WWW.MWFTR.COM

## **EECE421** Power System Analysis

## Fall 2017

## Dr. Charles Kim

### **Electrical Engineering and Computer Science**

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: 11:10 – 12:30

#### **#Instructor name(s)**

Dr. Charles Kim

△ 202-806-4821

△ckim@howard.edu

△3014 LKD

Office Hours: MTR 2 – 4pm

#### **#Text book, title, author, and year**

#### Elements of Power System Analysis,

△4<sup>th</sup> Ed (or higher). William Stevenson, Jr.

#### **#Class website:**

www.mwftr.com/421F17.html

♦ ♦ (i) www.mwftr.com/Power.html		
🔊 Most Visited 🛞 Getting Started 🔊 Latest Headlines		
EECE421 P	(•) (i) www.mwftr.com/421F17.html     Description (************************************	
Dr. Charles Kim		
Pre- or Co-Requi		
	EECE421 Power System Analysis (Fall 2017)	
Fall 2017		
2016	Dr. Charles Kim	
	Pre- or Co-Requiste Courses: EECE203 <u>Fundamentals of Circuit Theory</u>	
	Syllabus (in pdf format) of the course	
	Subject 1: Introduction	
	Subject 2: Background Material:	
	Subject 3: Basic Concepts	
	Subject 4: Transmission Lines (Impedance, Capacitance, Current and	

### Textbook

- **#** Text book:
- **Elements of Power System Analysis**, 4<sup>th</sup> Ed (or higher). William Stevenson, Jr.





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

by William D. Stevenson

★★★★★ 4.11 · F 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 broad subjects of <u>power system</u> <u>basics</u> including <u>voltage regulations</u>, <u>transmission line</u> <u>impedance and capacitance</u>, <u>transmission line voltage</u> <u>and current behaviors</u>, as well as some **advanced subjects** of <u>load flow studies and computation</u> <u>techniques</u> and <u>economic operation</u> of power system.
   <u>prerequisites or co-requisites</u>: EECE203
  - Fundamentals of Circuit Theory
- **#** An elective course for Electrical Engineering program.

## Topics (Chapter Numbers follow Stevenson's book)

- 3 1. General Background of Power Systems
- 8 2. Basic Concepts
- **3**. Transmission Line Series Impedance and Capacitance
- **#** 4. Transmission Line Current and Voltage Relations
- ₭ 5. System Modeling
- 6. Advanced Topics: Network Calculations, Load Flow, Economic Dispatch, Symmetrical Components

## **Topics by Illustration**

1. General Background Ener Conversion AC Transport  $(X \rightarrow E)$ DC 11/1/11 Subjects 2. why high transmission 2 O Transmission & Distribution رْلِّ Customer G ሳ V Tr 3٤ 3£ 3E Tr Tr

## **Topics by Illustration**



# **Topics by Illustration**

G_3E	
Paultze	Ċ
Fall current Loop	
( Stubility Studies	(DC flow
PVLP, P	AC flow (?)
	phase angle
V dez C	$\int \sqrt{4_3}$

# Grading

- **#** 2 Exams 20% each (40%)
- ∺ 1 Final Exam 20%

### **#** Class Activities – 20%

- ₭ Assignment 20%
- **#** Attendance Extra 5% (On-time arrival only)

**#** Grades:

- A: 90% or above
- ⊠B: 80 89 %
- <u>∽</u>C: 70 79 %
- ⊡D: 60 69 %
- ightarrow F: 59% or below

# **Class Schedule (Tentative)**

🔀 August: X November 1.Introduction △ 6. System Modeling **#** September: 7. Network Calculation △2. Basic Concept 8. Load Flow ○ 3. Transmission Line H December Impedance Final Exam 🔀 October △ 4. Transmission Line capacitance △ 5. Transmission Line Current & Voltage Relations