

# Syllabus for ELEG 5513 Power Systems Analysis

Summer 2018 8W1 session, University of Arkansas-Fayetteville

**Instructor:** Roy McCann, Ph.D., P.E.

Tel: 479-575-6054, Office Bell Engineering Center 3173

e-mail: [rmccann@uark.edu](mailto:rmccann@uark.edu)

**Text Book:** Power Systems Analysis and Design

Glover, Sarma and Overbye: Cengage ISBN-13: 978-1305632134 6<sup>th</sup> edition

Welcome to the course in analyzing power and energy systems. This class will introduce design and analysis concepts for electric power generation and transmission (> 100 kV). Topics include energy sources and conversion; power system components (high voltage circuit breakers, three-phase transformers, capacitors and transmission lines); load flow analysis; reference frame transformations; symmetrical and unsymmetrical fault conditions; 345 kV design project on transmission planning for a 600 MW wind farm interconnection.

The course is offered concurrently to students in the 8-week on-line MSE/MSEE session and on-campus UA-Fayetteville students.

**Weekly WebEx:** Tuesdays 6:30 PM – 7:30 PM central time zone are held. If a particular Tuesday is not available for a meeting, then Thursday at 6:30pm central or Saturday at 11:00am will be offered as a back-up. WebEx invitations are sent by email. The WebEx sessions are recorded for future reference and viewing by those who are not able to attend.

**Homework Assignments:** There will be homework assignments given each week and due Tuesday at 11:59pm. These will normally be taken from the end-of-chapter questions in the textbook. Student are encouraged to contact others in class to discuss solutions methods and results. However, the work you turn in must represent your understanding and be the result of your personal efforts. Assignments should be uploaded to BlackBoard.

**Tests:** There are two tests: Test 1 is after completing HW-1, 2, 3; Test 2 is taken after completing HW-4, 5, 6.

**Design Project:** There is a design project from the end of Chapter 6 section in the Glover-Sarma textbook. This is developed using a download of the student version of PowerWorld simulator (PowerWord.com).

## Course Grading

- |   |              |
|---|--------------|
| • Homework Assignments Combined:          | 20% of Total |
| • Two Written In-Class Tests at 20% Each: | 40% of Total |
| • Design Project:                         | 20% of Total |
| • Final Exam                              | 20% of Total |

## Grade Assignment Guidelines

Grades will be based upon an evaluation of each individual student's submitted coursework materials. For guidance purposes, the following are *approximate* grade assignments for the overall course average, and may be adjusted up or down:

90% to 100% → A

80% to 89% → B

70% to 79% → C

Less than 60% → D or F

**Class Topic Schedule (subject to modification)****8 week Summer (8W1) 2018 Term Schedule 5/29/2018– 7/19/2018 (instructional days)****All course materials must be turned in no later than Monday July 23 by 8:00am.**

<b>Week No.</b>	<b>Chapter/Section</b>	<b>Topic</b>
1	Chap 1 - 2	Circuit Analysis and System Operation
2	Chap 4	Transmission Line Analysis
3	Chap 3	Power System Component Models
4	Chap 5	Transmission Line Models: <b>Test 1</b>
5	Chap 6	Power Flow
6	Chap 6	Power Flow
7	Chap 7	Symmetrical Faults: <b>Test 2</b>
8	Chap 8	Symmetrical Components
--	<b>Final Project</b>	<b>Design Project Due 7/23/2018 8:00am</b>

Students are required to be aware of and comply with the University of Arkansas policies for academic integrity as described at <http://www.uark.edu/campus-resources/ree/honesty.html>.

**Summer 2018 Schedule**

<b>Week</b>	<b>Assignment</b>	<b>Due Date</b>	<b>Lecture Videos</b>	<b>Lecture Notes</b>
1	---	(Start 5/29)	6/2, 6/7	6/2, 6/7 6/9
2	HW-1	6/5	6/9	6/16, 6/17
3	HW-2	6/12	6/14	6/14
4	HW-3	6/19	6/16	6/17, 6/20
5	HW-4	6/26	6/21	6/21
6	HW-5	7/3	6/23, 6/28, 6/30, 7/5, 7/12	6/22, 6/23, 6/27,
7	HW-6	7/10	7/14, 7/19, 7/21, 7/26	6/28, 6/30, 7/7, 7/12
8	HW-7	7/13	----	7/14, 7, 19, 7/21, 7/26
9	Project	7/23	----	

Behavior in class is required to conform to University standards of conduct. In particular, the University faculty, administration and staff are committed to providing an equal educational opportunity to all students. The University of Arkansas does not condone discriminatory treatment of students or staff on the basis of age, disability, ethnic origin, marital status, race, religious commitment, gender, or sexual orientation in any of the activities conducted upon this campus.