Form: Course Syllabus		
	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	06

1.	**Course Title**	Power System and Electrical Machines
2.	**Course Number**	0908325
3.	**Credit Hours (Theory, Practical)**	3 Hours. Theoretical
	Contact Hours (Theory, Practical)	3 Hours weekly
4.	**Prerequisites/ Corequisites**	Electric circuits (2)
5.	**Program Title**	Bachelor's Degree
6.	**Program Code**	08
7.	**School/ Center**	School of Engineering
8.	**Department**	Mechatronics Engineering
9.	**Course Level**	3rd Year
10.	**Year of Study and Semester (s)**	2023/2024 2nd semester
11.	**Other Department(s) Involved in Teaching the Course**	
12.	**Main Learning Language**	English.
13.	**Learning Types**	☐Face to face learning ■Blended ☐Fully online
14.	**Online Platforms(s)**	■Moodle ■Microsoft Teams
15.	**Issuing Date**	25/2/2024
16.	**Revision Date**	25/2/2024

17. Course Coordinator:

Name: Eng. Samer Salah	Contact hours: Sun, Tue & Thu 11:30-12:30
Office number:2B	Phone number: None
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18. Other Instructors:

Name: Office number: Phone number: Email: Contact hours:

19. Course Description:

Magnetic circuits; single-phase transformers: Principles, analysis, performance characteristics and testing; electromechanical energy conversion; principles and classification of DC generators; DC motors: analysis, performance characteristics, starting, testing and speed control; synchronous motors: analysis, performance characteristics, applications, starting, and testing; three-phase induction motors: analysis, performance characteristics, testing, starting and speed control.

20. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

3. An ability to communicate effectively with a range of audiences.

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

21. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. Understand electromagnetic and electromechanical conversion principles including the motor effect and the generator effect.
2. Understand single phase transformers; Principles, analysis; performance characteristics and tests to establish parameters.
3. Understand DC Motors; Principles, analysis; performance characteristics.
4. Understand the concept of 3-phase rotating field magnetic field that is necessary for all AC motors (induction and synchronous).
5. Understand 3-phase induction Motors; Principles, analysis; performance characteristics.
6. Understand 3-phase synchronous Motors and generators; Principles, analysis; performance characteristics.
7. Be able to obtain the nameplate for a motor and analyze its parameters.
8. Be aware of the modern issues regarding the energy efficiency design of motors and rare earth metal permanent magnets.

Course ILOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1		√		√		
2		√		√		
3		√		√		
4		√		√		
5		√		√		
6		√		√		
7		√		√		
8		√		√		

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program ILOs / Course ILOs	ILO (1)	ILO (2)	ILO (3)	ILO (4)	ILO (5)	ILO (6)	ILO (7)
1							
2				√			
3							
4							
5				√			
6							
7							
8							

23. Topic Outline and Schedule:

Week	Lecture	Topic	ILO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1	1.1	Introduction to Electrical Machine		F to F	Moodle			
	1.2	Ch.1-Magnetic circuits (1)		F to F	Moodle			
	1.3	Ch.1-Magnetic circuits (2)		Blended	Teams			
2	2.1	Ch.1-Magnetic circuits (3)		F to F	Moodle			
	2.2	Ch.1-Magnetic circuits (4)		F to F	Moodle			
	2.3	Ch.1-Magnetic circuits (5)		Blended	Teams			
3	3.1	Ch.1-Magnetic circuits (6)		F to F	Moodle			
	3.2	Ch.2-Transformers (1)		F to F	Moodle			
	3.3	Ch.2-Transformers (2)		Blended	Teams			
4	4.1	Ch.2-Transformers (3)		F to F	Moodle			
	4.2	Ch.2-Transformers (4)		F to F	Moodle			
	4.3	Ch.2-Transformers (5)		Blended	Teams			
5	5.1	Ch.2-Transformers (6)		F to F	Moodle			

