EECE421 Power System Analysis

Fall 2016

Dr. Charles Kim

Department of Electrical and Computer Engineering

Howard University

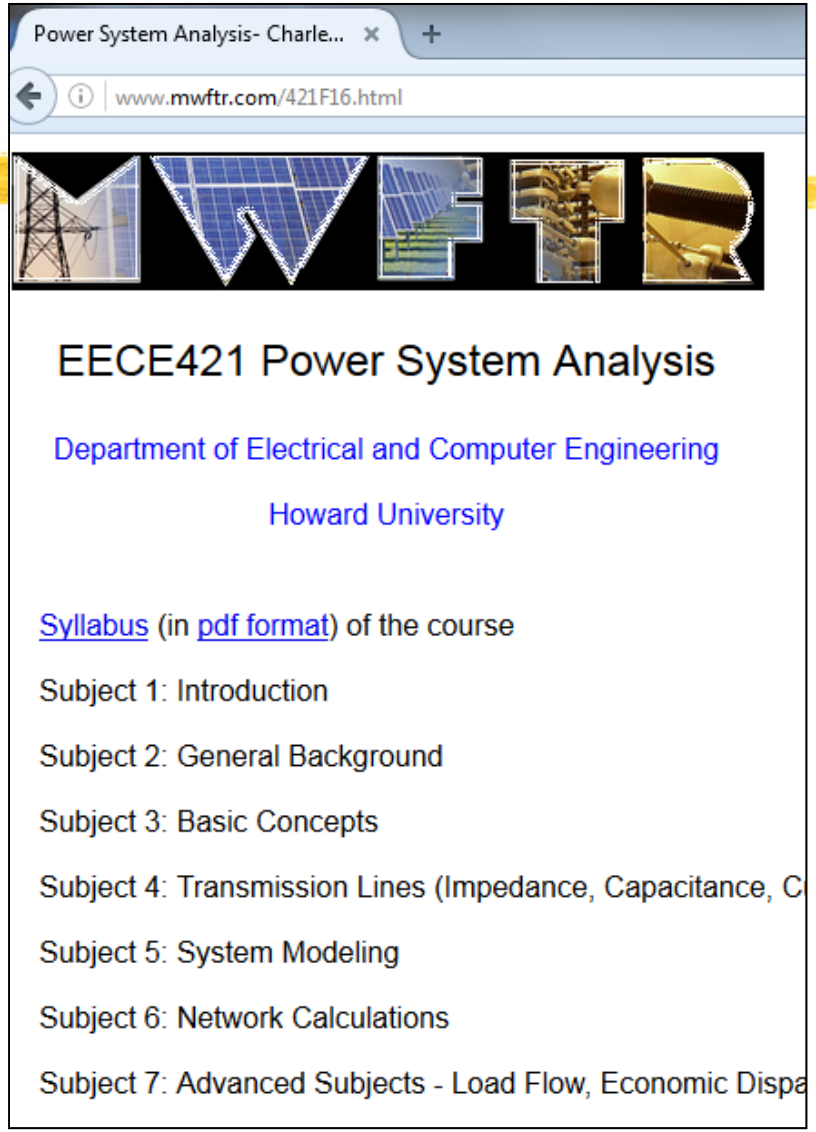
Course Introduction

Course number and name
EECE421 Power System Analysis and Design

Credits and contact hours
3 credits and 3 hours per week
(TR: 9:40 – 11:00)

Instructor name(s)
Dr. Charles Kim (202-806-4821;
ckim@howard.edu; 3014 LKD)

Text book, title, author, and year
Elements of Power System Analysis,
4th Ed (or higher). William Stevenson, Jr.



Textbook

Text book:

Elements of Power System Analysis, 4th Ed (or higher). William Stevenson, Jr.

Want to Read

Rate this book

Elements of Power System Analysis (Mcgraw Hill Series in Electrical and Computer Engineering)

by William D. Stevenson

4.11 · Rating Details · 55 Ratings · 3 Reviews

The approach is to develop the thinking process of the student in reaching a sound understanding of a broad range of topics in the power-system area of electrical engineering. Another goal is to promote the student's interest in learning more about the electric-power industry. The objective is not great depth, but the presentation is thorough enough to give the student the ...more

Hardcover, 436 pages

Published March 1st 1982 by Mcgraw-Hill College (first published January 1st 1975)

More Details... edit details

Information

Specific course information

The course covers one-line diagram, per unit quantity, power generation and synchronous machines, transmission line theory, load flow studies and computation techniques, economic operation of power system.

prerequisites or co-requisites: EECE203 Fundamentals of Circuit Theory and EECE325 Fundamentals of Energy Systems

An elective course for Electrical Engineering program.

