SUBJECT NO-EE60002, SUBJECT NAME- ADVANCED MACHINE DRIVES

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Course Name: Advanced Machine Drives Course No.: EE60002 L-T-P : 3-1-0 Prerequisite: EE60003, EE60035Module-1 (8 lectures): Induction Motor Drives: Field oriented control- Direct and indirect field orientation, stator-flux, rotor-flux and airgap-flux orientation. Flux-torque decoupling, Extended speed operation and Field weakening.Module-2 (8 lectures): Direct torque control of Induction Motor, Flux and speed observers, Induction generators, Doubly Fed Induction Machines (DFIM): Different modes of operation, Equivalent circuit, Active and reactive power control, Vector control of DFIM.Module-3 (6 lectures): Identification of Induction Motor Parameters: Linear Model, Nonlinear least square identification, Parameter error indices. Speed sensorless control: Signal injection and model based techniques, zero/low speed operation. Module-4 (6 lectures): Synchronous Motor Drives, Vector controled Cycloconverter fed Drive, Parameter estimation and sensorless control. Module-5 (6 lectures): Introduction to PM Synchronous Motor, Various rotor configurations of PMSM, Sinusoidal Back-Emf PMSM: Field oriented control, Direct torque control. Interior PM Machine: Maximum torque per ampere control, Field weakeningModule-6 (6 lectures): Introduction to Brushless DC Motor: EMF and Torque of BLDC machine, Voltage Source Inverter fed BLDC: Half-wave and Full-wave operation, Speed control, Torque ripple minimization, Sensorless operation.