EE353-3: Power Electronics

Course code and name	EE353-3: Power Electronics
Credits units	3 Credit units
Contact hours	5 Contact hours: 2 lecture, 1 tutorial and 2 practical
Instructor name	Dr. Slim Abid
Textbook	Daniel W. Hart Power Electronics Published by McGraw-Hill ISBN 978-0-07-338067-4
Other supplemental materials	- Power Electronics Circuit, Devices, and applications, 3rd, by Rashid Mohamed H, 2003. - Issa Batarseh · Ahmad Harb Power Electronics Springer International Publishing AG 2018
	Specific course information
a. Course description	This course gives a background on the concepts of power electronics. All the detail of converter circuits are presented for both DC and AC circuits. Moreover, applications of power electronics are demonstrated by using power semiconductor switches, such as, single/three phase rectifier circuits, which can be controlled/uncontrolled rectifier. Also, the course demonstrates single/three phase AC voltage controller and DC/DC converters.
b. Prerequisite	EE251-3
c. Required / Elective	Required
	Course Learning Outcomes

<u>CLO of the Lecture Activities:</u>

CLO1: Analyze power semiconductor devices and their applications.

CLO2: Analyze the operation of single & three phase rectifier with R & R-L loads.

CLO3: Calculate relevant output voltages, current, ripple, efficiency, the operation of single & three phase rectifier with R & R-L loads.

CLO4: Explain the operation of an AC/AC single/three phase voltage controller.

CLO5: Solve typical DC/DC converter applications problems.

CLO of the Laboratory Activities:

CLO1: Verify theory and to improve knowledge learned in class.

CLO2: Formulate and solve problems related to theory.

CLO3: Design and safety conducts an experimental procedure.

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.

CLO5: Communicate critical analysis of scientific information through written reports.

CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- Power Electronics & Semiconductor Devices
- Diode rectifiers (uncontrolled rectifiers)
- Controlled rectifiers
- AC voltage controllers
- DC/DC converters

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							
CLO3							
CLO4							
CLO5							
	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1							
CLO2							

CLO3							
CLO4							
CLO5							
CLO6							