



JOINT INSTITUTE  
交大密西根学院

# VE215 Introduction to Circuits

Fall 2020

(Last Updated on 2020/September/29)

**Degree Program:**

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

**Course Name:** Introduction to Circuits

**Course Code:** VE215

**Course Credits:** 4.0

**Course Category:** ✓ Required   ☐ Elective

**Course Pre/Co-requisites:** VV156 or VV186, VG101, Co-requisite VP240 (or VP260)

**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; energy and power. Time- and frequency-domain analysis of RLC circuits. Basic passive and active electronic filters. Laboratory experience with electrical signals and circuits.

**Textbook:**

- 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



### Instructor:

Yuljae Cho (赵栗在), *Ph.D.*

Email: [yuljae.cho@sjtu.edu.cn](mailto:yuljae.cho@sjtu.edu.cn)

### Teaching Assistant:

Yuchuan Tian (田雨川), [tianyc@sjtu.edu.cn](mailto:tianyc@sjtu.edu.cn)

Yipeng Lin (林意朋), [lore\\_l@sjtu.edu.cn](mailto:lore_l@sjtu.edu.cn)

Lan Zhang (张澜), [alexzl@sjtu.edu.cn](mailto:alexzl@sjtu.edu.cn)

### Contact Hour:

Wednesdays 2:00 – 4:00 pm

**Lectures:** Mondays and Wednesdays 8:00 – 9:40 am

	Sep				Oct				Nov					Dec		
Monday	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21
Tuesday	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22
Wednesday	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23
Thursday	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24
Friday	11	18	25	2	9	16	23	30	6	13	20	27	4	11	18	25
Saturday	12	19	26	3	10	17	24	31	7	14	21	28	5	12	19	26
Sunday	13	20	27	4	11	18	25	1	8	15	22	29	6	13	20	27
Jl Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14		

### Tentative Course Schedules:

Week	Date	Lecture Topics	Homework: main content; may vary slightly	Labs
1	Sep 7	Introduction to VE215, Ch1.Basic concepts		
	Sep 9	Ch2.Basic laws		
2	Sep 14	Ch3.Methods of analysis		Lab 1
	Sep 16	Ch3.Methods of analysis	HW1: Chaps.1-3	
3	Sep 21	Ch4.Circuit theorems		Lab 2
	Sep 23	Ch4.Circuit theorems	HW2: Chap4	
4	Sep 28	Ch5.Operational amplifiers		Lab 3
	Sep 30	Ch5.Operational amplifiers		
5	Oct 5	No lecture, National Holiday		
	Oct 7	No lecture, National Holiday		
	<b>Oct 10</b>	<b>Ch6.Capacitors and inductors</b>		
6	Oct 12	Ch7.First-order circuits	HW3: Chaps5,6	Lab4
	Oct 14	Ch7.First-order circuits		
7	Oct 19	Ch8.Second-order circuits		Lab5



	Oct 21	Ch8.Second-order circuits		
8	Oct 26	Ch9.Sinusoids and phasors	HW4: Chaps7,8	
	Oct 28	Ch10.Sinusoidal steady-state analysis		
9	Nov 2	No lecture, Midterm Exam		
	Nov 4	Ch11.AC power analysis	HW5: Chaps9,10	
10	Nov 9	Ch11.AC power analysis		Lab6
	Nov 11	Ch12.Three-phase circuits		
11	Nov 16	Ch12.Three-phase circuits		Lab7
	Nov 18	Ch13.Magnetically coupled circuits	HW6: Chaps11,12	
12	Nov 23	Ch13.Magnetically coupled circuits		Lab8
	Nov 25	Ch14.Frequency response	HW7: Chap13	
13	Nov 30	Ch14.Frequency response		Lab9
	Nov 2	Ch14.Frequency response & Review	HW8: Chap14	
14	Dec 7	No lecture, Final Exam		

### Grading Policy:

- 8 problem sets (homework assignments) 10%
- 8 in-class quizzes (also for checking attendance) 10%
- 9 Labs 15%
- Midterm Exam 30%
- Final Exam 35%

### Academic Integrity:

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 and two pieces of cheating paper for your Midterm Exam and Final Exam, 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.



JOINT INSTITUTE  
交大密西根学院

### **Important Notification Regarding Online Courses (where applicable)**

Teaching and learning materials, such as lecture slides, assignments, quizzes, videos etc. are copyrighted and may not be passed on to others without the express permission of the course instructor. This applies in particular to recordings of Zoom lectures and other videos created by instructors. In particular, it is not permissible to upload videos to sharing platforms (such as Youku or YouTube) or to post lecture slides, assignment questions, project descriptions etc. on public sites such as SlideShare.

### **Online Presence and Activities (where applicable)**

The Joint Institute imposes a “real name” policy for all online activities organized by JI instructors. This policy applies to groups or communication by E-Mail, Canvas, Piazza, Zoom, WeChat and all other platforms where groups are set up by JI or by individual instructors for students attending JI courses, events or other activities.

Students are required to use their actual name (in Pinyin) as part of their online presence for such groups and when communicating online. Account names, meeting IDs, passwords and other information intended to protect the exclusivity of such activities may not be shared with anyone who is not part of the course or activity.

### **Online Etiquette (where applicable)**

When communicating or otherwise using online groups, students should follow the regulations set down by instructors concerning the use of online tools. Vandalism, spam messages, verbal and other forms of abuse, violation of English-only policies (as detailed by instructors) and disturbance of the learning experience of other students are not permitted.