

The University of Texas at Austin
Department of Electrical and Computer Engineering
EE 369 - Power Systems Engineering (Unique: 16585)
Fall 2019

Instructor: Hao Zhu, haozhu@utexas.edu

Date/time: TTh 2:00- 3:30, ECJ 1.316

Office hours: Tue 3:30-5:30 and by appointment, EER 7.868

TA: Kyung-bin Kwon, @utexas.edu

Office hours: TBD

Prerequisites: Upper-division standing, and EE313 with a grade of at least C-.

Credit Hours: 3

Textbook: Duncan Glover, Thomas Overbye, and Mulukutla Sarma, *Power System Analysis and Design*, Sixth Edition, Cengage Learning, 2017.

Additional References:

- A. Bergen and V. Vital, *Power Systems Analysis*, 2nd ed., Prentice-Hall, 2000
- William D. Stevenson, *Elements of Power System Analysis*, 1955.

Class Tour: We are planning a class tour to visit the UT campus power plant during one class.

Course Outline: The course is an introduction to power systems engineering, in particular, the aspects related to the modeling and analysis of electrical power networks that interconnect generation and loads. The course topics are listed here with the textbook chapter number. Please check out Canvas calendar regularly for any updates on the course plan and quiz/exam dates.

Week	Chapter(s)	Topic
Aug 29	1	Intro to power systems
Sep 3	2	Complex power and three-phase power
Sep 12	4,5	Modeling transmission lines
Sep 26	3	Transformers
Oct 3	6	Modeling generators and loads
Oct 8	6	Power flow formulation
Oct 15	6	Power flow solution methods
Oct 22	6	Simplified power flow models
Oct 29	6	Economic dispatch
Nov 5	6	Optimal power flow
Nov 12	7	Power system fault analysis
Nov 19	11	Power system stability
TBD	ST	Tour of campus power plants
TBD	ST	Electricity market
TBD	ST	Microgrid design
TBD	ST	Electric distribution and utilities

Evaluation:

Weekly Quizzes	20%
Two In-class Midterms	50% (25% each)
Final Exam	30%

Course Policy:

• Grading

- The final score will be used to establish the ranking for grades. Plus and minus letter grades may be assigned.
- Discussion of homework questions is encouraged. Please work on your own *independent* homework solutions in order to prepare for the quizzes.

• Midterm exam

- In-class exams with closed books and closed notes are tentatively scheduled for Oct 15 and Nov 19, 2019.
- You may bring in one hand-written letter-size notesheet (both-sides okay) and use standard calculators.

• Weekly quizzes

- In-class quizzes with closed books and closed notes are scheduled every week. Formulas needed will be provided on the board. You may ask for any additional formulas and use standard calculators.

- The questions will be based on homework problems that are posted before the quizzes.
- Please attend the full class every time in order to take the quiz. Your quiz score may not be counted if you show up only for the quiz.

- **Use of electronics in lecture**

- During lecture, please exclusively focus on following the lecture content and minimize your use of laptops, smart phones and other electronics. Excessive usage of electronics during class, particularly if affecting other students, will be asked to leave the class.
- Each lecture may consist of both presentation slides and hand-written notes on the board. Lecture notes will be available on Canvas on a timely basis.

Additional Information:

- **University Honor Code:** “The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, fairness, and respect toward peers and community.” <http://www.utexas.edu/about/mission-and-values>
- **Religious Holidays:** By UT Austin policy, you must notify the instructor of any pending absence at least fourteen (14) days prior to the date of observance of a religious holy day, or on the first class day if the observance takes place during the first fourteen days of the semester. If you must miss class, lab section, exam, or assignment to observe a religious holiday, you will have an opportunity to complete the missed work within a reasonable amount of time after the absence.
- **Students with Disabilities:** UT provides upon request appropriate academic accommodations for qualified students with disabilities. Disabilities range from visual, hearing, and movement impairments to ADHD, psychological disorders (e.g. depression and bipolar disorder), and chronic health conditions (e.g. diabetes and cancer). These also include from temporary disabilities such as broken bones and recovery from surgery. For more information, contact Services for Students with Disabilities at (512) 471-6259 [voice], (866) 329-3986 [video phone], ssd@uts.cc.utexas.edu, or <http://ddce.utexas.edu/disability>.
- **Mental Health Counseling:** Counselors are available Monday-Friday 8am-5pm at the UT’s Counseling and Mental Health Center (CMHC) on the 5th floor of the Student Services Building (SSB) in person and by phone (512-471-3515). The 24/7 UT Crisis Line is 512-471-2255.
- **Campus Carry:** “The University of Texas at Austin is committed to providing a safe environment for students, employees, university affiliates, and visitors, and to respecting the right of individuals who are licensed to carry a handgun as permitted by Texas state law.” For more information, please see <http://campuscarry.utexas.edu/students>.