



Course Specifications

Muharram 1437 H

Institution:	Majmaah University
Academic Department :	Electrical Engineering
Programme :	Power & Machines Track
Course :	Selected Topics in Electrical Machines
Course Coordinator :	Dr.Praveen R.P.
Programme Coordinator :	.....
Course Specification Approved Date :	25/ 3/ 1437 H



A. Course Identification and General Information

1 - Course title : Selected Topics in Electrical Machines	Course Code: EE491	
2. Credit hours : (3)		
3 - Program(s) in which the course is offered: Electrical Engineering (Power & Machines Track)		
4 – Course Language : English		
5 - Name of faculty member responsible for the course: Dr.Praveen R.P.		
6 - Level/year at which this course is offered : 10th/5th		
7 - Pre-requisites for this course (if any) : EE 389 – Electric Machines		
8 - Co-requisites for this course (if any) : •		
9 - Location if not on main campus : College of Engineering		
10 - Mode of Instruction (mark all that apply)		
A - Traditional classroom	<input checked="" type="checkbox"/> What percentage? <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">100%</td></tr></table>	100%
100%		
B - Blended (traditional and online)	<input type="checkbox"/> What percentage? <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">..... %</td></tr></table> %
..... %		
D - e-learning	<input type="checkbox"/> What percentage? <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">..... %</td></tr></table> %
..... %		
E - Correspondence	<input type="checkbox"/> What percentage? <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">..... %</td></tr></table> %
..... %		
F - Other	<input type="checkbox"/> What percentage? <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">..... %</td></tr></table> %
..... %		
Comments :		

B Objectives

<p>What is the main purpose for this course?</p> <p>The student should be able to :</p> <ol style="list-style-type: none"> 1. Be acquainted the recent topics in the field of electrical machines which will serve the work market 2. Acquire more experience and knowledge 3. Get rid of the shortages and deficiencies in the compulsory courses
<p>Briefly describe any plans for developing and improving the course that are being implemented :</p> <ol style="list-style-type: none"> 1. To encourage the students to do application oriented micro-





projects

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Parallel Operation of Transformers	2	8
Open Delta Transformer, Scott Connection, Initial rush of current in Transformers, Magnetisation Characteristics and Harmonics	2	8
Necessity for Tap-Changing in Transformers, Location of Taps and Tap-Changing Methods, Instrument Transformers- Current Transformers, Potential Transformers	2	8
Double Squirrel-Cage Motors- Equivalent Circuit of Double Squirrel Cage Motor	2	8
Deep Bar Squirrel Cage Motors, Design Classes of Induction Motors	2	8
Permanent Magnet Brushless DC Motors – Construction, Principle of Operation, Drive Circuit, Applications	3	12
Synchronous Machine Dynamics – dq modeling – analysis of sudden three phase short-circuit, transient power-angle characteristics	2	8

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	0	0	0	60





Credit	3	0	0	0	0	3
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3. Additional private study/learning hours expected for students per week.

6

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1			
1.2	.....	.....	.....
1.3	.....	.....	.....
1.4	.....	.....	.....
1.5	.....	.....	.....
1.6	.....	.....	.....
2.0	Cognitive Skills		
1	Formulate the equivalent circuit for representing DSIM so as to solve engineering problems related to them and to state various design classes of Induction Motor	Lecture, Micro-Projects and Quizes	Standardize d exams, Micro projects
2	Solve engineering problems related to synchronous machine dynamics using dq modeling	Lecture, Micro-Projects and Quizes	Standardize d exams, Quizes
2.3			
2.4	.....	.....	.....
2.5	.....	.....	.....
2.6	.....	.....	.....
3.0	Interpersonal Skills & Responsibility		





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
3.1	.....	.....	.....
3.2	.....	.....	.....
3.3	.....	.....	.....
3.4	.....	.....	.....
3.5	.....	.....	.....
3.6	.....	.....	.....
4.0	Communication, Information Technology, Numerical		
a			
1	Identify the need for parallel operation of transformers and the conditions required for the same.	Lecture, Micro-Projects	Micro projects, Standardized Exams, Quizzes
2	Recognize different types of transformer connections and to explain the concept of magnetization characteristics and harmonics in transformers.	Lecture, Micro-Projects	Exams and Quizzes
3	Recognize the necessity for tap changing operation in transformers, its location and the use of instrument transformers	Lecture, Micro-Projects, Quizzes	Exams and Quizzes
k			
1	Apply the knowledge of Construction, Principle of Operation and Drive Circuit of PMSM motor to implement practical systems.	Lecture, Micro-Projects, Quizzes	Exams and Quizzes
4.6	.....	.....	.....
5.0	Psychomotor		
5.1	.....	.....	.....
5.2	.....	.....	.....
5.3	.....	.....	.....
5.4	.....	.....	.....
5.5	.....	.....	.....
5.6	.....	.....	.....





5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
1	First Mid-Term	6	20%
2	Second Mid-Term	12	20%
3	Final Exam	15	40%
4	Micro-Project	7	10%
5	Quiz	11	10%
6	.....	.....	.....
7	.....	.....	.....
8	.....	.....	.....

D. Student Academic Counseling and Support

1. Three office hours for supporting the student academic counselling.
2. All students are distributed among academic advisors
3. Advising information are included in the student Guide and in the College website

E. Learning Resources

1. List Required Textbooks :

- A.E. Fitzgerald, Charles Kingsley, Jr, and Stephen D. Usmans, "Electric Machinery", McGraw Hill, New York

2. List Essential References Materials :

1. S.J. Chapman, "Electric Machinery Fundamentals", McGraw Hill
2. SARMA, "Electric Machines Steady State Theory and Dynamic Performance", WEST





3. List Recommended Textbooks and Reference Material : <ul style="list-style-type: none">•
4. List Electronic Materials : <ul style="list-style-type: none">• www.nptel.ac.in,....• www.faculty.mu.edu.sa/praveen.r•
5. Other learning material : <ul style="list-style-type: none">•••

F. Facilities Required

1. Accommodation <ul style="list-style-type: none">• Laboratory Available• Lecture room Available .•
2. Computing resources <ul style="list-style-type: none">• LCD Projector Available• Smart Board Available
3. Other resources <ul style="list-style-type: none">• Books for student's use in the main library.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching: <ul style="list-style-type: none">• Student's Course Survey is used by Quality Unit in the Department for obtaining students feedback
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor : <p>Visits of colleagues to monitor the teaching process</p>
3 Processes for Improvement of Teaching : <p>The process for improvement in teaching is done by considering the following parameters:</p> <ol style="list-style-type: none">1. Course Report2. Results of students Course survey





3. Results of teaching evaluation by program instructor
4. Related workshops and training sessions

4. Processes for Verifying Standards of Student Achievement

A sample of the process of marking is checked by an independent member of teaching staff and thereafter the sum of the marks will be verified.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :

1. Reviewing Course Report every semester
2. Improvement every Year

Course Specification Approved

Department Official Meeting No (.....) Date ... / / H

Course's Coordinator

Name : Dr. Praveen R.P.

Signature :

Date : 25/ 3 /1437 H

Department Head

Name : Dr Abdullah

Almuhasien

Signature :

Date : .../ ... / H

