EEL 6255 – Advanced Power Systems Analysis
Graduate Credit Syllabus

Graduate Bulletin Description: Topics to include symmetrical and unsymmetrical fault analysis, power system estimation and control and power system stability. Occasional. ECS - Department of Electrical Engineering and Computer Science

EEL 6255 (3). Graduate Credit Syllabus. This is an advanced course to power systems engineering, designed to provide a student with the knowledge of steady-state analysis in power system operation. Course content includes power flow analysis, state estimation, power system security, automatic generation control, economic dispatch, optimal power flow, unit commitment, fuel scheduling, and production cost modeling.

Class Meeting Schedule: TBD

Pre-requisites
EEL4216-Fundamentals of Electric Power Systems. Familiar with power system analysis methods at the level of standard text books, including the ones by Bergen & Vittal, Grainger & Stevenson, and Glover & Sarma. Familiar with the topics of matrix algebra, calculus, network analysis theory including electric power flow analysis, and basic optimization concepts.

Instructor:
Wei Sun, PhD
Office: HEC 306
Office Phone: 407-823-2344
Email: sun@ucf.edu
Office hours: TBD

Learning Outcomes:
By the end of this course, students should be able to:

1. Acquire knowledge of steady-state analysis in power system operation.
2. Develop the ability to apply knowledge of steady-state analysis, along with computer software, to solve problems in power system operation.
3. Develop skills to communicate effectively through writing and presentation.
4. Prepare students for multidisciplinary research in power system area.

Required text(s) and suggested readings:
Allen J. Wood, Bruce F. Wollenberg, Gerald B. Sheble, *Power Generation, Operation, and Control*, 3rd Edition, Wiley, 2013.

Instructional Delivery:
This course will be 80% lecture, 20% presentation/discussion.

Course Requirements:

Assessment	Percent of Final Grade
Bi-weekly Assignment	10%
Midterm Exam	20%
Midterm Project	20%
Final Exam	30%
Final Design Project	20%
	100%

1. **Homework**: Homework will be assigned upon completion of each chapter/topic. Homework turned in late will be assessed a penalty: 20% reduction if it is one day late, or 40% reduction for 2-7 days late. Homework will not be accepted if overdue by more than seven days.
2. **Course Project**: Two course projects will be assigned. For group project, your project grade will be 90% of the group grade plus 10% of the feedback grade from your co-workers.
3. **Exams**: Unless you are otherwise informed by the instructor, all exams will be closed-book, closed-notes. During closed-book closed-notes exams, students will be allowed to use only writing instruments and a calculator. All other instruments or devices are prohibited.

Grading Scheme

Grading Scale (%)		Grading Scale (%)	
94-100	A	74-76	C
90-93	A-	70-73	C-
87-89	B+	67-69	D+
84-86	B	64-66	D
80-83	B-	60-63	D-
77-79	C+	0 - 59	F

Tentative Topical Outline

Please recognize that this is a "best guess" of our progress through content. Revisions may be required as the semester yields weather constraints and/or for other unforeseen issues. Every effort will be made to keep all informed of any changes that occur.

Week	Topic	Reference
1	Introduction and Review	
1-2	Power flow analysis	Chapter 4
3	State estimation	Chapter 12
4	Power system security	Chapter 11
5-6	Automatic generation control	Chapter 9-10
7	Characteristics of power generation units	Chapter 2

8-9	Economic dispatch	Chapter 3
10-11	Optimal power flow	Chapter 13
12-13	Unit commitment	Chapter 5
14-15	Other topics	
15-16	Course project presentations	

Academic Conduct Policy
Academic dishonesty in any form will not be tolerated. If you are uncertain as to what constitutes academic dishonesty, please consult The Golden Rule, the University of Central Florida's Student Handbook (http://www.goldenrule.sdes.ucf.edu/) for further details. As in all University courses, The Golden Rule Rules of Conduct will be applied. Violations of these rules will result in a record of the infraction being placed in your file and receiving a zero on the work in question AT A MINIMUM. At the instructor's discretion, you may also receive a failing grade for the course. Confirmation of such incidents can also result in expulsion from the University.

Disability Access
The University of Central Florida is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students who need accommodations must be registered with Student Disability Services, Ferrell Commons Room 185, phone (407) 823-2371, TTY/TDD only phone (407) 823-2116, before requesting accommodations from the professor.

Distance learning related components
All learning outcomes in this Distributed Learning course are equivalent to face-to-face (F2F) version of this course.

This course is an asynchronous online course. Students will work at different times from different locations and will not be required to attend any face-to-face (F2F) or synchronous meetings at the same time.

All discussion board posts and emails will be responded to within 24 hours. Feedback will be provided on all assignments within 48 hours.

Online lectures will be provided through Adobe Connect Professional. Therefore, students must has access to the Internet to view/hear lectures. No special software is required. Students will also submit all assignments and take all quizzes/tests through Blackboard.

Minimal technical skills are needed in this online course. All work in this course must be completed and submitted online. Therefore, students MUST have consistent and reliable access to a computer and the Internet. Before starting this course, students must feel comfortable doing the following. The minimal technical skills students should have include the ability to: organize and save electronic files, use email and attached files, check email and Webcourses daily, and download and upload documents.