	5.2	Ch.3-DC machinery Fundamentals (1)		F to F	Moodle			
	5.3	Ch.3-DC machinery Fundamentals (2)		Blended	Teams			
6	6.1	Ch.3-DC machinery Fundamentals (3)		F to F	Moodle			
	6.2	Ch.4-DC motors and generators (1)		F to F	Moodle			
	6.3	Ch.4-DC motors and generators (2)		Blended	Teams			
7	7.1	Ch.4-DC motors and generators (3)		F to F	Moodle			
	7.2	Ch.4-DC motors and generators (4)		F to F	Moodle			
	7.3	Ch.4-DC motors and generators (5)		Blended	Teams			
8	8.1	Ch.4-DC motors and generators (6)		F to F	Moodle			
	8.2	Ch.5-AC machinery Fundamentals (1)		F to F	Moodle			
	8.3	Ch.5-AC machinery Fundamentals (2)		Blended	Teams			
9	9.1	Ch.5-AC machinery Fundamentals (3)		F to F	Moodle			
	9.2	Ch.6-Induction motors (1)		F to F	Moodle			
	9.3	Ch.6-Induction motors (2)		Blended	Teams			
10	10.1	Ch.6-Induction motors (3)		F to F	Moodle			
	10.2	Ch.6-Induction motors (4)		F to F	Moodle			
	10.3	Ch.6-Induction motors (5)		Blended	Teams			
11	11.1	Ch.6-Induction motors (6)		F to F	Moodle			
	11.2	Ch.7-Synchronous Machines (1)		F to F	Moodle			
	11.3	Ch.7-Synchronous Machines (2)		Blended	Teams			
12	12.1	Ch.7-Synchronous Machines (3)		F to F	Moodle			
	12.2	Ch.7-Synchronous Machines (4)		F to F	Moodle			
	12.3	Ch.7-Synchronous Machines (5)		Blended	Teams			
13	13.1	Ch.7-Synchronous Machines (6)		F to F	Moodle			
	13.2	Matlab Applications (1)		F to F	Moodle			
	13.3	Matlab Applications (2)		Blended	Teams			
14	14.1	Matlab Applications (3)		F to F	Moodle			
	14.2	Ch.8-Motor sizing principles (1)		F to F	Moodle			
	14.3	Ch.8-Motor sizing principles (2)		Blended	Teams			
15	15.1	Ch.8-Motor sizing principles (3)		F to F	Moodle			
	15.2	Ch.8-Motor sizing principles (4)		F to F	Moodle			
	15.3	Ch.8-Motor sizing principles (5)		Blended	Teams			

24. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	ILO/s Linked to the Evaluation activity	Period (Week)	Platform
Quizzes	10	Ch.1 – Ch.4	1-13	4th	On campus
Projects	20	DC & AC motors	1-13	13th	On campus
Midterm Exam	30	Ch.1 – Ch.4	1-7	6th	On campus
Final Exam	40	Ch.4 – Ch.8	8-13	16th	On campus

25. Course Requirements:

Students should have a computer, internet connection, webcam, account on a Mathwork, Matlab Software, textbook and Handouts.

26. Course Policies:

A- Attendance policies:

Students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.

B- Absences from exams and submitting assignments on time:

There will be no makeup exams for any exam that 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 (in-patient) during the time of the examination.

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

C- Health and safety procedures:

None.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Department and college instructions regarding cheating and misappropriation will be applied.

E- Grading policy:

Assessment	Mark
Quizzes	10
Project	20
Midterm exam	30
Final exam	40
Total	100

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

Electrical Machine lab equipment and devices

27. References:

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

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

B- Recommended books, materials, and media:

28. Additional information:

None

Name of the Instructor or the Course Coordinator: ……**Eng.Samer Salah**……	Signature: ……..……	Date: ……..……
Name of the Head of Quality Assurance Committee/ Department ……	Signature: ……..……	Date: ……..……
Name of the Head of Department ……	Signature: ……..……	Date: ……..……
Name of the Head of Quality Assurance Committee/ School or Center ……	Signature: ……..……	Date: ……..……
Name of the Dean or the Director ……	Signature: ……..……	Date: ……..……