



Course Syllabus

1	Course title	Electrical Machines	
2	Course number	0908321	
3	Credit hours	3	
	Contact hours (theory, practical)	3 theoretical hours	
4	Prerequisites/corequisites	Electrical Circuits (0913213)	
5	Program title	B.Sc. in Computer Engineering	
6	Program code	0908321	
7	Awarding institution	The University of Jordan	
8	School	School of Engineering	
9	Department	Mechatronics Engineering Department	
10	Course level	Third Year	
11	Year of study and semester (s)	2021/2022 Second Semester	
12	Other department (s) involved in teaching the course	None	
13	Main teaching language	English	
14	Delivery method	<input type="checkbox"/> Face to face learning <input checked="" type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	3/3/2022	

17 Course Coordinator:

Name: Dr. Musa AlYaman	Contact hours: Monday 12:30-13:30, Thursday 12:30-13:30
Office number: 202 Mechatronics Engineering Department	Phone number: : 5355000 Ext. 23032
Email: m.alyaman@ju.edu.jo	



18 Other instructors:

None

19 Course Description:

Magnetic circuits; single-phase transformers: Principles, analysis, performance characteristics and testing; DC motors: principle of operation; methods of starting and control; Three-phase AC induction motors: principle of operation; methods of starting, testing and speed control. AC three-phase synchronous motors: principle of operation; methods of starting, testing and speed control. Stepper motor: principle of operation; methods of control. Servo-motors (AC and DC): principle of operation; methods of control. Criteria of selection of the different types of motors for various applications, Sizing calculation for several application.

20 Course aims and outcomes:

A- Aims:

This is the main course in which computer engineering students study the discipline of electrical machines (mainly rotary electromagnetic actuators).

B- Intended Learning Outcomes (ILOs):

Upon successful completion of this course, students will be able to:

- Understand electromagnetic and electromechanical conversion principles including the motor effect and the generator effect.
- Understand single phase transformers; Principles, analysis; performance characteristics and tests to establish parameters.
- Understand DC Motors; Principles, analysis; performance characteristics.
- Understand 3-phase induction Motors; Principles, analysis; performance characteristics.
- Understand stepper motors; Principles, and control.
- Understand servo motors; Principles, and control.
- Be able to obtain the nameplate for a motor and analyses its parameters.

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Day/Date
1	1.1	Course Overview	4	Face to Face	Section 1	Synchronous		Sunday 27/2/2022
	1.2	Course Overview	4	Face to Face	Section 101	Synchronous		Tuesday 1/3/2022
	1.3	Chapter 1 (Introduction to Machinery Principles) Slides (1-5)	4	Fully Online	Teams Chapter1_Lec1	Synchronous		Thursday 3/3/2022
2	2.1	Chapter 1 (Introduction to Machinery Principles) Slides (6-14)	4	Face to Face	Section 1 Chapter1_Lec2_P1 + Chapter1_Lec2_P2	Synchronous		Sunday 6/3/2022
	2.2	Chapter 1 (Introduction to Machinery Principles) Slides (15-20)	4	Face to Face	Section 101 Chapter1_Lec3_P1 + Chapter1_Lec3_P2	Synchronous		Tuesday 8/3/2022
	2.3	Chapter 1 (Introduction to Machinery Principles) Slides (20-25)	4	Fully Online	Teams Chapter1_Lec4_P1 + Chapter1_Lec4_P2	Synchronous		Thursday 10/3/2022
3	3.1	Chapter 2	4	Face to Face	Section 1	Synchronous		Sunday 13/3/2022

