

Course Syllabus

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:

Arturo Bretas

Office location: 427 NEB

E-mail address: arturo@ece.ufl.edu

Web site: E-Learning (Canvas)

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

5. Teaching Assistant:

Nader Aljohani (eng89nader@ufl.edu)

Office hours: Monday and Wednesday (05:00 - 06:00 pm) @ Zoom

Meeting ID: 943 4590 6863

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

7. **Meeting Location:** NEB 0202

8. **Textbook:**

- A.S. Bretas, N.G. Bretas, J.B.A. London Jr and B. Carvalho. *Cyber-Physical Power Systems State Estimation*. 1st edition, Elsevier, 2021. ISBN: 978-0323900331.

Optional Reference:

- J.D. Glover, T.J. Overbye and M.S. Sarma. *Power Systems Analysis and Design*, 6th edition, Cengage Learning, 2015, ISBN: 978-1305632134.
- J. Grainger and W.D. Stevenson, Jr.. *Power System Analysis*, New York: McGraw-Hill, 1994, ISBN: 978-0070612938.
- A. Monticelli. *State Estimation in Electric Power Systems: A Generalized Approach*. Springer Science & Business Media, 1999, ISBN: 978-1461549994.

9. **Tentative Course Outline:**

1. Introduction, Fundamentals

2. Transmission-line parameter computation & modeling, Transmission Line Steady-State Operation
3. Load Models, Power Flows, Economic Dispatch, Unit Commitment
4. DC / AC State Estimation
5. Symmetrical Faults & Symmetrical Components
6. Unsymmetrical Faults
7. Transient Stability

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

11. Homework Assignments:

(Undergrad Students): Chapters 1-13 (one problem / HM)

(Graduate Students): Chapters 1-13 (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.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use,

(2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Attendance Policy, Class Expectations, and Make-Up Policy

This class will be presented online using Zoom and requires access to a working webcam and stable internet connection. I prefer that students keep their camera on during the class so that I can see you as I would during normal face-to-face classes. Studies show that if we can see each other’s faces then we will have more engagement, more student success, and more faculty success. However, this is not a requirement. I understand if on certain days you can’t have your camera on due to internet bandwidth limitations, other family members, health issues, or any other reasons.

13. Grading:

Homework 20%

Exams 80% (MT - 21 Oct / F - 17 Dec @ 12:30 pm - 02:30 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> (Links to an external site.)Links to an external site.)"

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:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc> ([Links to an external site.](#)), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance \(Links to an external site.\)](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/> ([Links to an external site.](#)).

Covid-19 Protocols:

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website \(Links to an external site.\)](#) for more information.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml> (Links to an external site.).

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/> (Links to an external site.).

Library Support, <http://cms.uflib.ufl.edu/ask> (Links to an external site.). Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/> (Links to an external site.).

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/> (Links to an external site.).

Student Complaints Campus: <https://care.dso.ufl.edu> (Links to an external site.).

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process> (Links to an external site.).

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	Due
Thu Oct 21, 2021	Calendar Event Mid Term Exam	1:55pm to 3:50pm
Fri Dec 17, 2021	Calendar Event Final Exam Assignment Final Exam Assignment Midterm Exam Assignment Unnamed Quiz	12:30pm to 2:30pm

August 2021

Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25 July 2021 25 Previous month	26 July 2021 26 Previous month	27 July 2021 27 Previous month	28 July 2021 28 Previous month	29 July 2021 29 Previous month	30 July 2021 30 Previous month	31 July 2021 31 Previous month
1 August 2021 1	2 August 2021 2	3 August 2021 3	4 August 2021 4	5 August 2021 5	6 August 2021 6	7 August 2021 7
8 August 2021 8	9 August 2021 9	10 August 2021 10	11 August 2021 11	12 August 2021 12	13 August 2021 13	14 August 2021 14

Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
15 August 2021 15	16 August 2021 16	17 August 2021 17 Today	18 August 2021 18	19 August 2021 19	20 August 2021 20	21 August 2021 21
22 August 2021 22	23 August 2021 23	24 August 2021 24	25 August 2021 25	26 August 2021 26	27 August 2021 27	28 August 2021 28
29 August 2021 29	30 August 2021 30	31 August 2021 31	1 September 2021 1 Next month	2 September 2021 2 Next month	3 September 2021 3 Next month	4 September 2021 4 Next month

Assignments are weighted by group:

Group	Weight
Assignments	20%
midterm	40%
Final	40%
Total	100%