

GUJARAT TECHNOLOGICAL UNIVERSITY
MANUFACTURING ENGINEERING
B. E. SEMESTER: III

Subject Name: **Electrical Drives and Controls**

Subject Code: **133402**

Sr. No	Course Content
1.	Introduction: Basic elements – Types of electric drives – Factors influencing the choice of electrical drives – Heating and cooling curves – Loading conditions and classes of duty – Selection of power rating for drive motors with regard to thermal overloading and load variation factors.
2.	Motor Characteristics: Mechanical characteristics – Speed –Torque characteristics of various types of load and drive motors – Braking of Electrical motors – DC motors – Shunt – Series – Compound – Single phase and three phase induction motors.
3.	Starting Methods: Types of D.C motor starters – Typical control circuits for shunt and series motors – Three phase squirrel cage and slip ring induction motors.
4.	Conventional And Solid State Speed Control Of D.C. Drives: Speed control of DC series and shunt motors – Armature and field control – Ward-Leonard control system – Using controlled rectifiers and DC choppers – Applications.
5.	Conventional And Solid State Speed Control Of A.C. Drives: Speed control of three phase induction motor – Voltage control – Voltage / frequency control – Slip power recovery scheme – Using inverters and AC voltage regulators – Applications.

Text Books:

1. Vedam Subramaniam, “Electric Drives (concepts and applications)”, Tata McGraw-Hill, 2001.
2. Nagrath.I.J. and Kothari.D.P, “Electrical Machines”, Tata McGraw-Hill, 1998.

Reference Books:

1. Pillai.S.K “A First Course on Electric Drives”, Wiley Eastern Limited, 1998.
2. Singh, M.D., and Khanchandani, K.B., “Power Electronics”, Tata McGraw-Hill, 1998.
3. Partab, H., “Art and Science and Utilisation of Electrical Energy”, Dhanpat Rai and Sons, 1994.