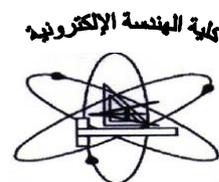


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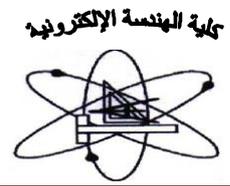
Department offering the program: Electronics and Electrical Communications
Department offering the course: Industrial electronics and Control Engineering

Course Specification

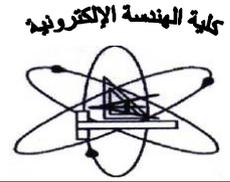
1- Course basic information :		
Course Code: ACE 124	Course Title: Electrical power	Academic year: 2015-2016
Department requirement		Level (1) – Semester : 2
Field: Basic Engineering Sciences	Teaching hours: Lecture [2] Tutorial [1] Practical [2]	

2.Course objectives	<ol style="list-style-type: none"> 1. To provide students the fundamentals of energy and Electrical power systems. 2. To enhance student ability to demonstrate the difference between single Phase Power and Three Phase Power systems. 3. To introduce students to Power Quality and Security consideration. 4. To teach students transmission lines parameters and methods of DC and AC power distribution. 5. To practice student for the analysis of Power flow.
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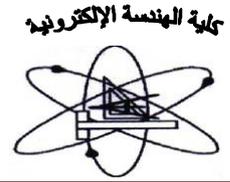
1. Intended Learning Outcomes:	Course ILOs
ARS	
<p>A.1 Explain Concepts and theories of mathematics and sciences, appropriate to the Electrical power</p> <p>A.5 Demonstrate methodologies of solving engineering problems, data collection and interpretation.</p> <p>A.6 State quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.</p>	<p>A1.1 Explain concepts and theories of mathematics and sciences, appropriate to the Energy and the Power System.</p> <p>A1.2 Explain concepts and theories of mathematics, appropriate to the Single Phase Power and three-phase power.</p> <p>A1.3 Explain concepts and theories of mathematics, appropriate to Transmission Line Parameters.</p> <p>A1.4 Explain concepts and theories of mathematics and sciences, appropriate to Power flow analysis.</p> <p>A5.1 Demonstrate methodologies of solving Energy and the Power System problems.</p> <p>A5.2 Demonstrate methodologies of solving Single Phase Power and Three Phase Power problems.</p> <p>A5.3 Demonstrate methodologies of solving Power Quality problems.</p> <p>A5.4 Demonstrate methodologies of solving Transmission Line Parameters problems.</p> <p>A5.5 Demonstrate methodologies of solving DC Transmission and Distribution problems.</p> <p>A5.6 Demonstrate methodologies of solving AC Transmission and Distribution problems.</p> <p>A5.7 Demonstrate methodologies of solving Power flow problems.</p> <p>A6.1 State Quality of Power systems and safety for power flow.</p>
A- Knowledge and Understanding:	



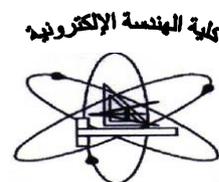
B- Intellectual Skills	<p>B.2 Select appropriate solutions for engineering problems based on analytical thinking.</p> <p>B.5 Assess and evaluate the characteristics and performance of components, systems and processes.</p> <p>B.9 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.</p>	<p>B2.1 Select appropriate solutions for Single Phase Power and Three-Phase Power problems based on analytical thinking.</p> <p>B2.2 Select appropriate solutions for Power Quality and Security consideration problems.</p> <p>B2.3 Select appropriate solutions for Transmission Line Parameters problems.</p> <p>B2.4 Select appropriate solutions for DC Transmission and Distribution problems.</p> <p>B2.5 Select appropriate solutions for AC Transmission and Distribution problems.</p> <p>B2.6 Select appropriate solutions for power flow problems.</p> <p>B5.1 Assess and evaluate the characteristics and performance of Energy and the Power System.</p> <p>B5.2 Assess and evaluate the characteristics and performance of Single Phase Power and Three Phase Power systems.</p> <p>B5.3 Assess and evaluate the characteristics and performance of Line Model.</p> <p>B5.4 Assess and evaluate the characteristics and performance of DC Transmission and Distribution.</p> <p>B5.5 Assess and evaluate the characteristics and performance of AC Transmission and Distribution.</p> <p>B9.1 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability for Single Phase Power and Three Phase Power systems.</p> <p>B9.2 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability for DC Transmission and Distribution.</p> <p>B9.3 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability for AC Transmission and Distribution.</p>
	<p>C.1 Apply knowledge of mathematics, science, design and engineering practice integrally to solve engineering problems.</p>	<p>C1.1 Apply knowledge of mathematics, science and engineering practice integrally to solve Energy and the Power System problems.</p> <p>C1.2 Apply knowledge of mathematics, science and engineering practice integrally to solve Single Phase Power and Three Phase Power problems.</p> <p>C1.3 Apply knowledge of mathematics, science and engineering practice integrally to solve Power Quality and Security consideration problems.</p> <p>C1.4 Apply knowledge of mathematics, science and engineering practice integrally to solve Transmission Line Parameters problems.</p> <p>C1.5 Apply knowledge of mathematics, science and engineering practice integrally to solve DC Transmission and Distribution problems.</p>



