

ECE 423: POWER SYSTEMS ANALYSIS**SPRING 2012****Time, Place:** MW 4:10 p.m. – 5:30 p.m.; Room 2205, EB.**Instructor:** J. Mitra

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Office hours: M 2:00–3:00 p.m., W 2:30 p.m. – 4:00 p.m., or by appointment; Room 2220, EB.

Prerequisite: ECE 320 or equivalent.**Course Text:** J. D. Glover, M. S. Sarma, T. J. Overbye, *Power System Analysis and Design*. Fourth Edition: Thomson, 2007.

Other supplementary reading material will be provided.

Course Description: Introduction to the principles, concepts, and analysis of major components of an electric power system; analysis of power systems in the steady state and under abnormal conditions; energy economics. Includes the development of models and analysis procedures for major power system components and for power networks; power flow, economic operation; symmetrical components, fault analysis; transient stability.**Lecture/Test Schedule¹:**

Dates	Topics	Chapters in Text
Jan 9	Introduction and review	Ch 1
Jan 11	Single and three phase circuits	Ch 2
Jan 18, 23	Transmission line models and performance	Ch 4, 5
Jan 25, 30	Transformers	Ch 3
Feb 1, 6	Generator and load models	
Feb 8	Review for Test 1	
Feb 13	Test 1	
Feb 15, 20, 22, 27	Power flow, power flow control	Ch 6
Feb 29, Mar 12	Unit commitment, economic dispatch	Ch 11
Mar 14	Energy markets and competition	
Mar 19	Review for Test 2	
Mar 21	Test 2	
Mar 26	Symmetrical faults	Ch 7
Mar 28, Apr 2	Symmetrical components	Ch 8
Apr 4, 9, 11	Unsymmetrical faults	Ch 9
Apr 16	Protection overview	Ch 10
Apr 18, 23	Transient stability	Ch 13
Apr 25	Review for Final exam	
May 2	Final exam, 5:45 p.m. – 7:45 p.m.	

Evaluation Criteria: The course grade will be determined as follows:

Homework assignments: 20%

3 tests, equally weighted: 80%

Make up test: There will be only **one** make up test. If you miss any of the tests for a valid reason, and can provide documentation to support this reason, you will be allowed to take the make up test.

Grading scale: Grading scale: 4.0: 93–100%; 3.5: 85–92%; 3.0: 77–84%; 2.5: 69–76% ; 2.0: 61–68%; 1.5: 53–60%; 1.0: 45–52%; 0: below 45%.

¹ This schedule is tentative and subject to change. Scheduling of tests will be confirmed in class, with at least one week’s prior notice.

Other Information

1. **Academic Honesty:** Article 2.3.3 of the [Academic Freedom Report](#) states that “The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards.” In addition, the Department of Electrical & Computer Engineering adheres to the policies on academic honesty as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades*; the all-University Policy on *Integrity of Scholarship and Grades*; and Ordinance 17.00, Examinations. (See [Spartan Life: Student Handbook and Resource Guide](#) and/or the MSU Web site: www.msu.edu.)

Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the www.allmsu.com Web site to complete any course work in ECE 423. Students who violate MSU academic integrity rules may receive a penalty grade, including a failing grade on the assignment or in the course. Contact your instructor if you are unsure about the appropriateness of your course work. (See also <http://www.msu.edu/unit/ombud/dishonestyFAQ.html>)

2. **Accommodations for Students with Disabilities:** from the Resource Center for Persons with Disabilities (RCPD): Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a verified individual services accommodation (“RISA”) form. Please present this form to me at the start of the term and/or two weeks prior to the accommodation date (test, project, etc.). Requests received after this date will be honored whenever possible.
3. **Drops and Adds:** The last day to add this course is the end of the first week of classes. The last day to drop this course with a 100 percent refund and no grade reported is February 3. The last day to drop this course with no refund and no grade reported is February 29. You should immediately make a copy of your amended schedule to verify you have added or dropped this course.
4. **Commercialized Lecture Notes:** Commercialization of lecture notes and university-provided course materials is not permitted in this course.
5. **Attendance:** Students whose names do not appear on the official class list for this course may not attend this class. Students who fail to attend the first four class sessions or class by the fifth day of the semester, whichever occurs first, may be dropped from the course.
6. **Disruptive Behavior:** Article 2.3.5 of the [Academic Freedom Report](#) (AFR) for students at Michigan State University states: “The student’s behavior in the classroom shall be conducive to the teaching and learning process for all concerned.” Article 2.3.10 of the [AFR](#) states that “The student has a right to scholarly relationships with faculty based on mutual trust and civility.” [General Student Regulation 5.02](#) states: “No student shall . . . interfere with the functions and services of the University (for example, but not limited to, classes . . .) such that the function or service is obstructed or disrupted.” Students whose conduct adversely affects the learning environment in this classroom may be subject to disciplinary action through the Student Faculty Judiciary process.