Mata Kuliah (MK)	Course Name	: Power System Analysis
	Code	: EE184511
	Credits	: 4
	Semester	: V

Description of Course

Power system analysis discusses power flow analysis and its calculation using Gauss Seidel, Newton Raphson and Fast Decoupled Method. Moreover, this subject discuss about symmetrical and asymmetrical short circuit analysis. This subject also discuss about transient stability analysis using equal area criterion.

Learning Outcomes

KNOWLEDGE

(P02) Mastering the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics Mastering the concepts and principles of engineering, and implementing them in the form of procedures for analysis and design in power systems, control systems, multimedia telecommunications, or electronics

SPECIFIC SKILL

(KK01) Able to formulate engineering problems in power systems, control systems, multimedia telecommunications, or electronics.

GENERAL SKILL

(KU12) Able to implement information and communication technology (ICT) in the context of implementation of his/her work.

ATTITUDE

(S09) Demonstrating attitude of responsibility on work in his/her field of expertise independently

(S12) Working together to be able to make the most of his/her potential

Course Learning Outcomes

KNOWLEDGE

Mastering the concept of simulation of a three phase ac power system based on the calculation of the single phase circuit in the steady state, transient and symmetry and asymmetry.

SPECIFIC SKILL

Able to analyze the three phase ac power system in steady state and transient for symmetry and asymmetry using MATLAB.

GENERAL SKILL

Able to use MATLAB software to carry out simulation and analysis of electric power systems

ATTITUDE

Demonstrate an attitude of responsibility for work in the field of expertise in the simulation and analysis of electric power systems independently.

Main Subjects

1. Basic concept of power system analysis
2. Modeling: main component model, line diagram, impedance / admittance diagram, quantity per unit, circuit model (Ybus, Zbus), mathematical model (power flow equation)
3. Power Flow Simulation and Analysis: Gauss-Seidel method, Newton Raphson method, Fast Decoupled method
4. The basic concept of short circuit in the electric power system
5. The Zbus method is applied to the simulation of 3 phase symmetry and short circuit analysis
6. Symmetry Component Theory
7. Simulation and Analysis of Short Circles using the Symmetry Component theory.
8. The basic concept of stability in the electric power system
9. Stability Simulation and Analysis.

Reference(s)

[1] John J. Grainger, William D. Stevenson, Jr., "Power System Analysis", McGraw-Hill Inc, 1994
[2] Hadi Saadat, “Power System Analysis”, McGraw-Hill Inc, 1999
[3] M.E. El-Hawary, "Electric Power Systems : Design and Analysis", Reston Publiishing Company, 1983
[4] C.A. Gross, " Power System Analysis", 2nd Edition, John Wiley & Sons,1983
[5] Turan Gonen, "Modern Power System Analysis", John Wiley & Sons, 1988

Prerequisite(s)

EW184003 Electric Circuits