

COURSE CONTENT:		
UNIT I	INTRODUCTION	9
Electric drive systems - solid state devices - solid state switching circuits – characteristics of electric motors - speed torque characteristics of electric motors – PWM techniques - rating and heating of motors.		
UNIT II	AC AND DC ELECTRIC DRIVES	9
Introduction – classification of electric drives – dynamic conditions of a drive system – stability considerations of electrical drives – dc choppers, inverters, cycloconverter, ac voltage controllers, stepper motor.		
UNIT III	POWER CONVERTERS	9
Induction motor drives – synchronous motor drives – dc drives – block diagram representation of drive systems, signal flow graph representation of the systems, transient response, frequency response, stability of controlled drives.		
UNIT IV	CLOSED LOOP CONTROL OF ELECTRICAL DRIVES	9
Drive considerations – control system components – mathematical preliminaries – Nyquist stability criterion – Assessment of relative stability using Nyquist criterion – closed loop frequency response – sensitivity analysis in frequency domain – PID controllers – feed back compensation, robust control system design.		
UNIT V	MICROCONTROLLERS AND DSP APPLICATIONS	9
Introduction – dedicated hardware system versus microcontroller control – application areas and functions of microcontroller and dsp in drive technology – control of electric drives using microcontroller and dsp – control system design of microcontroller based variable speed drives – applications in textile mills, steel rolling mills, cranes and hoist drives, cement mills, sugar mills, machine tools, coal mills, paper mills, centrifugal pumps, turbo compressors.		
TOTAL: 45 PERIODS		
TEXT BOOKS:		
<ol style="list-style-type: none"> 1. Vedam Subrahmanyam, “Electric drives – concepts and applications”, Tata McGraw Hill publishing company limited, New Delhi, 2003 edition. 2. John. B. Peatman, “Design with PIC Microcontrollers “, Pearson Education, Asia 2004. 		
REFERENCE BOOKS:		
<ol style="list-style-type: none"> 1. Mohammed. A. El-sharkawi, “ Fundamentals of Electrical drives”, Books/cole, Thomson learning, A division of Thomson learning lin., 2001 edition. 2. Gopal. M, “Control System Principles and Design”, Tata McGraw Hill publishing company limited, New Delhi, second edition. 3. Nagrath. I. J, Gopal. M, “Control Systems Engineering”, New age international publishers, third edition. 		