



**GOVERNMENT POLYTECHNIC DARLIPALI, SUNDARGARH**  
 ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ ଦଲିପାଲି, ସୁନ୍ଦରଗଡ଼  
 GOVERNMENT OF ODISHA | ଓଡ଼ିଶା ସରକାର

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**LESSON PLAN(2025-26)**

Discipline:		Semester: 4 <sup>th</sup>	Name of the Teaching faculty: Suchismita Sahoo
Subject: AC MACHINES AND SPECIAL ELECTRICAL MACHINES		No of Days/Week class allotted: 3	Semester from Date: 22/12/2025 to 18/04/2026 No of weeks: 18 No. of Periods available: 47
Subject Code: EEPC207 TH:3			
Month/ Week	No of periods available	Class Day	Theory topics to be covered
DECEMBER/ 1st	3P	1	<b>Three Phase Induction Motor</b> 1.1 Working principle: production of rotating magnetic field, Synchronous speed, rotor speed and slip
		2	1.2 Constructional details of 3 phase induction motors: Squirrel cage induction motor and Slip ring induction motor
		3	1.3 Rotor quantities: frequency, induced emf, power factor at starting and running condition
JANUARY/ 2 <sup>ND</sup>	3P	1	1.4 Characteristics of torque versus slip (speed), Torques: starting, full load and maximum with relations among them(numericals)
		2	1.5 Induction motor as a generalized transformer with phasor diagram
		3	1.6 Four quadrant operation, Power flow diagram (numericals)
JANUARY/ 3 <sup>RD</sup>	3P	1	1.7 Starters: need and types; stator resistance, auto transformer, star delta, rotor resistance and soft starters
		2	1.7 Starters: need and types; stator resistance, auto transformer, star delta, rotor resistance and soft starters
		3	1.8 Speed control methods: stator voltage, pole changing, rotor resistance and VVVF
JANUARY/ 4 <sup>TH</sup>	3P	1	1.9 Motor selection for different applications as per the load torque 10 12 speed requirements
		2	1.10 Maintenance of three phase induction motors
		3	<b>Single phase Induction Motors</b> 2.1 Double field revolving theory
	3P	1	2.2 Principle of making single phase


JANUARY/ 5 <sup>TH</sup>			induction motors self-start
		2	2.3 Construction and working of single phase induction motors
		3	2.3.1 Resistance start induction run
JANUARY/ 6 <sup>th</sup>	3P	1	2.3.2 Capacitor start induction run
		2	2.3.3 Capacitor start capacitor run
		3	2.3.4 Shaded pole
FEBRUARY/ 7 <sup>TH</sup>	3P	1	2.3.5 Repulsion type
		2	2.3.6 Series motor
		3	2.3.7 Universal motor
FEBRUARY/ 8 <sup>TH</sup>	3P	1	2.3.8 Hysteresis motor
		2	2.4 Torque-speed characteristics for all of the above motors.
		3	2.5 Motor selection for different applications as per the load torquespeed requirements
FEBRUARY/ 9 <sup>TH</sup>	3P	1	2.6 Maintenance of single phase induction motors
		2	<b>Three phase Alternators</b> 3.1 Principle of working, moving and stationary armatures
		3	<b>Three phase Alternators</b> 3.1 Principle of working, moving and stationary armatures
FEBRUARY/ 10 <sup>TH</sup>	3P	1	3.2 Constructional details: parts and their functions
		2	3.2.1 Rotor constructions
		3	3.2.2 Windings: Single and Double layer
MARCH/ 11 <sup>TH</sup>	3P	1	3.3 E.M.F. equation of an Alternator with numerical by considering short pitch factor and distribution factor
		1	3.3 E.M.F. equation of an Alternator with numerical by considering short pitch factor and distribution factor
		3	3.4 Alternator loading 3.4.1 Factors affecting the terminal voltage of alternator
MARCH/12 <sup>TH</sup>	3P	1	3.4.2 Armature resistance and leakage

			reactance drops.
		2	3.5 Armature reaction at various power factors and synchronous impedance
		3	<b>Synchronous Motors</b> 4.1 Principle of working /operation, significance of load angle.
MARCH/13 <sup>TH</sup>	3P	1	4.2 Torques: starting torque, running torque, pull in torque, pull out torque
		2	4.3 Synchronous motor on load with constant excitation (numerical), effect of excitation at constant load (numerical).
	3P	1	4.3 Synchronous motor on load with constant excitation (numerical), effect of excitation at constant load (numerical).
		2	4.4 Curves and Inverted V-Curves. 4.5 Hunting and Phase swinging.
		3	4.6 Methods of Starting of Synchronous Motor
	MARCH/14 <sup>TH</sup>	3P	1
2			<b>Fractional horse power (FHP) Motors</b> 5.1 Construction and working
3			5.1.1 Synchronous Reluctance Motor
APRIL/ 15 <sup>TH</sup>	3P	1	5.1.2 Switched Reluctance Motor 5.1.3 BLDC
		2	5.1.4 Permanent Magnet Synchronous Motors
		3	5.1.5 Stepper motors
APRIL/ 16 <sup>TH</sup>	3P	1	5.1.6 AC and DC servomotors
		2	5.2 Torque speed characteristics of above motors
		3	5.3 Applications of above motors
APRIL/ 17 <sup>TH</sup>	3P	1	REVISION
		2	PREVIOUS YEAR QUESTION DISCUSSION
		3	DOUBT CLEARING CLASS

Prepared by

  
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Lecturer (Stage-I) in Electrical

  
Principal

GP, Darlipali