



SYLLABUS

EE 4395, EE 5390

Power System Analysis

Fall 2021

Instructor:

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Class Hours: Tuesday and Thursday 1:30 PM – 2:50 PM at Undergraduate Learning Center 210

Online Office Hours: Wednesday, 1 PM to 2 PM via WebEx (link will be provided)
(For other times, by email appointment only; also, see Section IV)

PowerWorld Simulator Software coordinator: Travis Newbolt tmnewbolt@miners.utep.edu
PowerWorld Online office hours: send email appointment to Travis Newbolt for PowerWorld related queries

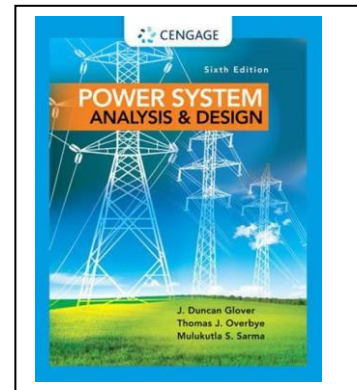
I. COURSE GENERAL INFORMATION

▪ **Required Textbook**

- Power System Analysis and Design
- Authors: J. D. Glover, T. J. Overbye, and M. S. Sarma
- Publisher & Edition: Cengage Learning, 6th Edition

✓ This course requires an online platform called MindTap (see page-6 for how to register into MindTap)

▪ **Prerequisite:** EE 2350 and EE 2351, each with a grade of C or better and/or department approval.



II. CATALOG DESCRIPTION

(3 credit hours). Power system analysis in steady-state conditions. Representation of power system components for analysis studies. Transmission line parameters. Network equations. Power flow analysis and numerical methods.

III. COURSE GOAL AND LEARNING OUTCOMES

The goal of this course is to provide students with a complete overview of interconnected electric power systems and their operations. This further includes an understanding of the principles, modeling, analysis, operation, and control of electric power systems.

Students completing Power System Analysis course will have

- Ability to calculate electric power system parameters in per unit format and, then use this format to analyse power system.
- Ability to develop appropriate models for a power system, and know how to formulate and solve Power Flow problem to calculate the state of power systems.
- Ability to calculate parameters of transmission lines, given line configuration and conductor data.
- Ability to perform analysis of transmission lines in steady-state operation.

IV. COURSE COMMUNICATION: HOW WE WILL STAY IN CONTACT WITH EACH OTHER?

- Student can communicate with me during the office hours (W, 1-2 pm) via Webex (link provided).
- If you are unable to visit during office hours, you need to send an appointment email and we will set up a meeting schedule, e.g., via MS Team, Webex, etc.
- While sending email, always write in the subject line “**EE4395 (or EE5390) Power Sys Analysis – your query**”.
- **Note:** you must use your UTEP email ID while communicating with me to receive my response.

V. COURSE FORMAT

The class is scheduled to meet twice a week from 1:30 pm to 2:50 pm every Tuesday and Thursday during the term. The course format includes lectures, project work, class discussions, presentations, quizzes, exercises, problem formulation, exams, video clip, etc.

VI. OVERVIEW OF COURSE TOPICS

<ul style="list-style-type: none"> • Introduction and Overview (Chapter 1) • Fundamentals – Review of Phasors, Three-Phase Power, Network Equations, Balanced Three-Phase Circuits, Power in Balanced Three-Phase Circuits (Chapter 2) • Power Transformers – Three-Phase Transformer Connections, Equivalent Circuit, per-unit system (Chapter 3) • Transmission Line parameters, Transmission Lines Modeling for Steady-State Analysis (Chapter 4 and Chapter 5) 	<ul style="list-style-type: none"> • Analysis of power system in steady-state, Power Flow Analysis, Problem Formulation and Solution Algorithms (including Gauss-Seidel, Newtown-Raphson) (Chapter 6)
<p>Contribution to Professional Component via this course: This course prepares students for the electrical power and energy systems engineering profession by introducing them to electric power systems and associated analytical techniques used by power system engineers, power system planners, and power system operators.</p> <p>Power System Software: Students will use PowerWorld Simulator for assignments and projects. Basic scientific calculators are required for algebraic and trigonometric calculations.</p>	

Blackboard: Course materials such as lecture notes, syllabus, homework assignments, simulation projects, and miscellaneous announcements will be available in the course blackboard (and they will also be announced in the class).