		Transformers Slides (1-8)			Chapter2_Lec1_P1 + Chapter2_Lec1_P2			
	3.2	Chapter 2 Transformers Slides (9-15)	4	Face to Face	Section 101 Chapter2_Lec2_P1 + Chapter2_Lec2_P2	Synchronous	Q1 (Chapter 1)	Tuesday 15/3/2022
	3.3	Project Discussion G1	4	Fully Online	Teams	Synchronous		Thursday 17/3/2022
4	4.1	Chapter 3 DC Machinery Fundamentals Slides (1-9)	4	Face to Face	Section 1 Chapter3_Lec1_P1 + Chapter3_Lec1_P2	Synchronous	Q1 (Chapter 1)	Sunday 20/3/2022
	4.2	Chapter 3 DC Machinery Fundamentals Slides (9-12)	4	Face to Face	Section 101 Chapter3_Lec2_P1 + Chapter3_Lec2_P2	Synchronous		Tuesday 22/3/2022
	4.3	Chapter 3 DC Machinery Fundamentals Slides (12-15)	4	Fully Online	Teams Chapter3_Lec3_P1 + Chapter3_Lec3_P2	Synchronous		Thursday 24/3/2022

5	5.1	Chapter 4 DC Motors and Generators Slides (1-5)	4	Face to Face	Section 1 Chapter4_Lec1_P1 + Chapter4_Lec1_P2	Synchronous		Sunday 27/3/2022
	5.2	Chapter 4 DC Motors and Generators Slides (6-10)	4	Face to Face	Section 101 Chapter4_Lec2_P1 + Chapter4_Lec2_P2	Synchronous		Tuesday 29/3/2022
	5.3	Project Discussion G2	4	Fully Online	Teams	Synchronous		Thursday 31/3/2022
6	6.1	Chapter 4 DC Motors and Generators Slides (11-15)	4	Face to Face	Section 1 Chapter4_Lec3_P1 + Chapter4_Lec3_P2	Synchronous		Sunday 3/4/2022
	6.2	Chapter 4 DC Motors and Generators Slides (16-23)	4	Face to Face	Section 101 Chapter4_Lec4_P1 + Chapter4_Lec4_P2	Synchronous		Tuesday 5/4/2022
	6.3	Project Discussion G3	4	Fully Online	Teams	Synchronous		Thursday 7/4/2022
7	7.1	Chapter 4 Catchup	4	Face to Face	Section 1 + Section 101	Synchronous	Q2 (Chapter 4)	Sunday 10/4/2022
	7.2	Chapter 5	4	Face to Face	Section 101	Synchronous	Q2 (Chapter 4)	Tuesday 12/4/2022

		AC Machinery Fundamentals Slides (1-6)			Chapter5_Lec1_P1 + Chapte5_Lec1_P2			
	7.3	Project Discussion G4	4	Fully Online	Teams	Synchronous		Thursday 14/4/2022
8	8.1	Mid Exam Revision	4	Face to Face	Section 1 + Section 101	Synchronous		Sunday 17/4/2022
	8.2	Mid Exam Chapters (1-4)	4	Face to Face	Section 1 + Section 101	Synchronous	Mid Exam 11:30-12:30	Tuesday 19/4/2022
	8.3	Mid Exam Discussion	4	Fully Online	Teams	Synchronous		Thursday 21/4/2022
9	9.1	Chapter 5 AC Machinery Fundamentals Slides (7-11)	4	Face to Face	Section 1 Chapter5_Lec2_P1 + Chapter5_Lec2_P2	Synchronous		Sunday 24/4/2022
	9.2	Chapter 5 Catchup	4	Face to Face	Section 1 + Section 101	Synchronous		Tuesday 26/4/2022
	9.3	Project Discussion G5	4	Fully Online	Teams	Synchronous		Thursday 28/4/2022
10	10.1	Chapter 6 Induction Motors Slides (1-10)	4	Face to Face	Section 1 Chapter6_Lec1_P1 + Chapter6_Lec1_P2	Synchronous		Sunday 8/5/2022
	10.2	Chapter 6 Induction Motors Slides (11-15)	4	Face to Face	Section 101 Chapter6_Lec2	Synchronous		Tuesday 10/5/2022

