FLORIDA ATLANTIC UNIVERSITY

NEW COURSE PROPOSAL
Graduate Programs

Department CEECS

College College of Engineering and Computer Science
*(To obtain a course number, contact **erudolph@fau.edu**)*

UGPC Approval _____
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

Prefix EEL **Number** 5252	*(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)* **Lab Code**	**Type of Course** Lecture	**Course Title** Power System Analysis and Control

Credits *(Review Provost Memorandum)*: 3

Effective Date *(TERM & YEAR)*: Fall 2019

Grading *(Select One Option)*: Regular (●) Sat/UnSat ( )

Course Description *(Syllabus must be attached; see Guidelines)*
Fundamentals of power grid, such as phasor, transformers, transmission line, power flow, and symmetrical faults.

Prerequisites	**Corequisites**	**Registration Controls** *(Major, College, Level)*
EEL 3111 Circuits 1 or equivalent	N/A	Graduate Students in the College of Eng. & Comp. Sci.

Prerequisites, Corequisites and Registration Controls are enforced for all sections of course

Minimum qualifications needed to teach course: Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.)	**List textbook information in syllabus or here** Power System Analysis and Design (Sixth Edition) by Glover, Overbye, Sarma, 2015 Cengage Learning ISBN-13: 978-1-305-63213- 4
Faculty Contact/Email/Phone James VanZwieten/jvanzwi@fau.edu/(561) 297-0955	**List/Attach comments from departments affected by new course** N/A

Approved by	***Date***
Department Chair	2/26/2019
College Curriculum Chair	3/11/19
College Dean	3/11/2019
UGPC Chair	3/27/2019
UGC Chair	3/27/19
Graduate College Dean	3/27/2019
UFS President	
Provost	

Email this form and syllabus to UGPC@fau.edu one week before the UGPC meeting.

GRADUATE COLLEGE
MAR 12 2019
Received

Department of Computer and Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus

1. Course title/number, number of credit hours	
Power System Analysis and Control – EEL 5252	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: EEL 3111 Circuits 1 or equivalent	
3. Course logistics	
Term: Fall 2019 *Room: TBD;* *Time: TBD;* *Final Exam*: TBD	
4. Instructor contact information	
Instructor's name	James VanZwieten
Office address	Engineering East (EE-96) Bldg., Rm. 316
Office Hours	TBD
Contact telephone number	(561) 297-0955
Email address	jvanzwi@fau.edu
5. TA contact information	
TA's name	TBD
Office address	TBD
Office Hours	TBD
Email address	TBD
6. Course description	
Fundamentals of power grid, such as phasor, transformers, transmission line, power flow, and symmetrical faults.	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	By the end of the course, students will be able to: 1) Understand present and future trends in electric power systems; 2) Understand elementary aspects of phasor and balanced three-phase circuits; 3) Solve circuits with single-phase or three-phase transformers as well as autotransformers; 4) Analyze the performance of single-phase and balanced three-phase transmission lines under normal steady-state operating conditions; 5) Develop computer programs to perform power flow analysis on a power system and economic dispatch analysis for a electricity market; 6) Define contingency analysis on a power system and perform contingency studies using a power flow analysis program.
8. Course evaluation method	
Homework 35%; Midterm Exam 30%; Final Exam 30%; Attendance & Participation 5%	
9. Course grading scale	
Grading Scale: 90 and above: "A", 86-89: "A- ", 82-85: "B+", 80-83: "B", 76-79: "B- ", 72-75: "C+", 68-71: "C", 64-67: "C- ", 60-63: "D+", 56-59: "D", 52-55: "D- ", 51 and below: "F." Note: Calculated grades will be rounded to the nearest integer.	
10. Policy on makeup tests, late work, and incompletes	
Makeup exams are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams will be administered and proctored by department personnel unless there are other pre-approved arrangements *Incomplete grades* are against the policy of the department, unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.	
11. Special course requirements	

None

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

13. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS)—in Boca Raton, SU 133 (561-297-3880); in Davie, LA 203 (954-236-1222); or in Jupiter, SR 110 (561-799-8585) —and follow all SAS procedures.

14. Honor code policy

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at
www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

15. Counseling and Psychological Services Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to
http://www.fau.edu/counseling/

16. Required texts/reading

Power System Analysis and Design (Sixth Edition) by Glover, Overbye, Sarma, 2015 Cengage Learning ISBN-13: 978-1-305-63213- 4.

17. Course topical outline

DATE	TOPIC
Week 1	-Course Introduction -Power Industry History -Review of Phasors -Homework 1 posted
Week 2	-Power Factor -Three-Phase System -Per Phase Analysis -Homework 1 due; Homework 2 posted
Week 3	-Transformers -Per Unit Analysis -Homework 2 due; Homework 3 posted
Week 4	-Per Unit Analysis (continued) -Three-Phase Transformers -Homework 3 due; Homework 4 posted
Week 5	-Power System Operations -Transmission Line Parameters (Inductance) -Homework 4 due; Homework 5 posted
Week 6	-Transmission Line Parameters (Capacitance and Resistance) -Homework 5 due; Homework 6 posted

Week 7	-Transmission Line Parameters (analysis tools and examples) -Homework 6 due; Homework 7 posted
Week 8	-Midterm Examination -Homework 7 due
Week 9	-Load and Generators -Bus Admittance Matrix -Homework 8 posted
Week 10	-AC Power Flow -DC Power Flow -Homework 8 due; Homework 9 posted
Week 11	-Economic Dispatch -Optimal Power Flow (OPF) -Homework 9 due; Homework 10 posted
Week 12	-Optimal Power Flow (continued) -Short Circuit Analysis -Homework 10 due; Homework 11 posted
Week 13	-Symmetrical Components -Symmetrical Faults -Homework 11 due; Homework 12 posted
Week 14	- Unbalanced Faults - Grounding -Homework 12 due; Homework 13 posted
Week 15	Introduction to Smart Grid Technologies - Homework 14 posted; Homework 13-14 due;
Final Exam	Final Exam