Department offering the program: Electronics and Electrical Communications Engineering
Department offering the course: Industrial electronics and Control Engineering

Course Specification

1- Course basic information :		
Course Code: ACE 224	**Course Title:** Electrical Machines	**Academic year:** 2015-2016 **Level (2) – Semester : 2**
Department requirement	**Teaching hours: Lecture [2] Tutorial [1] Lab [0]**	

2.Course objectives	1. To provide the fundamentals of energy and Electrical power systems. 2. To be familiar with transmission lines characteristics and methods of power distribution. 3. To get the basic constructions of electrical machines 4. To practice implementation of electrical power and machines circuit systems.

	1. Intended Learning Outcomes: ARS	**Course ILOs**
A- Knowledge and Understanding:	A.1) Explain Concepts and theories of mathematics and sciences, appropriate to the Electrical power and Machines	A.1-1) Explain the concepts and theories of mathematics, appropriate to the Fundamentals of Power System. A.1-2) Explain the concepts and theories of mathematics, appropriate to the Fundamentals of Power System A.1-3) Explain the concepts and theories of mathematics, appropriate to the Single- Phase Power and three-phase power.
	A.8) Describe Current engineering technologies as related to Electrical power and Machines.	A.8-1) Describe current engineering technologies as related to DC Motors. A.8-2) Describe current engineering technologies as related to DC Generators. A.8-3) Describe current engineering technologies as related to AC Motors. A.8-4) Describe current engineering technologies as related to AC Generators.

B- Intellectual Skills	B.1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. B.2) Select appropriate solutions for engineering problems based on analytical thinking.	B.1-1) Select appropriate mathematical and computer-based methods for DC Motors B.1-2) Select appropriate mathematical and computer-based methods for DC Generators. B.1-3) Select appropriate mathematical and computer-based methods for AC Motors B.1-4) Select appropriate mathematical and computer-based methods for AC Generators. B.2-1) Select appropriate solutions for engineering problems based on Single- Phase Power B.2-2) Select appropriate solutions for engineering problems based on Three-Phase Power B.2-3) Select appropriate solutions for engineering problems based on Distribution of power B.2-4) Select appropriate solutions for engineering problems based on Single phase Transformers
C- Professional Skills	C.1) Apply knowledge of mathematics, science, design and engineering practice integrally to solve engineering problems.	C.1-1) Apply knowledge of mathematics, science, design and engineering practice integrally to solve engineering problems for Transmission lines. C.1-2) Apply knowledge of mathematics, science, design and engineering practice integrally to solve engineering problems for Distribution of power. C.1-3) Apply knowledge of mathematics, science, design and engineering practice integrally to solve engineering problems for Direct current machines.
D-	D.3) Communicate effectively.	D.3-1) Communicate effectively.

2. **Course Contents**	Transformers - DC generator - DC motor - Speed control of DC motor - Single phase induction motor - Single phase synchronous motor - Single phase generator - Three phase machines - Special type's machines.
3. **Teaching and Learning Methods**	• Lectures • Tutorials • Research assignments
4. **Teaching and**	• Assign a portion of the office hours for those students.

Learning Methods for disable students	• Repeat the explanation of some of the material and tutorials. • Assign a teaching assistance to follow up the performance of this group of students.
5. **Student Assessment**	
Assessment Methods	- Weekly sheet exercises at class room - Quizzes - Mid term, and final exams
Assessment Schedule	**- Exercise sheet assignment : Weekly** **- Quizz-1: Week no 5** **- Mid-Term exam: Week no 8** **- Quizz-2: Week no 10** **- Final – term examination: Week no 16 to 18**
Weighting of Assessment	**- Class tutorial and quizzes : 10 %** **- Mid-term examination: 20 %** **- Case study and/or practical exam: … %** **- Final – term examination: 70 %** **- Other types of assessment: …… %** **Total 100 %**
1. **List of Text Books and References:**	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books	Skvarenina T. L, ana Dewitt W. E. , "*Electrical Power and Controls"*,Prentic Hall , London, 2009.
c- Recommended books	[1] Fitzgerald C. K. , and Kusko A., "Electric Machinery" , McGraw-Hill Book Company, Tokyo, 2008. [2] Guile A. , "Electrical Power Systems" , Pergamon Press , Oxford, 2007. [3] Yu Y. N. , "Electric Power" , Academic Press , New York, 2006
d- Periodicals, Web sites, etc.	http://www.eeecb.com/vb/forum

Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills

Fundamentals of Energy Fundamentals of Power System	1-2	A.1			D.3
Single- Phase Power	3	A.1	B.2		D.3
Three-Phase Power	4	A.1	B.2		D.3
Transmission lines	5			C.1	D.3
Distribution of power	6		B.2	C.1	D.3
Power Quality Considerations	7				D.3
Single phase Transformers	9-10		B.2		D.3
Direct current machines	11			C.1	D.3
DC Motors DC Generators	12-13	A.8	B.1		D.3
AC Motors	14	A.8	B.1		D.3
AC Generators	15	A.8	B.1		D.3

Teaching and Learning Methods - ILOs Matrix

Teaching and Learning Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Lectures	A.1,A.8	B.1,B.2		D.3
Tutorials.	A.1,A.8	B.1,B.2	C.1	D.3
Labs and/or case studies				
Reports and assignments	A.1,A.8	B.1,B.2	C.1	

Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Weekly sheet exercises	A.1,A.8	B.1,B.2		D.3
Reports				
Quizzes		B.1,B.2		
Laboratory exam				
Midterm, and Final Written exams	A.1,A.8	B.1,B.2		

Authorized from department board at 15/05/2016
Authorized from college board at 05/06/2016

Course coordinator: Prof. Mohamed A. Fkirin

Head of Department: Prof. Fathi El-Sayed Abd El-Samie

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