



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

EE531 Electric Drive Systems

Second Semester 2022-2023

Course Catalog

3 Credit Hours. Introduction to variable speed drive systems; basic concepts of electric drive systems; emphasis on system analysis and application. Modeling of dc machines; separately-excited and permanent magnet dc machines. Single- and three- phase controlled rectifiers for dc motor drives. Chopper-controlled dc motor drives. Three-phase induction motor drives with stator voltage and slip-energy recovery schemes. Variable frequency operation of three-phase induction and synchronous motor drives.

Text Book

Title	Electric Motor Drives: Modeling, Analysis and Control
Author(s)	Krishnan
Edition	1st Edition
Short Name	Ref#1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref#2	Fundamental of Electrical Drives	2) Gopal K. Dubey	2nd Edition	
Ref#3	Fundamental of Electrical Drives	3) Mohamed A. El-Sharkawi	3rd Edition	

Instructor

Name	Dr. Issam Smadi
Office Location	E2-L3

Office Hours	Mon : 08:00 - 09:00 Mon : 09:00 - 10:00 Mon : 11:30 - 13:00 Tue : 08:00 - 10:00 Tue : 11:30 - 13:00 Wed : 08:00 - 08:30 Thu : 08:00 - 08:30
Email	iasmadi@just.edu.jo

Class Schedule & Room
Section 2: Lecture Time: Mon : 10:00 - 11:30 Room: LAB

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction to Motor Drive Systems	From Ref#1
Weeks 2, 3	Modelling of DC Machines	From Ref#1
Weeks 4, 5	Phase-Controlled DC Motor Drives	From Ref#1 , From Ref#2
Weeks 7, 8	Chopper-Controlled DC Motor Drives	From Ref#1 , From Ref#2
Weeks 9, 10	Three-phase Induction Machines	From Ref#1 , From Ref#2 , From Ref#3
Weeks 11, 12	Phase-Controlled 3-phase Induction Motor Drives	From Ref#1 , From Ref#2
Weeks 13, 14	Frequency-Controlled 3-phase Induction Motor Drives	From Ref#1
Weeks 15, 16	Synchronous Motor Drives	From Ref#1

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Ability to understand the principles of electric drive systems [1ABET1, 1ABET2]	20%	
Ability to understand the modelling of DC machines. [1ABET1]	12%	
Understand the phase- and chopper-control of DC motor drives [1ABET1, 1ABET2]	25%	
Understand the Phase- and Frequency-control of induction motor drives. [1ABET1, 1ABET2]	43%	

Understand the methods of control of synchronous motor drives. [1ABET1, 1ABET2]	1%	
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Relationship to Program Student Outcomes (Out of 100%)						
ABET1	ABET2	ABET3	ABET4	ABET5	ABET6	ABET7
56.5	44.5					

Evaluation	
Assessment Tool	Weight
Final Exam	50%
Homeworks	20%
Midterm and Quizzes	30%

Policy	
Assessment Tool	Assignments /Quizzes You must be always ready 10% First exam According to the department schedule 25 % Second Exam According to the department schedule 25 % Final Exam According to the university final examination schedule 40 %

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