PLANNED SYLLABUS COVERAGE (Theory)
Government Polytechnic Bilaspur at Kalol

GP Bilaspur	Department: Electrical Engineering	Subject :EM-II			
	Course : Diploma	Duration: 3 Yrs.			
SYLLABUS COVERAGE	Total Period: 56Theory : 56				
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommende	Remarks
1	1-8	**Rotating Machine: Basic Concepts**	1.1 Principle of Energy conversion 1.2 Rotating Electrical Machine: definition of electrical machine, generator & motor 1.3 Physical concept of torque production: electromagnetic torque, reluctance torque and concept of torque angle.			
2	9-20	**DC Machines**	2.1 Constructional features of DC Machine 2.2Type of windings in DC machine: field and armature windings 2.3 Armature windings: lap & wave winding, armature winding terminologies (conductor, turn, coil, coil group, pole pitch, coil span, full-pitched coil, shortpitched coil, back & front-pitch) 2.4 Function of the Commutator in Motoring and Generating action 2.5 Armature Reaction in DC machine 2.6 Commutation, cause ofsparking, method to improve commutation 2.7 Power flow diagram of DC Machines			
3	21-34	**DC Generator**	3.1 Working principle of DC generator 3.2 Induced EMF equation & factors determining the EMF of generator 3.3 Electromagnetic torque equation & factors determining the torque 3.4 Relationship between generated EMF and generator terminal voltage 3.5 Types of DC generator: separately excited, shunt wound, series wound and compound (differential or cumulative type) generator 3.6 Necessary conditions to build up induced EMF in a DC shunt generator. 3.7 Operating characteristics of separately excited, Shunt, Series and Compound DC generator 3.8 Losses in DC Generator, Efficiency of DC Generator			

PLANNED SYLLABUS COVERAGE (Theory)
Government Polytechnic Bilaspur at Kalol

GP Bilaspur	Department: Electrical Engineering	Subject :EM-II
	Course : Diploma	Duration: 3 Yrs.
SYLLABUS COVERAGE	Total Period: 56Theory : 56	

Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommende	Remarks
1	1-8	**Rotating Machine: Basic Concepts**	1.1 Principle of Energy conversion 1.2 Rotating Electrical Machine: definition of electrical machine, generator & motor 1.3 Physical concept of torque production: electromagnetic torque, reluctance torque and concept of torque angle.			
2	9-20	**DC Machines**	2.1 Constructional features of DC Machine 2.2Type of windings in DC machine: field and armature windings 2.3 Armature windings: lap & wave winding, armature winding terminologies (conductor, turn, coil, coil group, pole pitch, coil span, full-pitched coil, shortpitched coil, back & front-pitch) 2.4 Function of the Commutator in Motoring and Generating action 2.5 Armature Reaction in DC machine 2.6 Commutation, cause ofsparking, method to improve commutation 2.7 Power flow diagram of DC Machines			
3	21-34	**DC Generator**	3.1 Working principle of DC generator 3.2 Induced EMF equation & factors determining the EMF of generator 3.3 Electromagnetic torque equation & factors determining the torque 3.4 Relationship between generated EMF and generator terminal voltage 3.5 Types of DC generator: separately excited, shunt wound, series wound and compound (differential or cumulative type) generator 3.6 Necessary conditions to build up induced EMF in a DC shunt generator. 3.7 Operating characteristics of separately excited, Shunt, Series and Compound DC generator 3.8 Losses in DC Generator, Efficiency of DC Generator			

52-52	DC Motor Applications and Maintenance of DC Machine	4.1 Working principle of DC motor 4.2 Back EMF equation and its significance 4.3 Torque equation of DC motor 4.4 Equivalent Circuit diagram 4.5 Relationship between back EMF and terminal voltage 4.6 Types of DC motors: Series motor, Shunt motor and Compound motor (differential and cumulative) 4.7 Need of Starter, 3-point Starter, 4-point Starter 4.8 Speed control of DC series and shunt motors: Armature & Field control methods and Ward Leonard method. 4.9 Operating characteristics of DC motors: Shunt, Series and Compound motors. 4.10 Effect of armature resistance on Torque-speed curve, 4.11 Losses in DC motor, Efficiency of DC motor: Direct method (direct mechanical loading method), Indirect method (Swinburne's method) and regenerative method (Hopkison's method)	
5.	53-56	**Applications and Maintenance of DC Machine**	5.1 DC generator applications 5.2 DC motor applications 5.3 DC Machines (motor & generator) testing and maintenance.

Approved	HOD Sign