



ISTANBUL OKAN UNIVERSITY

FACULTY OF ENGINEERING

COURSE SYLLABUS

2019/2020 Spring

Course Code-Name	EEE308 – Fundamentals of Power Systems																																
Course Schedule	Monday 14:00-16:50 – C306																																
Instructor's Name Phone E-mail Homepage Office Hours	Asst. Prof. Dr. Ömer Cihan Kıvanç (216) 677-1630 Ext. 2460 cihan.kivanc@okan.edu.tr http://users.okan.edu.tr/cihan.kivanc Room 215																																
Assistants' Name Phone E-mail	N/A																																
Textbook(s)	N/A																																
Supplementary Materials	<p>Hadi Saadat, <i>Power System Analysis</i>, McGraw-Hill, 1999, ISBN: 0-07-561634-3, ISBN-13: 978-00-756-1634-4.</p> <p>Hadi Saadat, <i>Power System Analysis</i>, 2nd ed., McGraw-Hill Primis Custom Publishing, July 2002, ISBN-13: 978-0072848694.</p> <p>Zia A. Yamayee, Juan L. Bala, <i>Electromechanical Energy Devices and Power Systems</i>, 1st ed., John Wiley & Sons, October 1993, ISBN-13: 978-0471572176.</p> <p>Depabriya Has, <i>Electrical Power Systems</i>, New Age International (P) Limited Publishers, 2006, ISBN-13: 978-81-224-2515-4.</p> <p>Theodore Wildi, <i>Electrical Machines, Drives, and Power Systems</i>, 6th ed., Pearson Education International Edition, January 2005, ISBN-13: 978-0131969186.</p> <p>Stephen J. Chapman, <i>Electric Machinery and Power System Fundamentals</i>, 1st ed., McGraw-Hill, 2001, ISBN-13: 978-0072291353.</p> <p>Pieter Schavemaker and Lou van der Sluis, <i>Electrical Power System Essentials</i>, John Wiley & Sons, 2009, ISBN-13: 978-0470-51027-8.</p>																																
Course Outline (per weeks)	<table border="1"> <thead> <tr> <th>Week</th><th>Tentative Course Subjects</th></tr> </thead> <tbody> <tr> <td>1</td><td>Introduction to Power Systems (Components and Analysis)</td></tr> <tr> <td>2</td><td>Introduction to Power Systems (Components and Analysis)</td></tr> <tr> <td>3</td><td>Prerequisites, Per-unit system, Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)</td></tr> <tr> <td>4</td><td>Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)</td></tr> <tr> <td>5</td><td>Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)</td></tr> <tr> <td>6</td><td>Transmission Line Models (The short transmission line, the medium-length line, the long transmission line)</td></tr> <tr> <td>7</td><td>Transmission Line Models (The short transmission line, the medium-length line, the long transmission line)</td></tr> <tr> <td>8</td><td>Power Flow Solutions (Introduction, scope of power system analysis, one-line diagrams, power system modeling)</td></tr> <tr> <td>9</td><td>Midterm Exam (No Class)</td></tr> <tr> <td>10</td><td>Power Flow Solutions (Power flow analysis, power flow concept, node-voltage equations, classification of buses, the gauss-seidel method, the newton-raphson method)</td></tr> <tr> <td>11</td><td>Power Flow Solutions (Power flow analysis, power flow concept, node-voltage equations, classification of buses, the gauss-seidel method, the newton-raphson method)</td></tr> <tr> <td>12</td><td>Spring Break (No Class)</td></tr> <tr> <td>13</td><td>Computer Simulation of Electric Power Systems (PowerWorld Simulator)</td></tr> <tr> <td>14</td><td>Power System Faults (Fault analysis, single line-to-ground fault (SLG), line-to-line fault (L-L), double line-to-ground fault (2LG), balanced three-phase fault, three-phase fault analysis, symmetrical components, unsymmetrical fault analysis)</td></tr> <tr> <td>15</td><td>Power System Faults (Fault analysis, single line-to-ground fault (SLG), line-to-line fault (L-L), double line-to-ground fault (2LG), balanced three-phase fault, three-phase fault analysis, symmetrical components, unsymmetrical fault analysis)</td></tr> </tbody> </table>	Week	Tentative Course Subjects	1	Introduction to Power Systems (Components and Analysis)	2	Introduction to Power Systems (Components and Analysis)	3	Prerequisites, Per-unit system, Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)	4	Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)	5	Transmission Lines (Resistance, inductance and inductive reactance, capacitance and capacitive reactance for single and three-phase circuits)	6	Transmission Line Models (The short transmission line, the medium-length line, the long transmission line)	7	Transmission Line Models (The short transmission line, the