Jordan University of Science and Technology
Faculty of Engineering
Electrical Engineering Department

EE332 Electric Machines
First Semester 2022-2023

Course Catalog
3 Credit Hours. Transformers: construction, principles and operation, ideal and non-ideal, performance characteristics, three-phase, auto transformers. DC machines: construction, classifications, performance equations of generators and motors, starting and speed control of motors. Synchronous machines: construction, generator and motor operations: salient and non-salient types. Three-phase induction motors: construction, operation, performance calculations, starting and speed control. Single phase induction motor. .

Text Book	
Title	Electric Machinery Fundamentals
Author(s)	S. J. Chapman
Edition	5th Edition
Short Name	Ref # 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Principles of Electric Machines and Power Electronics	P. C. Sen	3rd Edition	
Ref # 3	Electric Machines: Steady State Operation	S. A. Nasar, I. Boldea	1st Edition	
Ref # 4	Electric Machinery	A. E. Fitzgerald, C. Kingsley, S. D. Umans	6th Edition	

Instructor	
Name	**Mr. Adel Shawagfeh**
Office Location	E1 L-1

Office Hours	Sun : 09:30 - 11:00
	Mon : 11:30 - 13:00
	Tue : 09:30 - 11:00
	Thu : 09:30 - 11:00
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Class Schedule & Room

Section 1:
  Lecture Time: Sun, Tue, Thu : 12:30 - 13:30
  Room: E2008

Prerequisites

Line Number	Course Name	Prerequisite Type
242070	EE207 Electromagnetic (1)	Prerequisite / Pass
243101	EE310 Electric Circuits (2)	Prerequisite / Pass

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	Magnetic circuit, losses and inductance	From **Ref # 1**, From **Ref # 2**
Weeks 3, 4	Transformers	From **Ref # 1**
Weeks 5, 6, 7	DC machines	From **Ref # 1**
Weeks 8, 9, 10	Three phase induction (asynchronous) machines	From **Ref # 1**
Week 11	Single phase motors	From **Ref # 4**
Weeks 12, 13, 14, 15, 16	Synchronous machines	From **Ref # 1**

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the generation and the motor principles Understand some phenomena?s like: armature reaction, back emf, eddy current, hysteresis losses [1ABET1, 1ABET2, 1ABET4, 1ABET5, 1ABET6, 1ABET7]	20%	FIRST EXAM, SECOND EXAM, Final Exam
Define the input output characteristics of each machine Understand the impact of load changing on the system performance Analyze the speed torque characteristics for all motors [1ABET1, 1ABET4, 1ABET5, 1ABET6, 1ABET7]	15%	FIRST EXAM, SECOND EXAM, Final Exam

Explain all physical quantities by the suitable electric elements with the proper connections Understand the source and the nature of the system losses [1ABET1, 1ABET4, 1ABET5, 1ABET6, 1ABET7]	15%	FIRST EXAM, SECOND EXAM, Final Exam
Realize the inner construction and connections of electric machines Understand how to adjust the machine circuit which meets the desired performance under specific conditions Selecting the suitable machine based on the need applications [1ABET1, 1ABET3, 1ABET4, 1ABET5, 1ABET6, 1ABET7]	15%	FIRST EXAM, SECOND EXAM, Final Exam
Understand the conditions needed to do the open circuit and short circuit tests Realize the parameters known by each test Understand the acceptable approximation based on the full understanding of the machines and transformers [1ABET1, 1ABET3, 1ABET5, 1ABET6]	35%	FIRST EXAM, SECOND EXAM, Final Exam

Relationship to Program Student Outcomes (Out of 100%)						
ABET1	ABET2	ABET3	ABET4	ABET5	ABET6	ABET7
20.58	3.33	11.25	11.83	20.58	20.58	11.83

Evaluation	
Assessment Tool	**Weight**
FIRST EXAM	30%
SECOND EXAM	30%
Final Exam	40%

Policy	
First Exam	25%
Online Activities	25%
Final Exam	50%

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