

Faculty of Engineering & Technology

Power Electronics 2

Information :

Course Code :	EPR 452	Level	:	Undergraduate	Course Hours :	3.00- Hours

Department : Specialization of Electrical Power Engineering

Instructor Information :

Title	Name	Office hours
Professor	Naser Mohammed Bayoumy AbdelRahim	4
Lecturer	Ahmed Mohy Eldeen Ibrahim Mohamed	1
Assistant Lecturer	Mohamed Abdallah Mahmoud Shaheen	2
Assistant Lecturer	Mohamed Abdallah Mahmoud Shaheen	2

Area Of Study :

The Main Goals of this course are:

⁷Ænrich the student knowledge with the importance of power electronics devices in electrical systems. "Ántroduce the characteristics, operation and application of different power electronics converters.

A pemonstrate knowledge and understanding the concepts of power electronics circuits.

Description :

Ac voltage controllers: The single phase AC voltage controller, Three phase controller, Integral cycle control, Thyristor commutation techniques, Main principles, Circuits, DC choppers: The single thyristor chopper, Two thyristor choppers, Inverters: Single phase circuits, Bridge inverter circuits.

Course outcomes :

a.Knowledge and Understanding: :			
1 -	a1. Explain the different topography of AC voltage controllers.		
2 -	a2. Define the operation of DC choppers.		
3 -	a3. Identify the characteristics and operation of inverters.		
b.Intellectual Skills: :			
1 -	b1. Demonstrate the basic electrical skills to operate a power converter.		
2 -	b2. Apply the power electronics for different application in industry.		
3 -	b3. Propose the proper solution to enhance different types of converters performance.		
c.Professional and Practical Skills: :			
1 -	c1. Solve real problems of power electronics converters.		
2 -	c2. Practice a design of power electronics converter circuit.		
d.General and Transferable Skills: :			
1 -	d1. Gain access to data and information from libraries and internet related to course subjects.		



2 -	d2. Practice in a team work
3 -	d3. Write a technical report

Course Topic And Contents :

Торіс	No. of hours	Lecture	Tutorial / Practical
Three phase ac voltage controllers	5	3	2
Applications of ac voltage controllers	10	6	4
Buck dc-dc converters	10	6	4
Single phase ac voltage controllers	10	6	4
Boost dc-dc converters	10	6	4
Two quadrant dc-dc converters	5	3	2
Single phase square pulse inverters	10	6	4
Pulse Width Modulation (PWM) control	10	6	4
Three phase inverters	5	3	2

Teaching And Learning Methodologies :
Interactive lectures
Experiential learning
Self reading
Report writing

Course Assessment :				
Methods of assessment	Relative weight %	Week No	Assess What	
″Á∓inal exam	40.00			
o Assignments and Lab	10.00			
o In Class Quizzes	10.00			
o Mid-Term exams	30.00			
o Participations	10.00			

Recommended books :

1. M. H. Rashid. Power Electronics: Circuits, Devices, and Applications, 4th ed. Pearson Education Inc., 2013 (Text Book).

2. N. Mohan, T. M. Undeland, and W.P. Robbins Rower Electronics: Converters, Applications and Design, Alohn Wiley, 2nd edition, 2003.