

SEMESTER <i>Eighth</i>	DEPARTMENT <i>Power Engineering</i>	COURSE TITLE <i>Protection Systems Lab</i>
COURSE CODE <i>EP806</i>	HOURS: 3 UNITS: 1	COURSE SPECIFICATIONS <i>Practical Content</i>
1. Know the Concept of Protection Zones. <ul style="list-style-type: none"> ➤ Measure zero sequence current for three- phase system by using three transformers during earth fault. 		
2. Know the Transformer Protection Against Different Types of Faults. <ul style="list-style-type: none"> ➤ Using differential protection for protecting power transformer against over-current. ➤ Testing the relays using special testing instrument. 		
3. Demonstrate Motor Protection Against Different Types of Faults. <ul style="list-style-type: none"> ➤ Study the function, and apply the diagram of directional relay system of earth leakage protection. ➤ Study the system of earth leakage protection relays (with current circuit breakers and voltage circuit breakers) and apply its diagram. 		
4. Know Feeders and Transmission Lines Protection Against Different Types of Faults. <ul style="list-style-type: none"> ➤ Apply the diagram of line protection against earth fault using instantaneous relay. ➤ Apply and test the diagram of complete protection for transmission line by using two reverse relays and instantaneous relay. ➤ Apply and test the diagram of transmission line protection against over-current in one phase. ➤ Examine the usage of relays for transmission line protection against earth leakage when the neutral point connected to Paterson coil. 		
5. Understand the Bus-Bar Protection Against Ground Fault. <ul style="list-style-type: none"> ➤ Connect and test the protection system against over current and earth leakage protection in a sub-line. ➤ Inspect and connect earth fault protection by using instantaneous relay and timer. 		
6. Understand the Generator Protection Against Different Types of Faults. <ul style="list-style-type: none"> ➤ Verify different generator protection systems. 		

References:

- 1- *Switchgear and Protection*. By SUNI S-RGO.
- 2- *Principle of Power*. By V.K Mehata.
- 3- *Protective Relays* W.H.
- 4- *Applied protective relaying*. Westinghouse Electric Corporation Relay – Instrument Division, 1982.
5. *Modern Control Systems*, R. C. Dorf, Eddison Wesley, 1990.