

The University of Texas at El Paso

EE 4395/5390 Introduction to Power Systems

Fall 2019

Syllabus

Instructor: David G. Guzman

Office: **E328**

Office Hours: **Tuesdays & Thursdays 4:45 p.m. to 5:45 p.m.**

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1. Location & Time:

HSSN 135

Tuesday & Thursday: 6:00 p.m. – 7:20 p.m.

2. Course Description:

This course introduces the basic engineering theory and concepts for analyzing and designing power systems and its application to today's industry trends. This includes Engineering Fundamentals, Power Transformers, Transmission Line Parameters, Transmission Lines Steady-State Operations, and Power Flows.

3. Topics:

- **Introduction:** History, Present and Future Trends, Electric Utility Structure.
- **Fundamentals:** Phasors, Inst. Power, Complex Power, Network Equations, Balanced Three phase Circuits, and Power in Balanced Three Phase Circuits.
- **Power Transformers:** Ideal Transformers, Equivalent Circuits, Per Unit System, Three Phase Transformer Connections, and Phase Shift.
- **Transmission Line Parameters:** Resistance, Conductance, Inductance, Series Impedances, Capacitance, and Shunt Admittances.
- **Transmission Lines: Steady-State Analysis:** Medium and Short Line Approximations, Transmission-Line Differential Equations, Equivalent Pi Circuits, Lossless Lines, etc.
- **Power Flows:** Solutions to Linear Algebraic Equations such as Gauss Elimination, Jacobi, Gauss-Seidel. Solutions to nonlinear algebraic equations such as Newton-Raphson. The application of these methods to power flow calculations/solutions and the DC power flow.

4. Required Textbook:

Power System Analysis and Design. Glover, Sarma, Overbye. 6th Edition.

Students that choose to use an older edition of the book will be responsible to verify material covered, problems, etc. on their own.

5. Grading:

Attendance	10%	Will be taken at the beginning of every class
Exam 1	10%	September 5th, 2019.
Exam 2	10%	September 26th, 2019.
Exam 3	10%	TBD
Exam 4	10%	TBD
Exam 5	10%	TBD
Exam 6	10%	TBD
Final Exam	30%	December 12 th , 2019. Final Exam will be comprehensive
Final Grade	100%	

6. Homework

6.1. Homework will be assigned as material readings and practice problems during class. Homework assignments will not be graded but students are highly encouraged to read the assigned reading material and perform the assigned practice problems in preparation for the exams.

7. General Policies

7.1. Absences:

Students are highly encouraged not to miss any class sessions due to the complex class material to be presented. No make-up work, points, quizzes, or exams will be granted unless official written documentation is presented in a timely manner. No more than three “excused” absences will be allowed. Timely manner means at least one week (7 days) in advance for non-emergency related situations. Emergencies will require proper written documentation.

7.2. Punctuality:

Attendance will be taken at the beginning of class and will count towards final grade.

7.3. Course Drop Deadline:

The deadline to drop this course with an automatic W is **November 1st, 2019.**

7.4. Cellphone & Laptops:

Electronic devices will be allowed during class, however any student that is using this technology for activities other than those related to the class will be asked to leave the classroom. This includes social media and any other activity that goes against any official school policy.

7.5. Food and Drinks:

Any non-alcoholic drink will be allowed in class. No food will be allowed during class.

7.6. General Class Behavior:

I reserve the right to refuse service... this will be based in dishonest, disruptive, illegal, or unethical behavior.

7.7. Academic Dishonesty:

“Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes, and is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the *Handbook of Operating Procedures (HOP)*, and available in the Office of Student Life and on the homepage of the Office of Student Life at www.utep.edu/dos, can result in sanctions ranging from disciplinary probation, to a failing grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.”

7.8. Accommodations under ADA:

If you feel you may have a disability that requires special accommodations please contact the Disabled Student Services Office at (915) 747-5148, go to room 106E Union, or e-mail dss@utep.edu.