	10.3	Project Discussion G6	4	Fully Online	Teams	Synchronous		Thursday 12/5/2022
11	11.1	Chapter 6 Induction Motors Slides (15-20)	4	Face to Face	Section 1 Chapter6_Lec3_P1 + Chapter6_Lec3_P2	Synchronous		Sunday 15/5/2022
	11.2	Chapter 6 Catchup	4	Face to Face	Section 1 + Section 101	Synchronous		Tuesday 17/5/2022
	11.3	Project Discussion G7	4	Fully Online	Teams	Synchronous		Thursday 19/5/2022
12	12.1	Chapter 7 Synchronous Machines Slides (1-7)	4	Face to Face	Section 1 Chapter7_Lec1	Synchronous	Q3 (Chapter 6)	Sunday 22/5/2022
	12.2	Chapter 7 Synchronous Machines Slides (8-13)	4	Face to Face	Section 101 Chapter7_Lec2	Synchronous	Q3 (Chapter 6)	Tuesday 24/5/2022
	12.3	Project Discussion G8	4	Fully Online	Teams	Synchronous		Thursday 26/5/2022
13	13.1	11.1 Special-Purpose Motors Slides (1-8)	4	Face to Face	Section 1 Chapter8_Lec1_P1 + Chapter8_Lec1_P2			Sunday 29/5/2022
	13.2	11.2 Special-Purpose Motors Slides (9-19)	4	Face to Face	Section 101 Chapter8_Lec2_P1 + Chapter8_Lec2_P2			Tuesday 31/5/2022

	13.3	Project Discussion G9	4	Fully Online	Teams	Synchronous		Thursday 2/6/2022
14	14.1	Chapter 9 Motor Sizing Slides (1-10)	4	Face to Face	Section 1 Chapter9_Lec1_P1	Synchronous		Sunday 5/6/2022
	14.2	Chapter 9 Motor Sizing Slides (11-14)	4	Face to Face	Section 101 Chapter9_Lec1_P2	Synchronous		Tuesday 7/6/2022
	14.3	Course Discussion	4	Fully Online	Teams	Synchronous		Thursday 9/6/2022

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Quizzes	10	Chapters 1, 4 and 6	4	(3 rd , 4 th), 7 th , and 12 th	Moodle
Project	10		4		Moodle
Midterm Exam	30	Chapters 1-4	4	8 th week Tuesday 19/4/2022	Moodle
Final Exam	50	All topics	4		Moodle

23 Course Requirements

Each student should have a computer (with MS Project, MS Excel, and MS Word installed) and internet connection.

24 Course Policies:



A- Attendance policies:

Students are expected to attend EVERY CLASS SESSION and they are responsible for all materials, announcements, schedule changes, etc., discussed in class

B- Absences from exams and submitting assignments on time:

There will be no make-up exams for any exam or missed assignment, which will be taken during the course. Exceptions to this rule is restricted only to the following cases:

- Death of only first order relatives (father, mother, sister, or brother).
- Hospital entry (inpatient) during the time of the examination.

Any other cases will be given the zero mark in the corresponding exam or assignment.

C- Health and safety procedures:

Students are responsible for:

- Keeping themselves informed of conditions affecting their health and safety;
- Participating in safety training programs;
- Following to health and safety practices in their workplace, classroom;
- Advising of or reporting unsafe practices or serious hazards in the classroom or laboratory.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Follow the UoJ guidelines that providing definitions, procedures, and recommendations for promotion and violation of academic honesty and integrity.

E- Grading policy:

Follow the UoJ guidelines that providing definitions of undergraduate grading policy

F- Available university services that support achievement in the course:

Text book, class handouts, and an access to Personal Computer with office software

25 References:

A- Required book(s), assigned reading and audio-visuals:

Electric Machinery Fundamentals, Stephen J. Chapman 5th Edition McGraw-Hill

B- Recommended books, materials, and media:

Lecture note

26 Additional information:



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Name of Course Coordinator: Dr. Musa AlYaman-----Signature: ----- Date: 3/3/2022
Head of Curriculum Committee/Department: ----- Signature: ----- ---
Head of Department: ----- Signature: ----- -
Head of Curriculum Committee/Faculty: ----- Signature: ----- -
Dean: ----- Signature: -----