Topics (Chapter Numbers follow Stevenson's book)

1. General Background of Power Systems

2. Basic Concepts

3. Transmission Line Series Impedance and Capacitance

4. Transmission Line Current and Voltage Relations

5. System Modeling

6. Network Calculations

7. Load Flow

Advanced Topics:, Economic Dispatch, Symmetrical Components

Topics

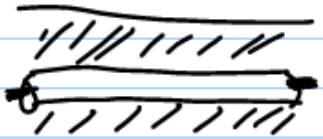
1. General Background

Energy Conversion

(X → E)

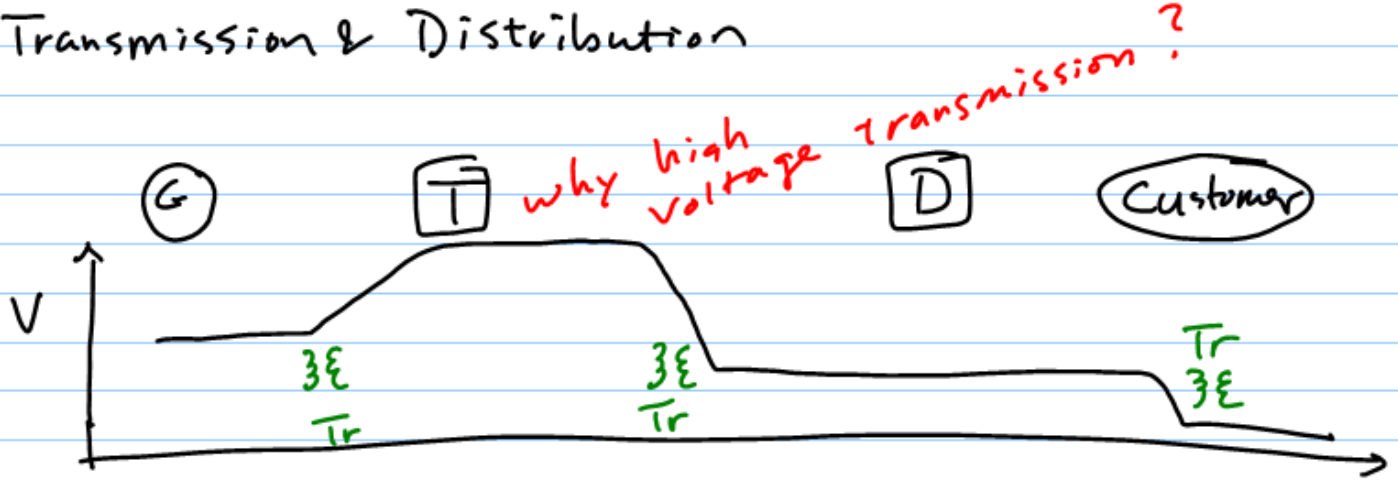
Transport

{ AC
{ DC

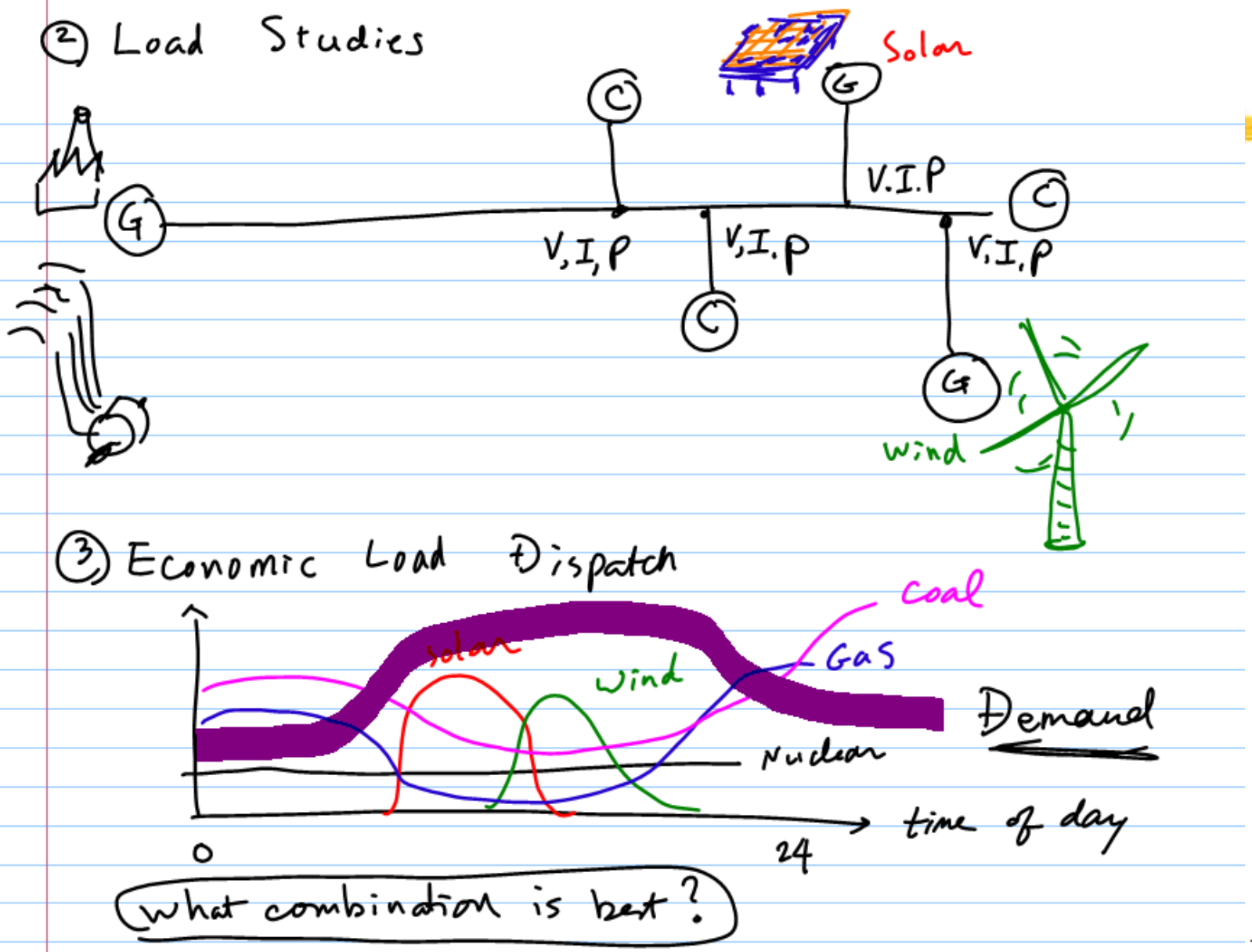


2. Subjects

① Transmission & Distribution

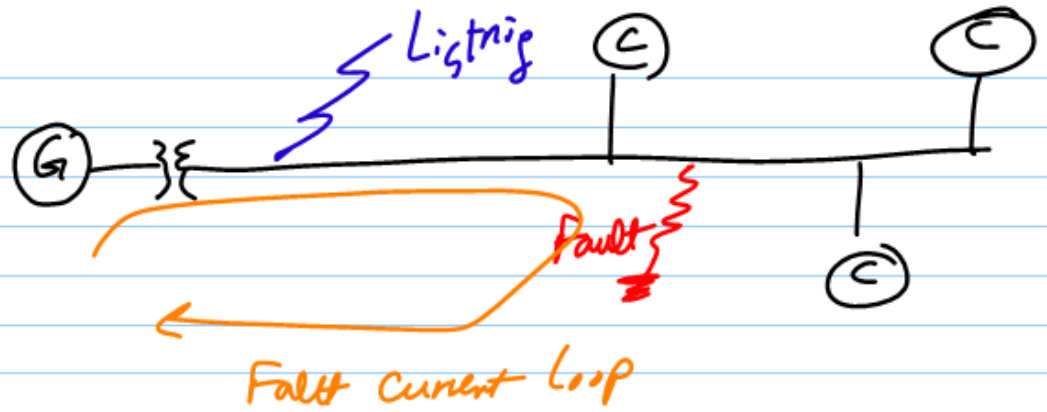


Topics

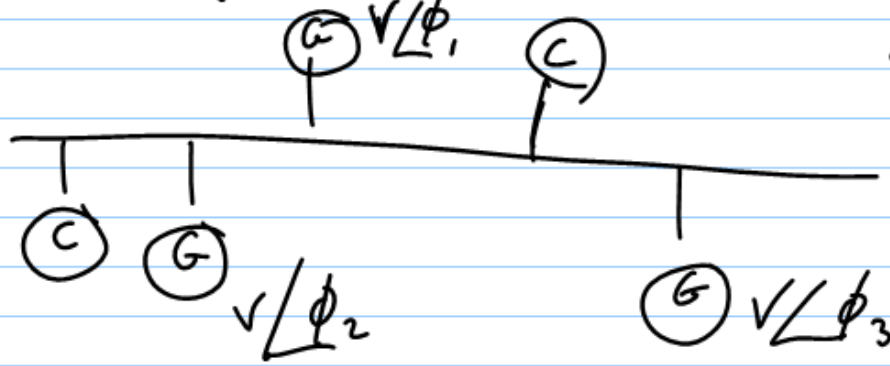

② Load Studies
Solar
V.I.P
V,I,P
V,I,P
V,I,P
wind
③ Economic Load Dispatch
coal
solar
wind
Gas
Demand
Nuclear
time of day
0
24
what combination is best?

Topics

③ Fault Calculation



④ Stability Studies



DC flow
High → Low
AC flow (?)
phase angle

* Start with Fundamental Concept. Next Class

Grading

- 2 Exams - 20% each (40%)
- 1 Final Exam – 30%
- Class Project – 15%
- Class activities and Assignment – 15%
- Attendance – Extra 5% (On-time arrival only)
- Grades:
  - A: 90% or above
  - B: 80 – 89 %
  - C: 70 - 79 %
  - D: 60 – 69 %
  - F: 59% or below

Class Schedule (Tentative)

- August:
  - 1.Introduction
- September:
  - 2. Basic Concept
  - 3. Transmission Line Impedance
  - Exam 1 (T 9/27)
- October
  - 4. Transmission Line capacitance
  - 5. Transmission Line Current & Voltage Relations
  - Exam 2 (R 10/27)
- November
  - 6. System Modeling
  - 7. Network Calculation
  - 8. Load Flow
- December
