

Course Syllabus

EEL 4251 / 5250 Power System Analysis (Fall 2019)

1. **Catalog Description** (3 credits):

Development of power system equivalents by phase, network analysis, load flow, symmetrical components, sequence networks, and fault analysis.

2. **Pre-requisites:** EEL 3211C

3. **Course Objectives:**

The main course goal is to provide students with a complete overview of interconnected power system analysis and design. At the completion of the course students should be able to develop appropriate models for an interconnected power system, and know how to perform power flow, short circuit and transient stability analysis. Students should also be able to write a basic power flow, short circuit and transient stability computer program.

4. **Instructor:**

Prof. Arturo Bretas

Office location: 427 NEB

E-mail address: [arturo@ece.ufl.edu \(mailto:arturo@ece.ufl.edu\)](mailto:arturo@ece.ufl.edu)

Web site: E-Learning (Canvas)

Office hours: Office hours: Tues. & Thurs. (10:00 - 11:00 am) @ NEB 427

5. Teaching Assistant: Cody Ruben ([cruben31@ufl.edu \(mailto:cruben31@ufl.edu\)](mailto:cruben31@ufl.edu))

Office hours: Monday and Friday (04:00 - 05:00 pm) @ NEB 470

6. Meeting Times: Tuesday (01:55 - 02:45 pm) - Thursday (01:55 - 03:50 pm)

7. Meeting Location: PSY 0151

8. Textbook: J.D. Glover, T.J. Overbye and M.S. Sarma, Power Systems Analysis and Design, 6th edition, Cengage Learning, 2015, ISBN number: 978-1-305-63213-4.

Optional Reference: J. Grainger & W.D. Stevenson, Jr., Power System Analysis, New York: McGraw-Hill, 1994.

Monticelli, A. *State Estimation in Electric Power Systems: A Generalized Approach*. Vol. 507. Springer Science & Business Media, 1999.

9. Tentative Course Outline:

1. (Text Chapter 1, 2) Introduction, Fundamentals
2. (Text Chapter 4, 5) Transmission-line parameter computation & modeling, Transmission Line Steady-State Operation
3. (Text Chapter 6) Load Models, Power Flows, Economic Dispatch, Unit Commitment
4. (Text Chapter 1,2, 8, 10 / Monticelli) DC / AC State Estimation
5. (Text Chapter 7 & 8) Symmetrical Faults & Symmetrical Components
6. (Text Chapter 9) Unsymmetrical Faults
7. (Text Chapter 13) Transient Stability

10. **Exams:** 2 exams (Different Exams for Undergraduate and Graduate Students)

11. Homework Assignments:

(Undergrad Students): Chapters 1,2,4,5,6,10, 7, 8, 9, 13 (one problem / HM)

(Graduate Students): Chapters 1,2,4,5,6,10, 7, 8, 9, 13 (two problems / HM)

Evaluation:

- In-class exams 80%
- Homework 20%. Some simple programming skill may be required. (Different Homework assignments for Undergraduate and Graduate Students)
- +/- grading will be used for the final course grade

12. Attendance and Expectations:

Attendance is expected but not required. Cell phones and other electronic devices are to be silenced. No text messaging during class or exams.

13. Grading:

Homework 20%

Exams 80% (MT - 10 Oct / F - 12 Dec @ 10:00 am - 12:00 pm)

14. Grading Scale:

A>95, 90<A-<95

87<B+<90, 83<B<87, 80<B-<83

77<C+<80, 73<C<77, 70<C-<73

67<D+<70, 63<D<67, 60<D-<63

0<F<60

15. Make-up Exam Policy:

If you have a University-approved excuse and arrange for it in advance, or in case of documented emergency, a make-up exam will be allowed and arrangements can be made for making up missed work. University attendance policies can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> Otherwise, make-up exams will be considered only in extraordinary cases.

16. Honesty Policy:

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

"...failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures (<http://www.dso.ufl.edu/sccr/procedures/honorcode.php> [.\(http://www.dso.ufl.edu/sccr/procedures/honorcode.php\)](http://www.dso.ufl.edu/sccr/procedures/honorcode.php))."

17. Accommodation for Students with Disabilities:

Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

18. UF Counseling Services:



Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

19. Software Use:

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Course Summary:

Date	Details	
Thu Oct 10, 2019	 Midterm exam (https://ufl.instructure.com/calendar?event_id=839252&include_contexts=course_370771)	1:55pm to 3:50pm
Wed Dec 11, 2019	 Final exam (https://ufl.instructure.com/calendar?event_id=839253&include_contexts=course_370771)	10am to 12pm