basics of electromechanical energy conversion. Theory, operation, construction, circuit modeling, analysis and applications of transformers, induction machines, synchronous machines and DC machines.		
Spanish:		
3. Pre/Co-requisites and other requirements:		
Pre-requisites: INEL 4075		
4. Course Objectives:		
The objective of the course is to give mechanical engineering students an introduction to the operation and analysis of electromechanical energy converters and their applications After completing the course, students should be prepared to apply basic energy conversion principles in the solution of electric machinery problems. Students will be able to evaluate the operation of transformers, motors and generators in modern industries		
5. Instructional Strategies:		
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input checked="" 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 type="checkbox"/> special problems <input type="checkbox"/> tutoring <input type="checkbox"/> research <input type="checkbox"/> other, please specify:		
6. Minimum or Required Resources Available:		
7. Course time frame and thematic outline		
	Outline	Contact Hours
	Introduction Student learning profile.	1
	Review of power and electromagnetics fundamentals.	4
	Basics of electromechanical energy conversion.	8
	Theory, operation, construction, circuit modeling, analysis and applications of transformers.	8
	Theory, operation, construction, circuit modeling, analysis and applications of induction machines.	8
	Theory, operation, construction, circuit modeling, analysis and applications of synchronous machines.	8
	Theory, operation, construction, circuit modeling, analysis and applications of DC machines.	8
	Total hours: (equivalent to contact period)	45
8. Grading System		
<input checked="" type="checkbox"/> Quantifiable (letters) <input type="checkbox"/> 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 checked="" type="checkbox"/> Exams	3	60

<input type="checkbox"/> Final Exam	1	30
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographies		
<input type="checkbox"/> Portfolio		
<input type="checkbox"/> Projects		
<input type="checkbox"/> Journals		
<input type="checkbox"/> Other, specify: Homework	5	10
TOTAL:		100%

10. Bibliography:

P. Ryff, Electric Machinery, 2nd Ed., Prentice Hall, 1994 or more recent

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
			√

13. Course Outcomes

Map to Program Outcomes

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Posses sufficient knowledge to understand the operation and analysis of electromechanical energy converters and their applications 2. Be able to apply algebra and mathematics to the solution of transformers and electric machinery problems. 3. Be capable of defining transformer and electric machinery models as possible electrical engineering problem solutions. 4. Be able to validate a solution (applying models above) within the physical context of a energy conversion apparatus and systems. | <p>(a)</p> <p>(a)</p> <p>(e)</p> <p>(e)</p> <p>(e)</p> |
|---|--|

Person(s) who prepared this description and date of preparation: _____
 Submitted by Efrain O'Neill, nov 2006