Disclaimer: Syllabus may subject to change within reasonable limits according to instructor's discretion. Any changes will be announced in the class.

The instructor may be on business related travel (e.g., conference, meeting), which might fall on the dates for which classes are scheduled. Such dates are expected to occur minimally during the semester period. In such cases, the scheduled class may either be rescheduled or make up with special assignment or a guest speaker will be available to substitute.

VII. GRADING SCHEME

Grades will be given based on following distribution:

Homework/Simulation Projects	20%
Quizzes	15%
Mid-Term Exam	25%
Final Exam	40%
Total	100%

As a general case, grades will be given as follows :

90-100	→	A
80-89	→	B
70-79	→	C
60-69	→	D
59 or below	→	F

VIII. QUIZZES

- Students should always be up to date with the lecture materials that are covered.
- Always be ready for the quizzes throughout the semester. No make-up for the missed quizzes.

IX. CLASS PARTICIPATION AND MAKE-UP POLICY

This is largely a skill course. So, it is important to attend class, participate in class activities, read all assignments, answer other students' questions, and ability to lead discussion in class. I will distribute a sign-in sheet to keep track of attendance and keep a diary to make note of your significant class participation. Student will be responsible for the material covered in the class in case of an absence.

There will be NO MAKE-UP for exam, quiz, presentation, assignments, or any assigned tasks, etc., **However, in case of pressing circumstances**, e.g., student having medical reason (evidence required from doctor) or military duties (with advanced notification) or compassionate reasons should inform the Instructor by sending email in advance or in emergency (i.e., in case a student is unable to inform the instructor in advance due to medical reason about his/her absence), the student must inform the instructor on the same week by Friday 5 PM via email with evidence (from doctor) as attachment.

Compassionate reasons do not include student's business/personal travel, car failure, traffic jam, etc.

X. CALCULATOR POLICY

Students can use only **basic scientific or non-programmable calculator** during the quizzes and exams. The **programmable and/or large screen calculator** (which usually has stored program, programmable functions, graphing functions, etc.) **is NOT allowed during the quizzes and exams.**

For any confusion about calculator policy, students can check with the Instructor to confirm about the use or permission of their calculators, however, it is recommended to do so as early as possible. If a student comes to the Instructor just a few minutes before the Exam/Quiz in order to confirm the use of his/her calculator, and if his/her calculator does not comply with the calculator's policy, it is his/her responsibility to manage the calculator complying the policy. Furthermore, a particular Exam/Quiz will be voided if a student is violating the calculator policy. In such case, that particular student will receive either zero on that Exam/Quiz or may have to re take Exam/Quiz. Moreover, it is also the students' responsibility to check the battery and the functioning of the calculator before they appear to the quizzes and exams. Student's calculator model number will be noted down. **NOTE: Bring your own calculator to every lecture.**

XI. EFFORT, ETIQUETTE, AND CLASSROOM ENVIRONMENT AND POLICIES

- Arrive in class before the lecture starts. Make class environment smooth, easy, interactive, and share your knowledge and experience.
- Part of being a professional is being on time and being prepared to do your job.
- Have an active participation in class activities → asking questions, answering other students' questions, and ability to lead discussion in class.
- Read the course materials before coming to the next class.
- **All the rooms in the UGLC has NO FOOD and NO DRINK (excluding water) policy.**
- **NO CELL PHONE POLICY: Cell phone should be completely switched off during the lecture hours.** Student will be asked to leave the classroom immediately (or will be given one-time warning) if the student is found using the cell phone in the classroom during lecture hours. *In such case, the student will also receive 10 points reduction in the final grade. Furthermore, if the same student is found using the cell phone for the second time, the instructor can drop out the student from the course.* In case of an urgency (during lecture hours), student can leave the classroom to make a phone call and can rejoin the class. If a student is found leaving and entering the class several times during the lecture, it will also not be acceptable. It is highly recommended to do your personal things before or after the lecture.
- **LAPTOP and E-Tablet Policy:** In the classroom, you can use your laptop or IPAD or e-tablet for course related activities, e.g., browsing lecture materials, simulation studies, research paper/project presentation/power point slides, writing notes and anything purely related to the course only. However, any student caught facebooking, texting, chatting, browsing irrelevant material, etc., will be asked to leave the class immediately, and the student will also receive 10 points reduction in the final grade.
- **Student disturbing the class**, e.g., talking, gossiping, misbehaving while the instructor is lecturing/busy in the class activities, etc., will be highly unacceptable.