C- Professional Skills	<p>C.5 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.</p> <p>C.8 Apply safe systems at work and observe the appropriate steps to manage risks.</p> <p>C.10 Apply quality assurance procedures and follow codes and standards.</p> <p>C.12 Prepare and present technical reports.</p>	<p>C1.6 Apply knowledge of mathematics, science and engineering practice integrally to solve AC Transmission and Distribution problems.</p> <p>C1.7 Apply knowledge of mathematics, science and engineering practice integrally to solve power flow problems.</p> <p>C5.1 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments on Single Phase Power and Three Phase Power.</p> <p>C5.2 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments on DC Transmission and Distribution.</p> <p>C5.3 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments on AC Transmission and Distribution.</p> <p>C8.1 Apply safe Energy and Power System at work and observe the appropriate steps to manage risks.</p> <p>C8.2 Apply safe Single and Three Phase Power System at work and observe the appropriate steps to manage risks.</p> <p>C8.3 Apply safe DC Transmission and Distribution System at work and observe the appropriate steps to manage risks.</p> <p>C8.4 Apply safe AC Transmission and Distribution System at work and observe the appropriate steps to manage risks.</p> <p>C10.1 Apply Power Quality and Security consideration and standards for power flow.</p> <p>C12.1 Prepare and present technical reports on Quality and Security consideration.</p> <p>C12.2 Prepare and present technical reports on practical tasks related to electrical power systems.</p>
D- General Skills	<p>D.1. Collaborate effectively within multidisciplinary team.</p> <p>D.2. Work in stressful environment and within constraints.</p> <p>D.3. Communicate effectively.</p> <p>D.6. Effectively manages tasks, time, and resources.</p> <p>D.7. Search for information and engage in life-long self learning discipline.</p>	<p>D1.1 Collaborate effectively within multidisciplinary team in practical work.</p> <p>D2.1 Work in stressful environment and within constraints while try to finish practical tasks at workshop.</p> <p>D3.1 Communicate effectively with demonstrator and colleagues in tutorial and practical work times.</p> <p>D6.1 Effectively manages tasks, time, and resources in tutorial, practical and exam times.</p> <p>D7.1 Search for information and engage in life-long self learning on topics related to electrical power.</p>



2. Course Contents	Fundamentals of Energy and the Power System - Single Phase Power – Three Phase Power -Power Quality and Security consideration - Transmission Line Parameters -Line Model Performance - DC Transmission and Distribution - AC Transmission and Distribution -Power flow analysis.
3. Teaching and Learning Methods	<ul style="list-style-type: none">• Lectures• Tutorials• Practical workshops.• Reports
4. Teaching and Learning Methods for disable students	<ul style="list-style-type: none">• Official low cost special classes for developing student skills, arranged by the faculty administration.• Assign a portion of the office hours for those students.• Repeat the explanation of some of the material at tutorials and workshops.
5. Student Assessment	
Assessment Methods	- Exercises/practical tasks/reports - Quizzes - Midterm, and final exams
Assessment Schedule	- Exercises/practical tasks/reports: Weekly - Quizz-1: Week <u>no</u> 5 - Mid-Term exam: Week <u>no</u> 8 - Oral and practical exam: Week <u>no</u> 15 - Final – term examination: Week <u>no</u> 16 to 18
Weighting of Assessment	- Semester work and quizzes : 10 % - Mid-term examination: 10 % - Oral and practical exam: 20 % - Final – term examination: <u>60 %</u> 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] Guile A. , “Electrical Power Systems” , Pergamon Press , Oxford, 2007. [2] Yu Y. N. , “Electric Power” , Academic Press , New York, 2006.
d- Periodicals, Web sites, etc.	http://www.eeeeb.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 and Power System	1-2	A1.1, A5.1	B5.1	C1.1, C8.1	D1.1,D2.1,D3.1 D6.1, D7.1
Single Phase Power – Three Phase Power	3-5	A1.2, A5.2	B2.1,B5.2, B9.1	C1.2, C5.1, C8.2, C12.2	D1.1,D2.1,D3.1 D6.1, D7.1
Power Quality and Security consideration	6-7	A5.3, A6.1	B2.2,	C1.3, C10.1, C12.1	D1.1,D2.1,D3.1 D6.1, D7.1
Transmission Line Parameters -Line Model Performance -	9-10	A1.3, A5.4	B2.3, B5.3	C1.4	D1.1,D2.1,D3.1 D6.1, D7.1
DC Transmission and Distribution	11	A5.5	B2.4,B5.4, B9.2	C1.5, C5.2, C8.3, C12.2	D1.1,D2.1,D3.1 D6.1, D7.1
AC Transmission and Distribution	12-13	A5.6	B2.5,B5.5, B9.3	C1.6, C5.3, C8.4, C12.2	D1.1,D2.1,D3.1 D6.1, D7.1
Power flow analysis.	14-15	A1.4, A5.7, A6.1	B2.6	C1.7, C10.1	D1.1,D2.1,D3.1 D6.1, D7.1

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.5, A.6	B.2,B.5, B.9	C.1	D.3
Tutorials	A.1,A.5, A.6	B.2,B.5, B.9	C.1	D.3
Exercises/practical tasks/reports	A.1,A.5, A.6	B.2,B.5, B.9	C.1,C.5,C.8, C.10,C.12	D.1,D.2,D.3 D.6, D7.1

Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Exercises/practical tasks/reports	A.1,A.5, A.6	B.2,B.5, B.9	C.1,C.5,C.8, C.10,C.12	D.1,D.2,D.3 D.6, D7.1
Quizzes	A.1,A.5, A.6	B.2,B.5, B.9	C.1	D.2, D.6
Laboratory exam	A.1,A.5, A.6	B.2,B.5, B.9	C.5, C.8, C.10	D.2, D.6
Midterm, and Final Written exams	A.1,A.5, A.6	B.2,B.5, B.9	C.1	D.2, D.6

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

