

The University of Texas at El Paso

College of Engineering

Department of Electrical and Computer Engineering

Course Syllabus

ECE4390/ECE5390 Special Topics: Power System Analysis II

Spring 2025

Course Information:

Classroom: Worrell Hall 205

CRN: 25861/25733

Class Time: TR 6:00 pm - 7:20 pm

Instructor:	Eric Galvan
Office:	
Phone:	
Email:	egalvan4@utep.edu
Office Hours:	Thursday 7:30 pm - 8:30 pm Others: by appointment
Text:	<ul style="list-style-type: none">• Power System Analysis and Design• Authors: J. D. Glover, T. J. Overbye, M. S. Sarma, and A. Birchfield• Publisher & Edition: Cengage Learning, 7th Edition
References:	<ul style="list-style-type: none">• Lecture Notes provided by the instructor.
Prerequisite	<ul style="list-style-type: none">• ECE 2301, ECE 2302 and ECE 4390/ECE 5390 Power System Analysis I, each with a grade of C or better and/or department approval.

Course Description: Power system analysis in steady-state conditions and fault analysis. Symmetrical faults, symmetrical components, unsymmetrical faults, and system protection.

Course Objectives and Learning Outcomes: This course provides students with a complete overview of power systems fault analysis and protection systems. Upon successful completion of this course, students should be able to:

1. Investigate and calculate subtransient fault current for a three-phase short circuit in a power system.
2. Use the symmetrical components method for analyzing unbalanced three-phase systems.
3. Develop and calculate sequence networks of loads, series impedances, transmission lines, rotating machines, and transformers.

4. Discuss and explain the difference of single line-to-ground, line-to-line, double line-to-ground, and balanced three-phase faults.
5. Calculate per-unit zero-, positive-, and negative-sequence networks to represent a three-phase system.
6. Discuss and explain basic system-protection components.
7. Use PowerWorld Simulator to compute symmetrical fault currents for balanced and unbalanced short circuits

Course calendar and topics covered (Tentative):

1. Symmetrical faults
2. Symmetrical components
3. Unsymmetrical faults
4. System Protection

Grades will be given based on following distribution:

Homework Assignments	30%
Course Project	20%
Attendance	10%
Mid-term Exam	20%
Final Exam	20%
Total	100%

Grading Scale:

A	100-90%
B	89-80%
C	79-70%
D	69-60%
F	59-0%

Power System Software: Students will use PowerWorld Simulator for assignments and projects. Each student must have the software installed on their laptop, personal computer or device.

Calculator: Basic scientific or non-programmable calculator is required for calculations. Students can only use basic scientific or non-programmable calculator during exams. It is the student's responsibility to always have their calculator ready for in-class assignments and exams.

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

Assignments: The homework assignments must be turned in by the due date. Late assignments will be decreased one letter grade per day late from the actual homework grade.

Exams: A midterm exam will be given the week of **March 4-6, 2025**

Final Exam: The final exam is comprehensive and is given in accordance with the University's Final Exam schedule, **Thursday, May 15th, 2025 7:00 pm – 9:45 pm.**

No Use of Cell Phones, Laptops, Tablets or Other Devices on Exams.

Class Participation and Activities: There will be class group and individual activities. In order to get a grade for them you must participate in the activity.

There will be No Make up for exams, presentations, assignments, or any assigned tasks. However, in case of pressing circumstances, make up will only be allowed for students with medical reason that prevents their attendance (written notification from doctor required), military duties (notification to be provided in advance), and for other compassionate reasons. Business related activities, car problems, and over sleeping are not considered compassionate reasons.

Course Drop Deadline: The deadline to drop this course with an automatic W is **April 4th, 2025.**

Attendance: Attendance is mandatory. When absent, the student is responsible for obtaining notes, handouts, and assignments and for meeting the same deadlines as the rest of the class. Excused absences are limited to documented medical emergencies, religious holidays and UTEP sponsored and/or required activities.

Cell Phone and Laptop Policy: Cell phones are not permitted during the lecture. Laptops may be used during assignments as specified by instructor. Students are required to turn off cell phones before entering the classroom. Cell phones should be placed out of sight (like in a purse or backpack). Students should NOT receive or make any calls/text messages during class. Students using cell phones during class will be asked to leave and will receive a zero for attendance and on all group assignments completed that day.

Institutional Policies

Academic Honesty: As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student's work is a fair representation of the student's ability to perform forms the basis for departmental and institutional quality. All students within the department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of Student Conduct and Conflict Resolution (OSCCR). The Associate Dean of Students will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the OSCCR homepage at <https://www.utep.edu/student-affairs/osccr/> for more information.

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.

Harassment: Members of the UTEP community are protected from discrimination and harassment by State and Federal Laws. Jokes, comments of sexual nature, as well as racist comments will not be tolerated. The student that violates this rule will be sent to the Dean of Students for disciplinary action.

Copyright Notice: Materials presented and posted within this course are protected by copyright laws. The materials presented during this course are only intended for use of students enrolled in this course and for the duration of the course.

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