NOTE: Student who is not following the aforementioned policies will be asked to leave the class immediately and can also be dropped from the course.

XII. INSTITUTIONAL POLICIES

Academic Honesty:

Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording: it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. ***If you are found to be cheating or plagiarizing, for example, but not limited to, in quiz, assignment, exam, report submission, any assigned task, etc., you will be subject to disciplinary action, per UTEP catalog policy.***

- Plagiarism, Cheating, and Academic Dishonesty are unacceptable and will NOT be tolerated.
- Student who is caught cheating/plagiarizing will receive a **failing grade** as well as additional disciplinary measures by the University.
- Any case involving academic dishonesty will be referred to the Engineering Dean's Office and the Office of the Dean of Students. See the Office of the Dean of Students' home page at www.utep.edu/dos/acadintg.htm for more information.
- Please review the statements below and UTEP's Web page on Policy on Academic Integrity at <http://sa.utep.edu/osccr/academic-integrity/>

Center for Accommodations and Support Services (CASS):

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

XIII. COVID-19 PRECAUTIONS

Please stay home if you (1) have been diagnosed with COVID-19, or (2) are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, and alternative instruction will be provided. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org

XIV. SOME OTHER IMPORTANT NOTES

- **Disclaimer:** Syllabus (that includes any content) may subject to change within reasonable limits according to instructor's discretion. Any changes will be announced in blackboard or in the class.
- **Students are expected to check the blackboard frequently (at least three times daily)** for course materials (e.g., Syllabus, Lecture Notes, announcements, etc.) and related information to see if any updates.
- **Students should also be checking emails frequently (at least three times daily)** as instructor can communicate via email.
- Usually the instructor sends email to all students keeping them in Bcc if it will be a group email.

- **Email Communication with a particular student:** **(1)** Instructor may send an email to a particular student to set up an online meeting or for any course related matter, and that student is supposed to answer the instructor's email as soon as possible (*which is Email-1*). **(2)** If the student does not reply to Email-1 within 24-hour period (*as students are expected to check email thrice a day*), the instructor will send a reminder email (*which is Email-2*). **(3)** If that student still does not reply to Email-2 within 2-business-day, there may be an impact on that student's grade.
- **Important note about Grade:** Grades are earned by students.
- Students are supposed to contact instructor in advance for any query.

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Register for your MindTap Course

This course requires an online homework platform called **MindTap**. Follow the instructions below to get started.

Register for your MindTap Course

1. Use the course registration link

<https://www.cengage.com/dashboard/#/course-confirmation/MTPPV3L3QBSW4/initial-course-confirmation>

2. Follow the instructions on screen to create your Cengage account and **register for this MindTap course**.

3. Begin your temporary access* period.

Need help? Visit the Cengage Start Strong Website (<https://startstrong.cengage.com>) for step-by-step instructions.

***Temporary Access:** You can access your **MindTap** course until 6:00 AM (UTC) on 9/6/2021 for free. At the end of the temporary access period, you will be prompted to purchase access. Your work will be saved and will be available to you again once you've completed your purchase.

MindTap Tips & Training Tools

Learn more about navigating your MindTap course: (<https://help.cengage.com/mindtap/mt-student/introduction.html>)

Technical Support & Troubleshooting

Our US-based support team delivers answers and advice via 24/7 online chat, Twitter, live phone support (1-800-354-9706) and through **support.cengage.com**, which includes helpful articles, and tutorials.

If you are having trouble loading MindTap, run the MindTap browser check <https://ng.cengage.com/static/browsercheck/index.html> to make sure your browser is compatible or refer to the MindTap System Requirements <https://help.cengage.com/mindtap/MindTap-System-Requirements.pdf>

If MindTap isn't loading, be sure to visit Techcheck <https://techcheck.cengage.com> to see if there is an outage.