



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

Form no. (12) Course Specification

1- Course Data

Course Code: EE 721	Course Title: Dynamics of Electrical Machines	Academic Year/Level: Pre-Thesis
Specialization: Electrical and Control Engineering	No. of Instructional Units: Lecture 3	

2- Course Aim	The student should be able to: <ul style="list-style-type: none">•Learn to represent the electric machines in their non linear models.•Analysis and monitor the machine performance in both transient and steady state modes.•Construct a complete model for the whole system and study the effect of disturbances.
----------------------	---

3- Intended Learning Outcome

a- Knowledge and Understanding	1.a A comprehensive understanding of the scientific principles of own specialization and related disciplines. 1.c A comprehensive knowledge and understanding of mathematical and computer models relevant to engineering discipline, and an appreciation of their limitations 1.f Emerging technologies required to design build, operate and maintain electrical & control systems analog and/or digital including: 1.f(1) Advanced analogue/digital control systems 1.f(2) Electric Machines & Drives 1.f(7) Digital system design
---------------------------------------	--

b- Intellectual Skills	<p>2.b Ability to apply mathematical and computer based models for solving problems in engineering, and the ability to access the limitations of particular cases.</p> <p>2.c Ability to extract data pertinent to unfamiliar problem, and apply in its solution using computer based engineering tools when appropriate.</p>
c- Professional Skills	<p>3.a Wide knowledge and comprehensive understanding of the design processes and methodologies and the ability to apply and adapt them in unfamiliar situations.</p> <p>3.c A thorough understanding of current practice and its limitations, and environmental impacts</p>
d- General Skills	<p>4.b The ability to monitor and adjust a personal program of work on an on-going basis, and top learn independently</p> <p>4.d The ability to learn new theories, concepts, methods, etc... in unfamiliar situations.</p>
4-Course Content	Week No.1: Analysis of classical DC machines Week No.2: Analysis of classical induction machines Week No.3: Analysis of classical synchronous machines Week No.4: Generalized equation of electrical machines Week No.5: D-Q modeling of generalized electrical machines Week No.6: Stationary and rotating parts representation Week No.7: Transient representation of the mathematical model Week No.8: Torque production terms Week No.9: Three phase to two phase transformation Week No.10: Unbalanced system transformation Week No.11: Short or open circuit representation Week No.12: Regulated machines representation Week No.13: Governor effect on output performance Week No.14: Load change effect on output performance Week No.15: Stability analysis for whole system

5- Teaching and Learning Methods	<ul style="list-style-type: none"> • Lectures • Reports & sheets 														
6- Teaching and Learning Methods for Students with Special Needs	<ul style="list-style-type: none"> • Lectures • Reports & sheets 														
7- Student Assessment:															
a- Procedures used:	<p>Written Examinations to assess the intended learning outcomes Class activities (Reports, Discussions, -----) to assess the intellectual Skills</p>														
b- Schedule:	<table border="0"> <tr> <td>Assessment 1</td> <td>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	7th Week Written Exam	Assessment 2	12th Week Written Exam	Assessment 3	Continuous Assessments	Assessment 4	16th Week Final Written Exam						
Assessment 1	7th Week Written Exam														
Assessment 2	12th Week Written Exam														
Assessment 3	Continuous Assessments														
Assessment 4	16th Week Final Written Exam														
c- Weighing of Assessment:	<table border="0"> <tr> <td>7th Week Examination</td> <td>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>	7th Week Examination	30 %	12th Week Examination	20 %	Final-term Examination	40 %	Oral Examination	0 %	Practical Examination	0 %	Semester Work	10 %	Total	100%
7th Week Examination	30 %														
12th Week Examination	20 %														
Final-term Examination	40 %														
Oral Examination	0 %														
Practical Examination	0 %														
Semester Work	10 %														
Total	100%														
8- List of References:															
a- Course Notes															

b- Required Books (Textbooks)	<ul style="list-style-type: none"> •D.P. Seu Gupta & W.J. Lynn, "Dynamics of Electric Machines", Macmillan, Latest Edition. •J. Hindmarch, "Electrical Machines and their Applications", Pergamon Press, Latest Edition.
c- Recommended Books	
d- Periodicals, Web Sites, ..., etc.	

Course Instructor:

Head of Department: