

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

EE-520 (971)

Power System Steady State Analysis

Instructor: Dr. Ibrahim O. Habiballah

Office-Location: 14-265

Extention: 4985

E-mail: ibrahimh@dpc.kfupm.edu.sa

Text Books: Computer Methods in Power System Analysis, Stagg & El-Abiad
Computer Analysis Methods for Power System, G.T. Heydt
(and Lecture Notes)

Grade Distribution:

Home Works 20%

Term-papaer & Project 30%

Mid-term Exam: 20%

Final Exam: 30%

EE-520

Tentative Schedule

Semester (971)

| Week # | Subject |
|--------|---|
| 1 | General Background & Introduction |
| 2-3 | Power System Matrices <ul style="list-style-type: none">- General Matrices- Admittance Matrix- Impedance Matrix- Loop Matrices- Effects of Mutual Coupling |
| 4 | Programming Considerations <ul style="list-style-type: none">- Sparsity- Solution Techniques- Optimal Ordering |
| 5-7 | Load-Flow Solution & Control <ul style="list-style-type: none">- Gauss & Gauss-Seidel Methods- Newton-Raphson Method- Fast-Decoupled Method |
| 8-11 | Short Circuit Analysis <ul style="list-style-type: none">- Symmetrical Faults- Symmetrical Components- Unsymmetrical Faults |
| 12-13 | Transient Stability <ul style="list-style-type: none">- Swing Equation- Power Angle Equation- Equal-Area Criterion |
| 14-15 | Term-Papaer Presentations |
| 16 | Final Exams |

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

ELECTRICAL ENGINEERING DEPARTMENT

EE-520 (992)

Power System Steady State Analysis

Instructor: Dr. Ibrahim O. Habiballah

Office-Location: 14-265

Extension: 4985 (voice-mail)

E-mail: ibrahimh@kfupm.edu.sa

Text Books: Computer Methods in Power System Analysis, Stagg & El-Abiad
Computer Analysis Methods for Power System, G.T. Heydt
(and Lecture Notes)

Grade Distribution:

Home Works 10%

Term-paper 20%

Project 20%

Mid-term Exam 20%

Final Exam 30%

EE-520 (992)

Tentative Schedule

| Week # | Subject |
|--------|--|
| | General Background & Introduction |
| - | AC Power |
| - | Per-Unit |
| - | Single-Line Diagram |
| 2-3 | Power System Matrices |
| | - General Matrices |
| | - Admittance Matrix |
| | - Impedance Matrix |
| | - Loop Matrices |
| | - Effects of Mutual Coupling |
| 4 | Programming Considerations |
| | - Sparsity |
| | - Solution Techniques |
| | - Optimal Ordering |
| 5-7 | Load-Flow Solution & Control |
| | - Gauss & Gauss-Seidel Methods |
| | - Newton-Raphson Method |
| | - Fast-Decoupled Method |
| 8-11 | Short Circuit Analysis |
| | - Symmetrical Faults |
| | - Symmetrical Components |
| | - Unsymmetrical Faults |
| 12-13 | Transient Stability |
| | - Swing Equation |
| | - Power Angle Equation |
| | - Equal-Area Criterion |
| 14-15 | Term-Paper Presentations |
| 16 | Final Exam |