

ACADEMIC LESSON PLAN OF SUMMER 2025

Discipline Electronics & communication Engg. (TH1)	Semester: - 4th	Name of the Teaching Faculty: JITENDRA KUMAR SAHOO
Subject: ELECTRICAL MACHINE	No. of days/per week class allotted : 4p/week	Semester From: 04 th FEBRUARY 2025 to 17 th MAY 2025 No. of weeks:15 weeks
Week	Classes/week	Theory Topics
1 st	1 st	ELECTRICAL MATERIAL 1.1 Properties & uses of different conducting material. (cont..)
	2 nd	1.2 Properties & use of various insulating materials used electrical engineering.
	3 rd	1.3 Various magnetic materials & their uses.
	4 th	DC GENERATOR 2.1 Construction, Principle & application of DC Generator. (cont..)
2 nd	1 st	2.1 Construction, Principle & application of DC Generator. .
	2 nd	2.2 Classify DC generator including voltage equation.
	3 rd	2.3 Derive EMF equation & simple problems. (cont..)
	4 th	2.3 Derive EMF equation & simple problems.
3 rd	1 st	2.4 Parallel operation of DC generators. (cont..)
	2 nd	2.4 Parallel operation of DC generators.
	3 rd	DC MOTOR 3.1 Principle of working of a DC motor. (cont..)
	4 th	3.1 Principle of working of a DC motor.
4 th	1 st	3.2 Concept of development of torque & back EMF in DC motor including simple problems. (cont..)
	2 nd	3.2 Concept of development of torque & back EMF in DC motor including simple problems.
	3 rd	3.3 Derive equation relating to back EMF, Current, Speed and Torque equation
	4 th	3.4 Classify DC motors & explain characteristics, application.
5 th	1 st	3.5 Three point & four point stator/static of DC motor by solid State converter. (cont..)
	2 nd	3.5 Three point & four point stator/static of DC motor by solid State converter.
	3 rd	3.6 Speed of DC motor by field control and armature control method. (cont..)

	4 th	3.6 Speed of DC motor by field control and armature control method.
6 th	1 st	3.7 Power stages of DC motor & derive Efficiency of a DC motor. (cont..)
	2 nd	3.7 Power stages of DC motor & derive Efficiency of a DC motor.
	3 rd	AC CIRCUITS 4.1 Mathematical representation of phasors, significant of operator "J" (cont..)
	4 th	4.1 Mathematical representation of phasors, significant of operator "J"
7 th	1 st	4.2 Addition, Subtraction, Multiplication and Division of phasor quantities. (cont..)
	2 nd	4.2 Addition, Subtraction, Multiplication and Division of phasor quantities.
	3 rd	4.3 AC series circuits containing resistance, capacitances, Conception of active, Reactive and apparent power and Q-factor of series circuits & solve related problems. (cont..)
	4 th	4.3 AC series circuits containing resistance, capacitances, Conception of active, Reactive and apparent power and Q-factor of series circuits & solve related problems.
8 th	1 st	4.4 Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances Q-factor of parallel circuits. (cont..)
	2 nd	4.4 Find the relation of AC Parallel circuits containing Resistances, Inductance and Capacitances Q-factor of parallel circuits.
	3 rd	TRANSFORMER 5.1 Ideal transformer. (cont..)
	4 th	5.1 Ideal transformer.
9 th	1 st	5.2 Construction & working principle of transformer
	2 nd	5.3 Derive of EMF equation of transformer, voltage transformation ratio.
	3 rd	5.4 Discuss Flux, Current, EMF components of transformer and their phasor diagram under no load Condition.
	4 th	5.5 Phasor representation of transformer flux, current EMF primary and secondary Voltages under loaded condition.
10 th	1 st	5.6 Types of losses in Single Phase (1- ϕ) Transformer. (cont..)
	2 nd	5.6 Types of losses in Single Phase (1- ϕ) Transformer.
	3 rd	5.7 Open circuit & short-circuit test (simple problems) (cont..)
	4 th	5.7 Open circuit & short-circuit test (simple problems)
	1 st	5.8 Parallel operation of Transformer.
	2 nd	5.9 Auto Transformer (cont..)
	3 rd	5.9 Auto Transformer
	4 th	INDUCTION MOTOR 6.1 Construction feature, types of three-phase induction motor. (cont..)

12 th	1 st	6.1 Construction feature, types of three-phase induction motor.
	2 nd	6.2 Principle of development of rotating magnetic field in the stator.
	3 rd	6.3 Establish relationship between synchronous speed, actual speed and slip of induction motor. (cont..)
	4 th	6.3 Establish relationship between synchronous speed, actual speed and slip of induction motor.
13 th	1 st	6.4 Establish relation between torque, rotor current and power factor. (cont..)
	2 nd	6.4 Establish relation between torque, rotor current and power factor.
	3 rd	6.5 Explain starting of an induction motor by using DOL and Star-Delta stator. State industrial use of induction motor. (cont..)
	4 th	6.5 Explain starting of an induction motor by using DOL and Star-Delta stator. State industrial use of induction motor.
14 th	1 st	SINGLE PHASE INDUCTION MOTOR 7.1 Construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor. (cont..)
	2 nd	7.1 Construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor. (cont..)
	3 rd	7.1 Construction features and principle of operation of capacitor type and shaded pole type of single-phase induction motor.
	4 th	7.2 Explain construction & operation of AC series motor. (cont..)
15 th	1 st	7.2 Explain construction & operation of AC series motor.
	2 nd	7.3 Concept of alternator & its application.
	3 rd	7.3 Concept of alternator & its application. (cont..)
	4 th	7.3 Concept of alternator & its application. (cont..)

Titendra Kumar Sahoo

Signature of Teaching Faculty

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Discipline Electronics & Telecommunication Engg.	Semester: - 4th	Name of the Teaching Faculty: - JITENDRA KUMAR SAHO & Biswanita Sahu & Sangeeta Patra
Subject: - ELECTRICAL MACHINE LAB	No of Days/per Week Class Allotted: - 4p/week	Semester From: - 04 th FEBRUARY 2025 to 17 th MAY 2025 No. of weeks:15 weeks
Week	Class Day	Theory/ Practical Topics
1 st	1st	1. Study different parts of DC Generator. (theory)
	2nd	1. Study different parts of DC Generator. (practical)
2 nd	1st	2. Run a DC shunt Generator (theory)
	2nd	2. Run a DC shunt Generator (practical)
3 rd	1st	3. Connect and run DC Motor (series, shunt and compound motor with suitable stators connections & measure speed.). (theory)
	2nd	3. Connect and run DC Motor (series, shunt and compound motor with suitable stators connections & measure speed.) (practical)
4 th	1st	3. Connect and run DC Motor (series, shunt and compound motor with suitable stators connections & measure speed.) (practical)
	2nd	3. Connect and run DC Motor (series, shunt and compound motor with suitable stators connections & measure speed.) (practical)
5 th	1st	4. Study 3 point & 4 point starter. (theory)
	2nd	4. Study 3 point & 4 point starter. (practical)
6 th	1st	4. Study 3 point & 4 point starter. (practical)
	2nd	5. Study speed Control of DC shunt motor(field and armature control method) (theory)
7 th	1st	5. Study speed Control of DC shunt motor(field and armature control method) (practical)
	2nd	5. Study speed Control of DC shunt motor(field and armature control method) (practical)
8 th	1st	6. Parallel operation of DC generators. (theory)
	2nd	6. Parallel operation of DC generators. (practical)
9 th	1st	7. Connect & run a 3- I.M. with the help of DOL & star-delta stator. (theory)
	2nd	7. Connect & run a 3- I.M. with the help of DOL & star-delta stator. (practical)
10 th	1st	7. Connect & run a 3- I.M. with the help of DOL & star-delta stator. (practical)
	2nd	8. Determine voltage regulation of transformer by direct loading. (theory)
11 th	1st	8. Determine voltage regulation of transformer by direct loading. (practical)
	2nd	9. Identify the terminals of a transformer perform short circuit & open circuit test & find the losses & efficiency. (theory)
12 th	1st	9. Identify the terminals of a transformer perform short circuit & open circuit test & find the losses & efficiency. (practical)
	2nd	9. Identify the terminals of a transformer perform short circuit & open circuit test & find the losses & efficiency. (practical)
13 th	1st	10. Parallel operation of Transformers(only single Phase) (theory)
	2nd	10. Parallel operation of Transformers(only single Phase) (practical)
14 th	1st	11. Construct switch board& Series Board using cut-out, switches, plugs, holder and two ways Switch. (theory)
	2nd	11. Construct switch board& Series Board using cut-out, switches, plugs, holder and two ways Switch. (practical)
15 th	1st	11. Construct switch board& Series Board using cut-out, switches, plugs, holder and two ways Switch. (practical)
	2nd	11. Construct switch board& Series Board using cut-out, switches, plugs, holder and two ways Switch. (practical)

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