

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC SEMESTER : VIII

ELECTRICAL ENGINEERING

Subject Name: **Electrical Drives and Traction**

Subject Code: **X80903**

Sr. No.	Course Contents	Total Hrs
1.	1. ELECTRIC DRIVES: Introduction: concept of electric drives, classification of electric drives, nature of load, factors effecting selection of drive, Running characteristics of D.C, Series and shunt motor, 3-phase induction motor, 3-phase synchronous motor and A.C series motors, Starting Methods: D.C series and shunt motors, starting methods of 3-phase induction motors, examples, starting methods of synchronous motors and single-phase induction motor. Energy efficient drives. Speed Control & Braking: D.C series and shunt motors, examples. Speed control of 3-phase induction motor. Examples, Methods of electric braking, of D.C motor, examples. Braking of 3-phase induction motor, Mechanical features of electric drive, Load equalization, flywheel calculations, examples. Temperatures rise of electric drives heating and cooling curves, standard ratings of motors, examples Applications of electric drives and selection of drives for particular service, conservation approach to be considered.	
2.	2. ELECTRICAL TRACTION: Introductions of different traction systems, various systems of electric traction. Locomotives, tramways, trolleys, track electrification, comparison between A.C and D.C systems of railway electrification, Types of speed and speed-time curves, examples. Mechanics of train movement, tractive effort, power, output, examples. Energy output from driving axles, energy output using simplified speed-time curves, examples, Factors affecting energy consumption, dead weight, accelerating weight, adhesion weight, examples., Traction motors and their characteristics, starting and speed control of D.C series and shunt motors, examples, Starting and speed control of A.C series and 3-phase induction motors, Braking of traction motors and mechanical considerations, conservation approach to be considered.	

Reference Books:-

Electric Traction – H. Partab.

Electrical Power Utilization – B. L. Theraja.

A text book on Power System Engg. – Soni, Gupta, Bhatnagar,