

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN POWER ELECTRONICS
SEMESTER: V

Subject Name: **Electrical Drives and Control - I**

Sr. No.	Course content
1.	Introduction: <ul style="list-style-type: none">• Concept and Classification, Control scheme, Methods of speed control• Components of Electric Drives• Review of Speed- Torque characteristics of DC shunt, series and compound motors• Evolution of DC drives
2.	Heating and Power Ratings of Drive Motors: <ul style="list-style-type: none">• Load diagram, Overload capacity, Insulating materials• Heating and cooling of motors, Service Conditions of electric drives, Selection of motor power capacity, Shock loading conditions
3.	Phase Controlled DC Drives: <ul style="list-style-type: none">• Single phase drives: Single phase half wave converter drives, Single phase semi converter drives, Single phase full converter drives, Single phase dual converter drives• Three phase drives: Three phase half wave converter drives, Three phase semi converter drives, Three phase full converter drives, Three phase dual converter drives• Power factor improvement, Linear and Cosine control of Phase angle, Over Current protection
4.	Breaking: <ul style="list-style-type: none">• Principle of power control• Principle of regenerative break control• Rheostatic brake control• Combined regenerative and rheostatic break control
5.	Close Loop Control: <ul style="list-style-type: none">• Separately excited motor drives• Series DC motor model• PLL control• Microprocessor control
6.	PMBDCM: <ul style="list-style-type: none">• Permanent magnet Brushless DC Motor Drives, their working, advantages, applications
7.	Miscellaneous: <ul style="list-style-type: none">• State Feedback controller for DC motor drives,• Stepper motor drives, Applications of DC drives and stepper motor drives

Reference Books:

1. Electric Drives, PHI, DE, SEN.
2. Power Electronics Devices, Circuits and Industrial Applications, Oxford, V.R. Moorthi.
3. Power Electronics Circuits, Devices and Applications, PHI, RASHID.
4. Fundamental of electric drives, cengage, Mohamed A EI-Sharkawi.
5. Thyristors DC Drives, John Wiley & Sons, P. C. Sen.