

**ESE 271      ELECTRICAL CIRCUIT ANALYSIS      FALL, 2011**

Instructor: A.H. Zemanian

Room: Light Engineering 201.

Office Hours: Mondays and Wednesdays from 8:30 to 10:30 A.M

Textbook: "Electric Circuit Analysis," Third Edition, by Johnson, Johnson, Hilburn, and Scott.

Grading System: There will be three exams during the semester. In addition, there will be a final exam. Furthermore, every student is required to submit a course portfolio. About 95% of the course letter grade will be based on the exams and about 5% on the portfolio.

A student's score on each exam (including the final exam) will be divided by the class average for it to get a "normalized score" for each exam. Then, the lowest normalized score will be dropped, and the other three scores will be added to get a total normalized score for the student. If a student misses an exam, the score for that exam will be 0. If two or more exams are missed, the total normalized score will become smaller accordingly. Finally, if the student's portfolio is acceptable, 0.15 will be added to the total normalized score to get the course's numerical grade, and a lesser amount will be added if the portfolio is less acceptable. The course's letter grade will be based on a curve obtained from the numerical grades of all the students.

With regard to the portfolio, a set of portfolio problems and exercises will be listed for each assignment. The student should submit an original handwritten solution for each portfolio problem and exercise. (Machine copies will not be acceptable.) The portfolio problems are chosen from the problems listed at the end of each chapter of the textbook, and the portfolio exercises are chosen from within the chapters.

Notice Regarding the Final Grade: The P/NC option is not available on this course (or on any other CSE or ESE course).

Hours and Places for Tutorial Assistance Provided by the Teaching Assistants: These will be announced subsequently.

Handicapped Students: If you have a physical, psychological, medical, or learning disability that may impact on your ability to carry out assigned course work, you are urged to contact the staff in the Disability Support Services Office (DSS) in room 128 of the Educational Communications Center. DSS will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability is confidential.

## PROBLEM ASSIGNMENTS:

The portfolio problems given at the end of each chapter of the textbook, and the portfolio exercises are taken from within the chapters. Hand these in by the next-to-the-last week of the semester.

### Assignment 1:

Basic concepts for resistive circuits; 2 lectures.

Read Chapters 1 and 2.

Portfolio: Probs. 1.15, 2.17, 2.49, 2.58; Exercise 2.7.1 (page 61).

### Assignment 2:

Dependent sources and op amps; 3 lectures.

Read Chapter 3.

Portfolio: Probs. 3.9, 3.16, 3.17, 3.23, 3.31.

### Assignment 3:

Analysis methods; 6 lectures.

Read Chapter 4 and Appendix A.

Portfolio: Probs. 4.7, 4.21, 4.35, 4.39, 4.43, 4.45.

### Assignment 4:

Energy storage elements; 2 lectures.

Read Chapter 5.

Portfolio: Probs. 5.6, 5.15, 5.27; Exercise 5.7.2, (page 195); also, Appendix A problems (to be announced).

Assignment 5:

Phasors: 3 lectures.

Read Chapter 8 and Appendix B.

Portfolio: Probs. 8.13(a), 8.13(d), 8.14(d), 8.27, 8.32, 8.41; also, complex-number problems (to be announced).

Assignment 6:

AC steady-state analysis: 4 lectures.

Read Chapter 9.

Portfolio: Probs. 9.7, 9.13, 9.19, 9.21.

Assignment 7:

AC steady-state analysis (continued): 3 lectures.

Read Chapter 10.

Portfolio: Probs. 10.4, 10.5, 10.13(c), 10.25, Exercise 10.5.1 (page 428).

Assignment 8:

Piecewise linear functions and delta functions.

Read pages 234-239 and 486-493.

Portfolio: Probs. 6.39, 6.40, 12.12(a), 12.13(a),(d), 12.14(a),(b), 12.19.

Assignment 9:

Integro-differential equations for circuits: 1 lecture.

Read pages 273-276 and 510-511.

Portfolio: Probs. Just write the integro-differential equations for 7.2, 7.7, 7.41, 7.43; also, extra problems (to be announced).

Assignment 10:

Laplace transforms: 6 lectures.

Read Chap. 12.

Portfolio: Probs. 12.1, 12.10, 12.27(b), 12.31(a), 12.32(a).

Assignment 11:

Transient circuit analysis: 5 lectures:

Read Chapter 13.

Portfolio: Probs. 13.6, 13.15, 13.19, 13.27, 13.29, 13.49, 13.53.

Assignment 12:

Mutual inductance and transformers: 2 lectures.

Read Chapter 15.

Portfolio: Probs. 15.9, 15.11, 15.29, 15.31.