



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 2016-2017 (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:

Mohamed Atef

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Office Hours: Tuesday and Thursdays 10 AM to 12 PM, Room 409, 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 13	Introduction to Ve215, Basic concepts (Sections 1.3-1.7)		
	Sep 15	No Lecture Moon Festival-Sep 15		
2	Sep 19	Basic laws (2.1-2.8)	HW1 issued	
	Sep 20	Methods of analysis (3.1-3.6)		
	Sep 22	Methods of analysis (3.7,3.9), Circuit theorems (4.1-4.4)	HW2 issued	
3	Sep 26	Circuit theorems (4.5-4.8, 4.10)	HW3 issued	
	Sep 27	Operational amplifiers (5.1-5.3)		Lab1
	Sep 29	Operational amplifiers (5.4-5.7)	HW4 issued	
4	Oct 3	No lecture, National Holiday		
	Oct 4	No lecture, National Holiday		
	Oct 6	No lecture, National Holiday		
5	Oct 10	Operational amplifiers (5.8, 5.10)		Lab2
	Oct 11	Capacitors and inductors (6.1-6.6)		
	Oct 13	No lecture, Midterm Exam 1		
6	Oct 17	No lecture, MWSCAS Conference		
	Oct 18	No lecture, MWSCAS Conference		
	Oct 20	No lecture, MWSCAS Conference		
7	Oct 24	First-order circuits (7.1-7.4)		
	Oct 25	First-order circuits (7.5-7.7, 7.9)	HW5 issued	Lab3
	Oct 27	Second-order circuits (8.1-8.6)		
8	Oct 31	Second-order circuits (8.7-8.8, 8.10-8.11)		
	Nov 1	Sinusoids and phasors (9.1-9.4)	HW6 issued	
	Nov 3	Sinusoids and phasors (9.5-9.8)		
9	Nov 8	Sinusoidal steady-state analysis (10.1-10.6)	HW7 issued	Lab4
	Nov 10	Sinusoidal steady-state analysis (10.7, 10.9)		
10	Nov 14	AC power analysis (11.1-11.6)		Lab5
	Nov 15	No lecture, Midterm Exam 2		



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	Nov 17	AC power analysis (11.7-11.9)		
11	Nov 22	Three-phase circuits (12.1-12.6)		
	Nov 24	Three-phase circuits (12.7-12.8, 12.10)	HW8 issued	
12	Nov 28	Magnetically coupled circuits (13.1-13.5)		
	Nov 29	Magnetically coupled circuits (13.6-13.7, 13.9)	HW9 issued	
	Dec 1	Frequency response (14.1-14.3)		
13	Dec 6	Frequency response (14.4-14.6)	HW10 issued	
	Dec 8	Frequency response (14.7-14.8)		
14	Dec 12	No lecture, Final Exam		