



University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: Mechanical/Marine Engineering

Form no. (12)
Course Specification

1- Course Data

Course Code: EE 329	Course Title: Electrical Machines	Academic Year/Level: 3
Specialization: Mechanical/Marine	No. of Instructional Units: 3	Lecture 2 Practical 2

2- Course Aim	<p>To give non - electrical engineering students a basic understanding of the principles of operation and construction of direct and alternating current machines and transformers.</p> <p>A study of theory and concept of Electric Machines (AC & DC).</p> <p>Deriving equivalent circuit of electrical machines.</p> <p>Studying performance and characteristics of machines (AC & DC).</p>
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3- Intended Learning Outcome

a- Knowledge and Understanding	<p>Summarize electric circuits solving methods</p> <p>Summarize definition and principles of magnetic circuits</p> <p>Explain theory, construction, calculations, applications, characteristics of DC Machines, transformers, three phase induction motors and synchronous machine</p> <p>Show methods of control of DC Machines</p>
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b- Intellectual Skills	Apply electric and magnetic circuit solving principles to solve various electric and magnetic circuit configuration Calculate the input, output characteristics of dc machines, transformers, three phase induction motor and synchronous machine
c- Professional Skills	Compare between electric and magnetic circuits Experiment in the laboratory with characteristics and parameters of dc machine, transformer, three phase induction motor and synchronous machine
d- General Skills	Sketch the construction of dc machine and induction motor

<p>4- Course Content</p>	<p><i>Week Number 1:</i> Review on electric circuits.</p> <p><i>Week Number 2:</i> Magnetic circuits.</p> <p><i>Week Number 3:</i> DC Machines (1): DC machines: construction-applications-theory of operation.</p> <p><i>Week Number 4:</i> DC Machines (2): DC machines: equivalent circuit-excitation-voltage control.</p> <p><i>Week Number 5:</i> DC Machines (3): DC motors: starting-characteristics.</p> <p><i>Week Number 6:</i> DC Machines (4): DC motors: performance and speed control.</p> <p><i>Week Number 7:</i> 7th week exam + Transformers (1): construction-applications.</p> <p><i>Week Number 8:</i> Transformers (2): theory- equivalent circuits-tests.</p> <p><i>Week Number 9:</i> Transformers (3): voltage regulation-efficiency.</p> <p><i>Week Number 10:</i> Three Phase Induction Motors (1): construction-applications.</p> <p><i>Week Number 11:</i> Three Phase Induction Motors (2): rotating magnetic field-theory of operation-equivalent circuit.</p> <p><i>Week Number 12:</i> 12th week + 3-phase induction motor (3): characteristics-performance-starting.</p> <p><i>Week Number 13:</i> Synchronous Machine (1): construction-applications-equivalent circuit.</p> <p><i>Week Number 14:</i> Synchronous Machine (2): synchronous alternator: theory of operation-characteristics-synchronization.</p> <p><i>Week Number 15:</i> Synchronous Machine (3): synchronous motor.</p> <p><i>Week Number 16:</i> Final Exam.</p>
<p>5- Teaching and Learning Methods</p>	<ul style="list-style-type: none"> - Lectures - Tutorials - Reports & sheets - Laboratories

6- Teaching and Learning Methods for Students with Special Needs	<ul style="list-style-type: none"> - Lectures - Tutorials - Reports & sheets - Laboratories 														
7- Student Assessment:	Written Examinations to assess The Intended Learning Outcomes Class Activities (Reports, Discussions, -----) to assess The Intellectual Skills														
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b- Schedule:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Assessment 1</td> <td style="width: 40%;">7th Week Written Exam</td> </tr> <tr> <td>Assessment 2</td> <td>12th Week Written Exam</td> </tr> <tr> <td>Assessment 3</td> <td>Continuous Assessments</td> </tr> <tr> <td>Assessment 4</td> <td>16th Week Final Written Exam</td> </tr> </table>	Assessment 1	7 th Week Written Exam	Assessment 2	12 th Week Written Exam	Assessment 3	Continuous Assessments	Assessment 4	16 th Week Final Written Exam						
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c- Weighing of Assessment:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">7th Week Examination</td> <td style="width: 30%;">30%</td> </tr> <tr> <td>12th Week Examination</td> <td>20%</td> </tr> <tr> <td>Final-term Examination</td> <td>40%</td> </tr> <tr> <td>Oral Examination</td> <td>0%</td> </tr> <tr> <td>Practical Examination</td> <td>0%</td> </tr> <tr> <td>Semester Work</td> <td>10%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </table>	7 th Week Examination	30%	12 th Week Examination	20%	Final-term Examination	40%	Oral Examination	0%	Practical Examination	0%	Semester Work	10%	Total	100%
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8- List of References:	C.Hubert, 'Electric Machines" Maxwell Macmillan, 1991														
a- Course Notes															
b- Required Books (Textbooks)	B. S. Guru, "Electric Machinery and Transformers", Oxford Uni. Press, 2001														
c- Recommended Books															
d- Periodicals, Web Sites, ..., etc.															

Course Instructor:

Head of Department:

Program Manager: