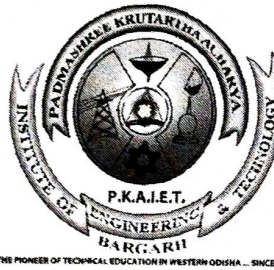


# PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



## LESSON PLAN Session-2024-2025

Semester: 6th Discipline: Electrical Engg.

Subject: Switch Gear and Protective Devices (SGPD)

Name of the Teaching Faculty: Subesh Chandra Nayak

Subject: Switchgear Protective Devices No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1	1	Essential features of Switch gear
	2	Switchgear Equipment
	3	Bus-bar Arrangement
	4	Switchgear Accommodation
2	5	Short Circuit
	6	Faults in a Power System
	7	Symmetrical faults on 3-phase System
	8	Limitation of fault Current
3	9	Percentage Reactance
	10	Percentage reactance and Base KVA
	11	Short circuit KVA
	12	Reactor control of Short circuit Currents

  
Signature of the Faculty

Subject: Switch gear & Protective Devices No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory / Practical Topics
4	13	Location of reactors.
	14	Steps for symmetrical fault calculations.
	15	Solve numericals on Symmetrical fault.
	16	Solve numericals on Symmetrical fault
5	17	Desirable characteristics of fuse elements.
	18	Fuse element materials.
	19	Types of fuses and important terms used for fuses.
	20	Low and high voltage fuses.
6	21	Current carrying capacity of fuse elements.
	22	Difference between a fuse and Circuit Breaker.
	23	Definition and Principle of Circuit Breaker & Arc Phenomenon & Principle of Arc Extinction.
	24	Method of Arc Extinction. Definition of Arc Voltage, Restriking Voltage & Recovery voltage.

Signature of the Faculty

Subject: Switchgear Protective Devices No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
7	25	Classification of Circuit Breaker Oil circuit Breaker and its operation.
	26	Plane Breakoil Circuit Breaker . Arc Control Oil circuit Breaker .
	27	Low Oil Circuit Breaker .
	28	Maintenance of Oil Circuit Breaker
8	29	Air Blast Circuit Breaker and its applications .
	30	Sulphur Hexafluoride ( $SF_6$ ) Circuit Breaker Vacuum Circuit Breaker
	31	Switchgear Component, Problems of Circuit interruption
	32	Resistance Switching Circuit Breaker Rating .
9	33	Definition of Protective Relay Fundamental requirement of protective relay .
	34	Basic Relay operation . Electromagnetic Attractive type, Induction type
	35	Definition of pick-up current, Current setting, plug setting Multiplier and Time setting Multiplier .
	36	Classification of functional relays, Induction type over current relay. (Non directional)

Signature of the Faculty

Subject: Switchgear and Protective Devices No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
10	37	Induction type directional power relay
	38	Induction type directional over current relay
	39	Differential relay (i) Current differential relay (ii) Voltage balance differential relay
	40	Types of Protection
11	41	Protection of Alternator Differential protection of alternator
	42	Balance earth fault protection Protection systems for Transformer.
	43	Buechholz relay Protection of Bus bar
	44	Protection of Transmission line.
12	45	Different pilot wire protection - (Menz-price voltage balance system)
	46	Explain protection of feeder by over current and earth fault relay
	47	Voltage surge and causes of over voltage
	48	Internal cause of over voltage.

Signature of the Faculty

Subject: Switchgear Protective Devices No. of Days/per week class allotted : 4

Semester From Date : 04-02-2025 To Date: 17-05-2025 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
13	49	External cause of overvoltage (lightning)
	50	Mechanism of lightning discharge
	51	Types of lightning strokes
	52	Harmful effect of lightning
14	53	Lightning arrester and types of lightning arrester
	54	Rod-gap lightning arrester
	55	Horn gap arrester, valve type arrester.
	56	Surge Absorber.
15	57	Static relay, Instantaneous relay
	58	Advantages of static Relay.
	59	Instantaneous over current relay
	60	Principle of IDMT relay.

  
Signature of the Faculty