medium-length line, the long transmission line)	8	Power Flow Solutions (Introduction, scope of power system analysis, one-line diagrams, power system modeling)	9	Midterm Exam (No Class)	10	Power Flow Solutions (Power flow analysis, power flow concept, node-voltage equations, classification of buses, the gauss-seidel method, the newton-raphson method)	11	Power Flow Solutions (Power flow analysis, power flow concept, node-voltage equations, classification of buses, the gauss-seidel method, the newton-raphson method)	12	Spring Break (No Class)	13	Computer Simulation of Electric Power Systems (PowerWorld Simulator)	14	Power System Faults (Fault analysis, single line-to-ground fault (SLG), line-to-line fault (L-L), double line-to-ground fault (2LG), balanced three-phase fault, three-phase fault analysis, symmetrical components, unsymmetrical fault analysis)	15	Power System Faults (Fault analysis, single line-to-ground fault (SLG), line-to-line fault (L-L), double line-to-ground fault (2LG), balanced three-phase fault, three-phase fault analysis, symmetrical components, unsymmetrical fault analysis)
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Midterm Date(s)	Week 9
Grading (Tentative)	<ul style="list-style-type: none"> • Midterm 50% • Final 50% <p>- The final course grade will be based on midterm exam and final exam.</p>
Attendance	Regularity of 70% is required in the class.
Additional Remarks	<p><u>Homework</u> Returning late homework will cause a low grade. Academic dishonesty explained below is applied.</p> <p><u>In the Exams</u> You must have your own calculator. No cell phones. No sharing of items during exams (erasers, pencils, tips, books, notes, calculators, etc.) Any person causing disruption during the exam will be asked to leave the exam and will receive a low grade. Academic dishonesty explained below is applied for all the exams.</p> <p><u>Academic Dishonesty</u> It is the philosophy of Okan University that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.</p> <p>Academic dishonesty or academic misconduct is any type of cheating that occurs in relation to a formal academic exercise. It can include</p> <p>Plagiarism: The adoption or reproduction of original creations of another author (person, collective, organization, community or other type of author, including anonymous authors) without due acknowledgment. Fabrication: The falsification of data, information, or citations in any formal academic exercise. Deception: Providing false information to an instructor concerning a formal academic exercise—e.g., giving a false excuse for missing a deadline or falsely claiming to have submitted work. Cheating: Any attempt to give or obtain assistance in a formal academic exercise (like an examination) without due acknowledgment. Bribery: or paid services. Giving certain test answers for money. Sabotage: Acting to prevent others from completing their work. This includes cutting pages out of library books or willfully disrupting the experiments of others.</p> <p>Cheating includes the following:</p> <ul style="list-style-type: none"> • giving or receiving information during an exam ("exam" includes tests and quizzes) • using unauthorized material (like notes) during an exam; unauthorized dissemination or receipt of exams, exam materials, contents, or answer keys • taking an exam or writing a paper for another student or asking someone to take an exam or write a paper for you (this includes shared work and/or group-produced answers on homeworks). • submitting the same paper—or different versions of what is substantially the same paper. • misrepresenting or fabricating written work, sources, research, or results as well as helping another student commit an act of academic dishonesty or lying to protect a student who has committed such an act. <p>Penalties for academic dishonesty are severe and can include, but are not limited to, a written reprimand, a zero on the assignment/exam, re-taking the exam in question, an F in the course, or expulsion from the University. Don't jeopardize your career by an act of academic dishonesty.</p> <p>References:</p> <ol style="list-style-type: none"> 1. Academic dishonesty. Wikipedia, the free encyclopedia. http://en.wikipedia.org/wiki/Academic_dishonesty 2. Lars R. Jones, Robert Taylor, Sharon Irvin, Leslie Faircloth http://www.fit.edu/current/documents/plagiarism.pdf