No	Course Information	
1	Unit name:	Electrical Machine and Control I
2	Code:	EP 51014
3	Classification:	Engineering subject
4	Credit value:	2.5
5	Semester/ Year Offered:	1/5
6	Pre-requisite:	EP21014, Basic Electronics EP31014, Power Electronics
7	Mode of delivery:	Lecture, Practical
8	Assessment system and breakdown of marks:	Tutorial, Practical, Exam
	Test	20%
	Mid-term/ final Examination	30%
9	Academic staff teaching unit:	
10	Course outcome of unit: In this course students will be able ➥ To describe the modern variable speed system ➥ To determine the speed, current, torque response and efficiency of various dc motors by using their modeling and transfer functions. ➥ To represent the performance and design of speed control dc motor drives ➥ To determine the performance of the chopper power circuit ➥ To measure the speed, torque, current and voltage of DC motors	
11	Synopsis of unit: The course covers the electrical machine and control system. The course introduces students to control system, description of the motor-drive applications, the status of power devices, classes of electrical machines, power converters, controllers and mechanical systems. This is followed by a discussion of the theory of operation of separately-excited and permanent-magnet dc brush motors and their modeling and transfer functions. Then, the various dc motor drives and designing the chopper power circuit are discussed.	

Topic:

14	Main references:
	R.Krishnan: Electric Motor Derive: Modeling, Analysis, and Control,
15	Additional references:
	P.W.Franklin, Theory of DC Motor Controlled by Power Pulses.

Information on Lab Practical

Job No (1) Study on the Characteristics of Separately Excited DC Motor

Objective: To understand the characteristics of separately excited DC motor.

Required Equipments:

EMT DC machine assembly, EMT tabletop structure, EMT 6, EMT 8,EMT 9

Job No (2) Simulation of Single Phase Half Wave Controlled Rectifier

 Objective: (1) To measure the dc output voltage of single phase half wave controlled rectifier

       (2) To construct the model of single phase half wave controlled rectifier

Required Equipments:

    (1)   PC   1 set

    (2)   MATLAB software

Job No (3) Simulation of Single Phase Full-wave Controlled Rectifier

Objective :   (1) To measure the dc output voltage of single phase full wave controlled rectifier

       (2) To control the dc output voltage by varying the triggering angle

Required Equipments:

    (3)   PC   1 set

    (4)   MATLAB software

Job No (4) Simulation of Single Phase Full-wave Controlled Rectifier With Source Impedance

Objective :   (1) To measure the dc output voltage of the single phase full wave controlled rectifier with impedance

       (2) To control the dc output voltage by varying the triggering angle

Required Equipments:

    (1)   PC   1 set

    (2)   MATLAB software

Job No (5) First-Quadrant Chopper DC Drive

Objective :   (1) To demonstrate the first-quadrant chopper DC drive during speed

regulation

Required Equipments:

     (1)   PC   1 set

     (2)   MATLAB software