Cleveland State University
Department of Electrical Engineering and Computer Science

EEC 473: Power Systems

Catalog Description: EEC 473/571 Power Systems. (3-0-3).
Prerequisite: EEC 361.
Power system components modeling: transformers, generators, and
transmission lines. Power flow analysis.

Textbook: Glover & Sarma, Power System Analyses and Design with personal
computer applications.


Coordinator: Dr. Ana V. Stankovic,
Professor of Electrical Engineering and Computer Science

Course Objectives: To develop the ability to model the elements of a power system
including transformers, rotating machines and transmission lines using
per unit system and sequence impedance networks derived from the use
of symmetrical components. To develop the ability to analyze the power
flow in the power system. To develop ability to use matrix methods for
solving network problems.

Expected Outcomes: Upon completion of this course students should be able to:
1. Model the elements of a power system.
2. Analyze the power flow in a power system.
3. Use the matrix methods for solving power system problems.

Fulfills the Following Electrical Program Objectives and Outcomes:

Objectives: 1. Practice electrical engineering in power systems.
2. Define and diagnose problems, and provide and implement electrical.
enGINEERING solutions in industry, business, and government.
3. Develop their knowledge beyond the undergraduate level and to keep
current with advancements in electrical engineering.

Outcomes: (a) An ability to apply knowledge of mathematics, science, and
engineering to general electrical engineering and, in particular, to power
systems.
(b) An ability to design a system, component, or process to meet desired
needs.
(c) An ability to identify, formulate, and solve electrical engineering
problems.
(d) A recognition of the need for, and an ability to engage in life-long
learning.
(e) An ability to use the techniques, skills, and modern engineering tools
necessary for electrical engineering practice.
Prerequisite by Topics:
1. Three-phase circuits.
2. Electromagnetic field theory.
3. Matrix methods.

Topics:
1. An Overview 3
2. Three-phase power, power factor correction and network equations, Symmetrical components 4
3. Power Transformers, Per-unit system 8
4. Midterm and discussions 3
5. Transmission Line parameters 8
6. Transmission Lines: Steady State Operation 8
7. Power Flow 8
8. Field Trips 3
Total 45

Projects:
Term project, approved by instructor. Student submits a written report on the project.

Grading
Midterm - 35%
Final - 45%
Homework - 10%
Project - 10%

Homework:
Has to be turned in on time.

Exam Format
Open Book

Computer Usage:
Software: Easy Power

Prepared by: Dr. Ana V. Stankovic
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