EENG-SHU **251**
Circuits

Instructor Information

- Pingping DING, Associate Professor of Practice of Engineering
- Office: 1156
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- Office hours: Monday & Wednesday 2:00 pm - 4:00 pm

Course Information

- Spring 2022
- 4 credits
- This course covers Passive DC circuit elements, Kirchhoff's laws, electric power calculations, analysis of DC circuits, Nodal and Mesh analysis techniques, voltage and current division, Thevenin's and Norton's theorems, source-free and forced responses of RL/RC/ RLC circuits, and operational amplifiers.
- This course is a fundamental core course for degrees in ECE.
- Class cap size: 15 students
- Prerequisite: Calculus (MATH-121) or Honors Calculus (MATH-201)
- Course schedule:
    - Lecture/Recitation: Monday & Wednesday 9:45 am-11:00 am, Room 307
    - Laboratories: Friday 9:15 am-11:05 am, Room 711

Course Learning Outcomes

Lectures/Recitations:

- Ability to apply circuit theorems.
- Ability to analyze first and second order linear circuits.
- Ability to analyze linear circuits containing operational amplifiers.
- Ability to use phasors for steady-state sinusoidal circuit analysis.

Laboratories:

- Ability to wire circuits on a breadboard.
- Ability to use DC power supplies, multimeters, oscilloscopes, voltage probes and function generators.
- Ability to accurately measure current, voltage, energy, and power in DC and AC circuits.
- Ability to use a PSPICE software and compare results to those experimentally measured.

Course Requirements

Learning Materials

Recommended textbook:

Engineering Circuit Analysis (9th Edition) by William H. Hayt, Jack Kemmerly, Steven M. Durbin, McGraw-Hill Education, ISBN: 978-1260084887

SPICE Software:

Students will have to simulate circuits on a computer with a SPICE ("Simulation Program with Integrated Circuit Emphasis") software during laboratories.
Recommended free online tool: www.circuitlab.com (students can register to get a license for free with their NYU email)

Grades (Assessment, Measurement and Evaluation)

The grade for this course will be determined according to the following formula:

Assignments/Activities	% of Final Grade
Final Exam	30%
Midterm Exam	20%
Homework assignments	30%
Lab assignments	20%

Letter Grades

Letter grades for the entire course will be assigned as follows:

Letter Grade	Points	Percent
A	4.00	95% and higher
A-	3.67	90% - 94.99%
B+	3.33	87% - 89.99%
B	3.00	83% - 86.99%
B-	2.67	80% - 82.99%

Letter Grade	Points	Percent
C+	2.33	77% - 79.99%
C	2.00	73% - 76.99%
C-	1.67	70% - 72.99%
D+	1.33	67% - 69.99%
D	1.00	63% - 66.99%
F	.00	62.99% and lower

Grading Evaluation Scale

NYU Shanghai follows the same grading practices as NYU New York. The following grades may be awarded: A, A-, B+, B, B-, C+, C, C-, D+, D, F. In general, A indicates excellent work, B indicates good work, C indicates satisfactory work, and D indicates passable work and is the lowest passing grade. F indicates failure. There are some additional grades—P for pass, W for Withdrawal—which are awarded administratively.

Grade Dissemination

Graded tests and materials in this course will be returned individually only by request. You can access your scores at any time using the Grade Book Function of NYU Classes.

Course Policies

Class Attendance and Participation

Students are expected to attend all scheduled classes unless the instructor explicitly informs the class that other ways of doing the work are acceptable.

No student shall leave a scheduled exercise because of the absence of the instructor until a reasonable time has passed. By tradition and as a matter of courtesy, a student should wait ten minutes before leaving.

Late Assignment

Assignments are due **at the date and time indicated in the syllabus**. Missed assignments will be earn an F. Exceptions can be made only with the prior approval of the instructor.

Instructional Technology

Email/Texting: You can contact the instructor by email whenever you have a question regarding the course. You can usually expect an answer within 24 hours (except during weekends).

Mobile Devices (laptop/tablet/smartphone) Expectations:
You can use your laptop during class only for:

- Taking notes
- Using a SPICE software for the simulation of circuits
- Check the lecture slides on NYU Classes

The use of mobile phone during the lectures/recitations/laboratories is prohibited.

Professionalism Policy

Please attend to all university policy and classroom etiquette procedures. Those not heeding the policies will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time, be attentive, and respectful for all class meetings. Students who habitually disturb the class by talking, arriving late or other unprofessional behavior may suffer a reduction in their final class grade.

Academic Honesty/Plagiarism

All students are expected to adhere to the Academic Standards and Discipline.

Disability Disclosure Statement

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

NYU is committed to providing equal educational opportunity and participation for students with disabilities. It is NYU Shanghai's policy that no student with a qualified disability be excluded from participating in any NYU Shanghai program or activity, denied the benefits of any NYU Shanghai program or activity, or otherwise subjected to discrimination with regard to any NYU Shanghai program or activity. Any student who needs a reasonable accommodation based on a qualified disability is required to register with the CSD for assistance. Students can register online through the Moses Center and can contact the Director of the Academic Resource Center with questions or for assistance.

Title IX Compliance

From the NYU Title IX website: "Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination on the basis of sex in educational programs. It protects victims of sexual or gender-based bullying and harassment and survivors of gender-based violence. Protection from the discrimination on the basis of sex includes protection from being retaliated against for filing a complaint of discrimination or harassment. NYU is committed to complying with Title IX and enforcing University policies prohibiting discrimination on the basis of sex. Mary Signor, Executive Director of the Office of Equal Opportunity, serves as New York University's Title IX Coordinator. The University's Title IX Coordinator is a resource for any questions or concerns about sex discrimination, sexual harassment, sexual violence, or sexual

misconduct and is available to discuss your rights and judicial options. University policies define prohibited conduct, provide informal and formal procedures for filing a complaint and a prompt and equitable resolution of complaints.

Religious Observances

New York University, as a nonsectarian institution, adheres to the general policy of including in its official calendar only certain legal holidays. However, it has also long been NYU policy that members of any religious group may, without penalty, excuse themselves from classes when compliance with their religious obligations requires it. In 1988, the University Senate affirmed this policy and passed the following resolution:

1. Students who anticipate being absent because of any religious observance should, whenever possible, notify faculty in advance of such anticipated absence;
2. Whenever feasible, examinations and assignment deadlines should not be scheduled on religious holidays. Any student absent from class because of religious beliefs shall not be penalized for any class, examination, or assignment deadline missed on that day or days.
3. If examinations or assignment deadlines are scheduled, any student who is unable to attend class because of religious beliefs shall be given the opportunity to make up that day or days.
4. No adverse or prejudicial effects shall result to any student who avails himself or herself of the above provisions.

Course Schedule

Topics and Assignments

	Topic	**Assignments/Midterm**
Week 1	Introduction - Basic passive elements	
Week 2	Voltage, Current and Power laws – Series and Parallel equivalences	
Week 3	Nodal analysis	
Week 4	Mesh analysis	Homework 1 due
Week 5	Superposition – Thévenin and Norton equivalences	
Week 6	Review	Homework 2 due Midterm
Week 7	Capacitors and Inductors	
Week 8	First-order circuits	
Week 9	RLC circuits	

	Topic	Assignments/Midterm
Week 10	Operational Amplifiers	
Week 11	Steady state AC analysis	Homework 3 due
Week 12	Phasors	
Week 13	AC Power analysis	
Week 14	Review	Homework 4 due

Resources

- **Access your course materials**: NYU Brightspace