Power System Operation Analysis (Fall 2018)
Syllabus

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Course # 1011097-002
Classroom 208, Tianjiabing Building, Xixi Campus (西溪校区田家炳书院 208)
Class time Tuesday 8:00-11:25am
Office hours Monday 2:00-3:00pm (email me before visit)
Web page Course materials will be posted on ZJU Cloud using the following URL or scan the QR code above. ZJU account login will be required.
https://pan.zju.edu.cn/share/2658ba8c4c5f673dd42597f8a0

Teaching assistant: None
Administrative assistant: Ms. Jing An (安竞, anjing@zju.edu.cn)
203, No.2 Academic Building, Yuquan Campus (玉泉校区教二 203)

Learning goals:

1. Master the language of power system dynamics
2. Learn fundamental concepts of stability in power systems
3. Model system components and control equipment
4. Analyze dynamic behavior in response to small and large disturbances.

Course prerequisites: Undergraduate courses of power system steady-state analysis and transient analysis (本科生课程，电力系统稳态分析及电力系统暂态分析) or equivalent

Textbook: "Power system control and stability," by P. M. Anderson and A. A. Fouad, second edition, 2003, Wiley and IEEE Press. Note that the text has 3 different editions: 1977, 1994 and 2003. It is OK to use 1994 edition but 2003 edition is recommended.

References:

[1] P. Kundur, "Power system stability and control," 1994, McGraw-Hill.
[2] P. W. Sauer and M. A. Pai, "Power system dynamics and stability," 2006, Stipes.
[3] T. Van Cutsem and C. Vournas, "Voltage stability of electric power systems," 1998, Springer.
[4] X.-F. Wang, Y.-H. Song, M. Irving, "Modern Power Systems Analysis", 2008, Springer.
[5] Z. Liu, "Electric Power and Energy in China", 2013, Wiley.
[6] J. McCalley, "EE554: Power System Dynamics", 2018, Iowa State University.
http://home.engineering.iastate.edu/~jdm/ee554/index.htm

Other materials: Class notes and other materials (e.g., papers, reports, etc) will be posted on the ZJU Cloud*. You may not need to read every resource in detail. It is suggested to review each resource in a skimming-mode so that you will be aware of what is in the resource. They are highly possible to help you in your own research and professional career.

Tests: There will be four in-class quizzes and one final exam during the semester.

The quiz sheets will be provided during selected classes, which include single/multiple choice questions, judgment questions, short answer questions. The answered sheets will be collected at the end of the class. It may take 10-15min to finish each in-class quiz.

The final exam will be open-book and open-note, and calculators will be allowed. No computer or phone. The exact date will be arranged by Graduate School and posted before lecture ends.

Project: The available topics for the course projects will be made available on Lecture #3. The project should be finished individually. No grouping is required. One may propose his/her own project topic related to power system dynamics, preferably suggested by his/her advisor. More details on the project requirement will be posted on Lecture #3. Students are required to report the topics selected before Lecture #4. The course project report will be collected on Lecture #8.

Grading policy:

In-class quizzes	30%
Project	30%
Final exam	40%

Communication: Feel free to communicate with me in any way that is convenient to you (after class, during office hours, email), for questions about the course material. Communication in English is suggested, even for those fluent in Chinese.

Academic misconduct: Academic misconduct in any form is in violation of Zhejiang University Student Disciplinary Regulations and WILL NOT be tolerated. This includes, but is not limited to: copying or sharing project works, plagiarism, having someone else do your academic work, or other misconduct behavior during final exam. Depending on the act, an F grade could be received. More details on academic misconduct regulations at ZJU can be found here.

http://grs.zju.edu.cn/redir.php?catalog_id=10032&object_id=12732

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http://www.gov.cn/flfg/2010-02/26/content_1544458.htm

Tentative Schedule of Lectures

Lecture	Date	Topic	Chapter	Note
#1	Sep. 18	Introduction to power system stability	1	Quiz #1
#2	Sep. 25	The classical model	2	
National Day Break				
#3	Oct. 9	Synchronous generation: Part I - machine	4	Quiz #2, Announce project topics
#4	Oct. 16	Synchronous generation: Part II - system	7, 8, 10, 11, 12	Determine project topics
#5	Oct. 23	Multi-machine simulation	5, 9	Quiz #3
#6	Oct. 30	Response to small disturbance	3, 6	
#7	Nov. 6	Voltage stability	N/A	Quiz #4
#8	Nov. 13	Advanced topics: TBD	N/A	Collect project report
Final Week				