COURSE	Name	: Power System Protection
	Code	: EE184710
	Credits	: 2
	Semester	: VI

Description of Course

Electric Power System Protection course discussabout the types of protection equipment or relay protection, its settings and applications in the electric power system.

Learning Outcomes

KNOWLEDGE

(P02) Mastering the concepts, procedures and principles of engineering and realizing them in the form of procedures required for system analysis and design in electric power systems, regulatory systems, multimedia telecommunications, or electronics.

(P03) Mastering concepts, procedures and system design principles in electric power systems, regulatory systems, multimedia telecommunications, or electronics

SPECIFIC SKILL

(KK02) Able to describe the resolution of engineering problems in electric power systems, regulatory systems, multimedia telecommunications, or electronics.

(KK03) Able to describe system design for problem solving in electric power systems, regulatory systems, multimedia telecommunications, or electronics by considering technical standards, aspects of performance, reliability, ease of implementation, and guarantee of sustainability.

GENERAL SKILL

(KU12) Able to implement information and communication technology in the context of carrying out their work.

ATTITUDE

(S09) Demonstrate the attitude of being responsible for work in thier area of expertise independently

(S12) Working together to make use of their maximum potential

Course Learning Outcomes

KNOWLEDGE

Mastering the concept of the basic principles of protection systems, protection system components and know how to determine protection relay settings and able to explain and analyze protection coordination.

Able to explain the process of lightning, find out the damage caused by lightning strikes and know the various methods of lightning protection and are able to plan lightning protection and coordinate its isolation in the electric power system.

SPECIFIC SKILL

Able to analyze protection system components and know how to determine protection relay settings and able to explain and analyze protection coordination.

Able to explain the process of lightning, find out the damage caused by lightning strikes and know the various methods of lightning protection and are able to plan lightning protection and coordinate its isolation in the electric power system.

GENERAL SKILL

Able to use ETAP software to analyze security system components and how to determine protection relay settings and can explain and analyze protection coordination.

Able to use ATP/EMTP software for lightning, find out the damage caused by lightning strikes and know the various methods of lightning protection and are able to plan lightning protection and coordinate its isolation in the power system.

ATTITUDE

Demonstrate an attitude of responsibility for work in the field

his expertise independently.

Working together to make use of their maximum potential.

Main Subjects

1. Disturbances of electric power systems, protection relay requirements, transformer equipment, protection system functions and elements, security relay types and security systems
2. Calculation of the setting of Protection relay and its coordination in the electric power system; various sorting systems and their coordination with protection systems.
3. Forming lightning and lightning parameters; Damage and interference due to lightning either directly or indirectly (galvanic, inductive, capacitive); traveling wave, EMC (Electromagnetic Compability).
4. The cone protection system method, Faraday cage, rolling ball; Internal protection of equipment in the building. For electrical, computer, telecommunications, instrumentation and installation facilities; the influence and protection of lightning on electric power systems, and coordination of isolation in electric power systems.

Reference(s)

[1] M. Titarenko & I.Noskov, Protective Relaying in Electric Power System,
[2] Sunïl S. Rao, Switchgear and Protection,
[3] Turan Gonen, Modern Power System Analysis,
[4] T.S. Hutauruk, Gelombang Berjalan dan Proteksi Surja
[5] Pritindra Chowdhuri, Electromagnetic Transient in Power System

Prerequisite(s)

EE184511 Power System Analysis