



**EE 4395/5390**  
**Introduction to Power Systems**  
The University of Texas at El Paso  
**Fall 2020**  
Syllabus

**Instructor:** David G. Guzman

**Office:** E328; will not receive students in person during Fall 2020 unless absolutely necessary.

**Office Hours:** Virtually and by appointment. Via phone, Microsoft Teams, and/or facetime.

**E-mail:** [dgguzman@utep.edu](mailto:dgguzman@utep.edu)

1. Class Location & Time:

Will meet online via Collaborate Ultra in Blackboard and attendance to online sessions is mandatory.

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

2. Course Description:

This course introduces the fundamental engineering theory and methodology for analyzing and designing traditional power systems and its application to the electric utility industry. In addition, the material in this course provides fundamental knowledge that is necessary in other emerging technologies connected to the power grid such as micro-grids, smart grids, renewable energy, and energy storage systems. The material covered includes Power Systems History, Fundamentals for Power Systems, Power Transformers, Transmission Line Parameters, Transmission Line Steady-State Operation, and the Introduction to Power Flow Analysis.

3. Topics:

- **Introduction:** History, Present and Future Trends, Electric Utility Structure, and Emerging Technologies.
- **Engineering 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.

- **Parameters of Transmission Lines:** Resistance, Conductance, Inductance, Series Impedances, Capacitance, and Shunt Admittances.
- **Steady-State Analysis of Transmission Systems:** Medium and Short Line Approximations, Transmission-Line Differential Equations, Equivalent Pi Circuits, Lossless Lines, Maximum Power Flow, Line Loadability, etc.

4. Required Textbook:

Power System Analysis and Design. Glover, Sarma, Overbye. 6<sup>th</sup> 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%	9/3/2020
Exam 2	10%	9/22/2020
Exam 3	10%	10/8/2020
Exam 4	10%	10/27/2020
Exam 5	10%	11/12/2020
Exam 6	10%	12/1/2020
Final Exam*	30%	TBD (12/7/2020-12/11/2020)
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Total	100%	

\*Final Exam will be comprehensive

Final Grade Scale:

A = 90.00% - 100.00%

B = 80.00% - 89.99%

C = 70.00% - 79.99%

D = 60.00% - 69.00%

F = < 60.00%

## 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 **October 30<sup>th</sup>, 2020**.

### 7.4. Cellphone & Laptops (as applicable for online class):

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 (as applicable for online class):

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](http://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 (as applicable for online class):

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](mailto:dss@utep.edu).

