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| <br><b>FLORIDA ATLANTIC UNIVERSITY</b>   | <b>NEW COURSE PROPOSAL</b><br><b>Graduate Programs</b>  |  | UGPC Approval _____<br>UFS Approval _____<br>SCNS Submittal _____<br>Confirmed _____<br>Banner Posted _____<br>Catalog _____ |
|   | <b>Department</b> CEECS<br><br><b>College</b> College of Engineering and Computer Science<br><i>(To obtain a course number, contact <a href="mailto:erudolph@fau.edu">erudolph@fau.edu</a>)</i> |  |  |
| <b>Prefix</b> EEL<br><br><b>Number</b> 5252   | <i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i><br><b>Lab Code</b>  | <b>Type of Course</b><br>Lecture   | <b>Course Title</b><br>Power System Analysis and Control   |
| <b>Credits</b> <i>(Review Provost Memorandum)</i><br>3<br><br><b>Effective Date</b> <i>(TERM &amp; YEAR)</i><br>Fall 2019   | <b>Grading</b> <i>(Select One Option)</i><br><br><b>Regular</b> <input checked="" type="radio"/><br><b>Sat/UnSat</b> <input type="radio"/>  | <b>Course Description</b> <i>(Syllabus must be attached; see <a href="#">Guidelines</a>)</i><br>Fundamentals of power grid, such as phasor, transformers, transmission line, power flow, and symmetrical faults. |  |
| <b>Prerequisites</b><br>EEL 3111 Circuits 1 or equivalent   |   | <b>Corequisites</b><br>N/A   | <b>Registration Controls</b> <i>(Major, College, Level)</i><br>Graduate Students in the College of Eng. & Comp. Sci.         |
| <b>Prerequisites, Corequisites and Registration Controls are enforced for all sections of course</b>  |   |  |  |
| <b>Minimum qualifications needed to teach course:</b><br>Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.) |   | <b>List textbook information in syllabus or here</b><br>Power System Analysis and Design (Sixth Edition) by Glover, Overbye, Sarma, 2015 Cengage Learning ISBN-13: 978-1-305-63213- 4                            |  |
| <b>Faculty Contact/Email/Phone</b><br>James VanZwieten/ <a href="mailto:jvanzwi@fau.edu">jvanzwi@fau.edu</a> /(561) 297-0955  |   | <b>List/Attach comments from departments affected by new course</b><br>N/A   |  |

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| <b>Approved by</b><br>Department Chair <u><i>Morgan Eubel</i></u><br>College Curriculum Chair <u><i>[Signature]</i></u><br>College Dean <u><i>McCarder</i></u><br>UGPC Chair _____<br>UGC Chair _____<br>Graduate College Dean _____<br>UFS President _____<br>Provost _____ | <b>Date</b><br><u><i>2/26/2019</i></u><br><u><i>3/11/19</i></u><br><u><i>3/11/2019</i></u><br>_____<br>_____<br>_____<br>_____ |
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Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) one week before the UGPC meeting.

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

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| <b>1. Course title/number, number of credit hours</b>   |   |
| Power System Analysis and Control – EEL 5252  | 3 credit hours  |
| <b>2. Course prerequisites, corequisites, and where the course fits in the program of study</b>   |   |
| Prerequisites: EEL 3111 Circuits 1 or equivalent  |   |
| <b>3. Course logistics</b>  |   |
| Term: Fall 2019<br>Room: TBD;<br>Time: TBD;<br>Final Exam: TBD  |   |
| <b>4. Instructor contact information</b>  |   |
| 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   |
| <b>5. TA contact information</b>  |   |
| TA's name   | TBD   |
| Office address  | TBD   |
| Office Hours  | TBD   |
| Email address   | TBD   |
| <b>6. Course description</b>  |   |
| Fundamentals of power grid, such as phasor, transformers, transmission line, power flow, and symmetrical faults.  |   |
| <b>7. Course objectives/student learning outcomes/program outcomes</b>  |   |
| Course objectives   | By the end of the course, students will be able to:<br>1) Understand present and future trends in electric power systems;<br>2) Understand elementary aspects of phasor and balanced three-phase circuits;<br>3) Solve circuits with single-phase or three-phase transformers as well as autotransformers;<br>4) Analyze the performance of single-phase and balanced three-phase transmission lines under normal steady-state operating conditions;<br>5) Develop computer programs to perform power flow analysis on a power system and economic dispatch analysis for a electricity market;<br>6) Define contingency analysis on a power system and perform contingency studies using a power flow analysis program. |
| <b>8. Course evaluation method</b>  |   |
| Homework 35%; Midterm Exam 30%; Final Exam 30%; Attendance & Participation 5%   |   |
| <b>9. Course grading scale</b>  |   |
| Grading Scale:<br>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."<br>Note: Calculated grades will be rounded to the nearest integer.   |   |
| <b>10. Policy on makeup tests, late work, and incompletes</b>   |   |
| 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<br>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. |   |
| <b>11. Special course requirements</b>  |   |

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| None   |  |
| <b>12. Classroom etiquette policy</b>  |  |
| 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.   |  |
| <b>13. Disability policy statement</b>   |  |
| 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.  |  |
| <b>14. Honor code policy</b>   |  |
| 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 <a href="http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf">www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf</a> |  |
| <b>15. Counseling and Psychological Services Center</b>  |  |
| 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 <a href="http://www.fau.edu/counseling/">http://www.fau.edu/counseling/</a>   |  |
| <b>16. Required texts/reading</b>  |  |
| <u>Power System Analysis and Design</u> (Sixth Edition) by Glover, Overbye, Sarma, 2015 Cengage Learning ISBN-13: 978-1-305-63213- 4.  |  |
| <b>17. Course topical outline</b>  |  |
| <b>DATE</b>  | <b>TOPIC</b>   |
| Week 1   | -Course Introduction<br>-Power Industry History<br>-Review of Phasors<br>-Homework 1 posted                  |
| Week 2   | -Power Factor<br>-Three-Phase System<br>-Per Phase Analysis<br>-Homework 1 due; Homework 2 posted            |
| Week 3   | -Transformers<br>-Per Unit Analysis<br>-Homework 2 due; Homework 3 posted                                    |
| Week 4   | -Per Unit Analysis (continued)<br>-Three-Phase Transformers<br>-Homework 3 due; Homework 4 posted            |
| Week 5   | -Power System Operations<br>-Transmission Line Parameters (Inductance)<br>-Homework 4 due; Homework 5 posted |
| Week 6   | -Transmission Line Parameters (Capacitance and Resistance)<br>-Homework 5 due; Homework 6 posted             |

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