



Course Specifications

Muharram 1437 H

Institution:	Majmaah University
Academic Department :	Electrical Engineering
Programme :	Power and Machines Track
Course :	EE 389
Course Coordinator :	Dr. Ahmed Bilal Awan
Programme Coordinator :	.....
Course Specification Approved Date :	.... / ... / ..... H



A. Course Identification and General Information

1 - Course title :	Electric Machines	Course Code:	EE 389
2. Credit hours :	(3)		
3 - Program(s) in which the course is offered:	Electrical (Power and Machine track)		
4 – Course Language :	English		
5 - Name of faculty member responsible for the course:	Dr. Ahmed Bilal Awan		
6 - Level/year at which this course is offered :	Level 7/Year 3		
7 - Pre-requisites for this course (if any) :	<ul style="list-style-type: none"> • EE 288 		
8 - Co-requisites for this course (if any) :	<ul style="list-style-type: none"> • 		
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?	100 %
B - Blended (traditional and online)	<input type="checkbox"/>	What percentage? %
D - e-learning	<input type="checkbox"/>	What percentage? %
E - Correspondence	<input type="checkbox"/>	What percentage? %
F - Other	<input type="checkbox"/>	What percentage? %
Comments :	.....	

B Objectives

<p>What is the main purpose for this course?</p> <p>Three-phase induction machines (construction, operation, equivalent circuit, performance calculations, starting of induction motors, speed control), single-phase induction motors, reluctance motors, stepper motors, fundamentals of D.C machines, DC machines (components, classification, performance, motor characteristics, starting of DC motors, speed control of DC motors), servo motors, universal motors.</p> <p>Briefly describe any plans for developing and improving the course that are being implemented :</p> <p>.....</p>



C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to AC machinery	1	4
3-phase induction machines (construction)	1	4
3-phase induction machines (operation)	1.5	6
3-phase Induction machines (equivalent circuit)	1	4
3-phase Induction machines (performance calculations)	1.5	6
3-phase Induction motors (starting, speed control)	1	4
1-phase Induction motors	1	4
reluctance motors	1	4
stepper motors	1	4
Fundamentals of DC machines	1	4
DC machines (components, classification)	1	4
DC machines (performance, motor characteristics)	1	4
DC motors (starting, speed control)	1	4
Servo motors, universal motors	1	4

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

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

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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		
2.1	Analyze a drive circuit for stepper motors for control applications. Analyze a drive circuit for servo motors.	Lecture, small group work, , research projects and individual presentation	Standardized exams, Oral exams, Micro projects
2.2	Formulate equivalent circuits representing single phase and three-phase induction motor to calculate and predict the performance of machines. Formulate, and solve engineering problems by using DC machines, servo motors, universal motors and stepper motors	Lecture, small group work, , research projects and individual presentation	Standardized exams, Oral exams, Micro projects
2.3	.....	.....	.....
2.4	.....	.....	.....
2.5	.....	.....	.....
2.6	.....	.....	.....
3.0	Interpersonal Skills & Responsibility		
3.1	.....	.....	.....
3.2	.....	.....	.....
3.3	.....	.....	.....
3.4	.....	.....	.....
3.5	.....	.....	.....
3.6	.....	.....	.....
4.0	Communication, Information Technology, Numerical		
4.1	Illustrate the construction, connections, principle of operation of three-phase and single phase induction motor, stepper motors, servo and reluctance motors.	Lecture, research activities, case studies,	Exercises, quizzes, homework, 1st, 2nd and final exams.





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
		memorization and individual presentation	
4.2	Determine the performance characteristics (current/speed and torque/speed) of the three-phase and single phase induction motor.	Lecture, research activities, case studies, memorization and individual presentation	Exercises, quizzes, homework, 1st, 2nd and final exams.
4.3	.....	.....	.....
4.4	.....	.....	.....
4.5	.....	.....	.....
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	Homeworks and micro project	3rd , 5th, 9 th and 12 th	10%
2	Quizzes	4th , 7th, 11th and 13th	10%
3	Exams	7th and 12th	40 %
4	Final Exam	16th	40 %
5	.....	.....	.....
6	.....	.....	.....





7	.....	.....	.....
8	.....	.....	.....





D. Student Academic Counseling and Support

Office hours are dedicated for student in each week.

E. Learning Resources

1. List Required Textbooks :

- S. J. Chapman, "Electric Machinery Fundamentals", McGraw Hill

2. List Essential References Materials :

- SARMA, "Electric Machines-steady state theory and dynamic performance" WEST

3. List Recommended Textbooks and Reference Material :

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-
-

4. List Electronic Materials :

-
-
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5. Other learning material :

-
-
-

F. Facilities Required

1. Accommodation

-
-
-





2. Computing resources

-
-
-

3. Other resources

-
-
-

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- Confidential questionnaire.
- Discussion with the students.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :

- Observation of the students' performance.
- Observation of the faculty members.

3 Processes for Improvement of Teaching :

- Teaching is improved by using innovative teaching methods and strategies to establish constructive and positive relations with all students in guiding them in their development of critical, analytical thinking and problem solving abilities.

4. Processes for Verifying Standards of Student Achievement

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

- Review the course content each year by a faculty committee.





Course Specification Approved
Department Official Meeting No (.....) Date ... / / *H*

Course's Coordinator

Name :
Signature :
Date : .../ ... / *H*

Department Head

Name :
Signature :
Date : .../ ... / *H*

