



University of Michigan

—•交大密西根学院•—

UM-SJTU Joint Institute



Shanghai Jiao Tong University

Course Profile

Degree Program:

- ☐ ECE-Electrical & Computer Engineering
☐ ME -Mechanical Engineering
☒ General Courses for Both ECE & ME Degree Programs

Course Name: Introduction to Electric Circuits

Course Code: VE215

Course Credits: 4.0

Course Category: ☒ Required ☐ Elective

Terms Offered:

- ☒ Fall 2019-2020 (YYYY-YYYY)
☐ Spring _____ (YYYY-YYYY)
☐ Summer _____ (YYYY-YYYY)

Course Pre/Co-requisites:

VV156 or VV186, VG101, Co-requisite VP240 (or VP260)

Textbook: (Reference Books could also be listed here)

- Required: *Fundamentals of Electric Circuits*, 5/e, by Charles K. Alexander and Matthew N. O. Sadiku, McGraw Hill, 2013, ISBN 978-0-07-338057-5
- Lab Manual: *Circuits Make Sense – A New Lab Book for Introductory Courses in Electric Circuits*, 5/e, by Alexander Ganago (Department of Electrical Engineering and Computer Science, University of Michigan), John Wiley & Sons, 2007, 9780470106792

Instructors:

Sung-Liang Chen (陈松良)

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Office Hours: All Tuesdays and Wednesdays 2:00-3:00pm, Room 428, JI Building

Teaching Assistants:

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Grading Policy:

Ve215 has 10 problem sets (homework assignments), 5 labs, and 3 exams:

In-class Quizzes: 5%

Problem Sets: 15%

Labs: 15%

Exam 1 (Midterm Exam 1): 20%

Exam 2 (Midterm Exam 2): 20%

Exam 3 (Final Exam): 25%



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Academic Integrity: (Any types of honor code regulations like class rules, homework policy, exam rules or project collaboration policy could be defined here)

- Problem sets (homework assignments) may be done with partners, but I believe that you do not fully understand the technical material unless you work on enough problems by yourself.
- Exams will be given under the JI's Honor Code and will require individual efforts. The exams will be closed book, even though you can take one, two, and three pieces of cheating paper for your Midterm Exam 1, Midterm Exam 2, and Final, respectively. Scientific calculators can be used for the exams. The use of other electronic devices such as electronic dictionary and cell phone during exams will constitute an Honor Code violation. If you miss an exam, real documentation is required stating why you could not attend (severe disease, for example).
- The labs will help you develop engineering skills. Unexcused absence will result in a grade of zero for the missed and the student has the responsibility of contacting the instructor or teaching assistant to make up the missed lab. Skipping lab activities will result in an "F" or "Fail" for this course.

Course description and detailed teaching schedules:

Course Description: Introduction to electric circuits. Basic concepts of voltage and current; kirchhoff's voltage and current laws; Ohm's law; voltage and current sources; Thevenin and Norton equivalent circuits; DC and low active circuits using operational amplifiers; diodes, and transistors; energy and power. Time- and frequency-domain analysis of RLC circuits. Basic passive and active electronic filters. Laboratory experience with electrical signals and circuits.

Tentative Teaching Schedule:

Week	Date	Lecture Topics	Homework	Labs
1	Sep 9	Introduction to Ve215, Basic concepts (Sections 1.3-1.7)		
	Sep 11	Basic laws (2.1-2.8)	HW1 issued	
	Sep 13	Moon Festival		
2	Sep 16	Methods of analysis (3.1-3.6)		
	Sep 18	Methods of analysis (3.7,3.9), Circuit theorems (4.1-4.4)	HW2 issued	
	Sep 20	Circuit theorems (4.5-4.8, 4.10)		
3	Sep 23	Operational amplifiers (5.1-5.5)	HW3 issued	
	Sep 25	Operational amplifiers (5.6-5.8, 5.10)		
	Sep 27	Capacitors and inductors (6.1-6.6)	HW4 issued	
4	Sep 30	No lecture, Midterm Exam 1		
	Oct 2	No lecture, National Holiday		
	Oct 4	No lecture, National Holiday		
5	Oct 7	No lecture, National Holiday		Lab1
	Oct 9	First-order circuits (7.1-7.4)		
	Oct 11	No lecture [course rescheduling]		
6	Oct 14	First-order circuits (7.5-7.7, 7.9)	HW5 issued	Lab2
	Oct 16	Second-order circuits (8.1-8.6)		
7	Oct 21	Second-order circuits (8.7-8.8, 8.10-8.11)	HW6 issued	Lab3
	Oct 23	Sinusoids and phasors (9.1-9.4)		
	Oct 23 2:00pm- 3:40pm (tentative)	Sinusoids and phasors (9.5-9.8) [make-up for Oct. 11]		
8	Oct 28	Sinusoidal steady-state analysis (10.1-10.6)		Lab4
	Oct 30	Sinusoidal steady-state analysis (10.7, 10.9)	HW7 issued	
9	Nov 4	No lecture, Midterm Exam 2		Lab5
	Nov 6	AC power analysis (11.1-11.6)		
10	Nov 11	AC power analysis (11.7-11.9)		



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	Nov 13	Three-phase circuits (12.1-12.6)		
11	Nov 18	Three-phase circuits (12.7-12.8, 12.10)	HW8 issued	
	Nov 20	Magnetically coupled circuits (13.1-13.5)		
12	Nov 25	Magnetically coupled circuits (13.6-13.7, 13.9)	HW9 issued	
	Nov 27	Frequency response (14.1-14.3)		
13	Dec 2	Frequency response (14.4-14.6)	HW10 issued	
	Dec 4	Frequency response (14.7-14.8)		
14	Dec 9	No lecture, Final Exam		