  - Final Exam

Can Handwriting Make You Smarter?

WSJ 4/4/2016

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Can Handwriting Make You Smarter?

Students who take notes by hand outperform students who type, and more type these days, new studies show

Students who take notes by hand in class outperform students who type notes. As more students use their phones, laptops and tablets in class, they may be surprised to learn they will have more success learning new material if they write. WSJ's Lee Hotz joins Lunch Break With Tanya Rivero to discuss.

Findings

- Researchers
  - Pam Mueller, Princeton
  - Daniel Oppenheimer, UCLA
- Subjects
  - 67 students
  - Listening to talks on various topics (algorithms etc)
  - Note-taking by
    - Keyboard
    - Pen and paper
  - Testing the participants
    - Immediately after
    - Again in 1 week

Findings

- Core Message from the Research:
  - People who write in longhand (compared with those who type their notes ***or who do neither [emphasis and addition by ck]***) appear to
    - Learn better
    - Retain information longer, and
    - More readily grasp new ideas
  - Laptop users take note by rote, taking down what they hear almost word by word – Having all these notes did not help refresh their recollection.
  - Longhand writers take down fewer words, but think more intensely about the material as they write and digest what they hear more thoroughly

Findings

- What they say
  - “All of that effort helps you learn” – Daniel Oppenheimer, UCLA
  - “Note taking is a pretty dynamic process. You are transforming what you hear in your mind.” – Michael Friedman, Harvard University
  - “The written notes capture my thinking better than typing” – “Ironically, the very feature that makes laptop note-taking so appealing – the ability to take notes more quickly – is what undermines learning”- Kenneth Kiewra, University of Nebraska - Lincoln

Second Opinion

Because it requires such concentration, the process of taking notes itself can be distracting. Dr. Kiewra recalled that when he was still a student, one of his professors banned note-taking in class because he wanted students to pay full attention to the lesson. The teacher instead supplied prepared notes for the entire class.

Nonetheless, Dr. Kiewra recalled that he continued taking his own notes, cradling his head in his arms to shield his notebook as he wrote. One day, however, the professor caught him in the act.

"Mr. Kiewra, are you taking notes in my classroom?" he demanded. The flustered student dissembled. "I'm only writing a letter to a friend back home."

"Oh thank goodness," the professor said. "I thought you were taking notes."

I bet students who don't have to spend so much time taking notes(by hand or computer) will blow both out of the water. Instead of having to constantly take notes, the professor could provide the information in written form and lecture over it. So the student could spend more time comprehending what is being lectured about and ask questions. It's not about being lazy it's about learning as much as possible and focusing on the material.

Proposition

Let’s practice longhand note-taking at least for equations and important concepts