

**50:750:233 ELECTRIC CIRCUITS I**  
**Fall 2022 Rutgers University Camden**

Topics

basic circuit elements, resistive circuits including Ohm's Law and Kirchhoff's Laws, node voltage analysis, mesh current analysis, superposition principle, Thevenin and Norton equivalent circuits, op-amps and their applications, capacitors, inductors, basic ordinary differential equations, first and second order transient circuits, complex variables review, AC circuits steady-state analysis and the power analysis.

Learning Goals

Students will be able to view any DC circuit networks from multiple perspectives, and set up linear equations and solve; Students will gain a refreshing and comprehensive understanding of the concept of linearity; Students will be able to solve any transient circuits containing capacitors and inductors with first order and second order differential equations; Students will be able to set up second order differential equations for any AC circuit steady states, and solve by matching to the standard forms; Students will be prepared for advanced courses in electrical engineering.

Co-requisite

50:750:235, Electric Circuits Laboratory I.

Lecture Time and Location

Tuesday 6pm ~ 8:50pm, CNS 312A.

Instructor

Jiantao Kong, email: [jk1729@rutgers.edu](mailto:jk1729@rutgers.edu), or message on Canvas (preferred).

Office Hours

Tuesday Thursday 3:30pm ~ 5pm in CNS 216G, or by appointment.

Textbook

Basic Engineering Circuit Analysis 11<sup>th</sup> edition by J. D. Irwin and R. M. Nelms; One hard copy is reserved in the Robson Library; Hard copy can also be purchased from the University Bookstore, not required; Digital PDF will work perfectly fine.

Course Website

Canvas, all course materials will be posted there.

Homework Assignments

Problems will be selected from the textbook and other sources, approximately weekly posted on Canvas-Assignments, due date will be specified each time. Students solve the problems on their own paper sheets, make into pictures or PDFs and upload to the Canvas-Assignments link as submission. Working directly on a tablet and turning in digital files is even better.

One Midterm Exam

Close-book, in class in mid-October covering book chapters 1, 2, 3, 5 and 4. Exact sections will be specified in an exam guide.

### Final Exam

Close-book, comprehensive, covering book chapters 1, 2, 3, 5, 4, 6, 7, 8 and 9. A self-prepared hand-written one-sided A4 equation sheet will be allowed and expected.

### Grades

midterm (30%) + homework (20%) + final (40%) + attendance (10%)

>90.0	>86.0	>80.0	>76.0	>70.0	>60.0	
A	B+	B	C+	C	D	F

### [Academic Integrity Policy](#)

For homework assignments, discussions and group studies are allowed and encouraged, but the work you submit should be absolutely your own, NO COPYING. For exams, no communication is allowed, any evidence of cheating would have to be reported to the University.

### Accommodations

Please feel free to talk to me and to the Office of Dean of Students, and it will be offered with University authorization.

This syllabus might be updated on Canvas without further notice.

THE END