



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: Electromagnetics I

Course Code: VE230

Course Credits: 4.0

Course Category:  Required  Elective

### Terms Offered:

- Fall \_\_\_\_\_ (YYYY-YYYY)  
 Spring \_\_\_\_\_ (YYYY-YYYY)  
 Summer 2019-2020 (YYYY-YYYY)

### Course Pre/Co-requisites:

Vv255 or Vv285, Vp240 (or Vp260), Ve215

### Textbook: (Reference Books could also be listed here)

- Required: Field and Electromagnetics (2nd Edition), David K. Cheng, 清华大学出版社 9787302152125
- Reference books:
  1. Introduction to Electrodynamics (3rd Edition), David J. Griffiths, 世界图书出版公司 9787506272896
  2. Elements of Engineering Electromagnetics (5th Edition), Nannapaneni Narayana Rao, Prentice Hall International, Inc. ISBN: 0130255610
  3. Fundamentals of Applied Electromagnetics (7th Edition), F. T. Ulaby, U. Ravailoi, Pearson, ISBN: 0133356817
  4. Electricity and Magnetism (3<sup>rd</sup> Edition), Edward M. Purcell and David J. Morin, Cambridge, ISBN: 9781107014022
  5. The Feynman Lectures on Physics, Richard P. Feynman, Robert B. Leighton, and Matthew Sands, Pearson, ISBN: 0201510049

### Instructors:

Sung-Liang Chen (陈松良)

[sungliang.chen@sjtu.edu.cn](mailto:sungliang.chen@sjtu.edu.cn)

Lecture Hours: Mondays 8:00-9:40; Wednesdays 8:00-9:40; Fridays 8:00-9:40 (even weeks)

Office Hours: Tuesdays 9:00-11:00 (via Zoom)

### Teaching Assistants:

TA1: Xiaolei Zheng (郑晓蕾), [kimzhengxiaolei@sjtu.edu.cn](mailto:kimzhengxiaolei@sjtu.edu.cn)

TA2: Yitao He (何屹滔), [lich97zz@sjtu.edu.cn](mailto:lich97zz@sjtu.edu.cn)

TA3: Dingyu Wang (王定宇), [altonwang@sjtu.edu.cn](mailto:altonwang@sjtu.edu.cn)

### Grading Policy:

Ve230 has 9 problem sets (homework assignments), 5 quizzes, and 3 exams. **The assignments will not be**

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**graded BUT will play a crucial role for students whose final grade is at the border line. Some problems given at exams will be picked up from assignments.**

In-class unannounced quizzes: 20%

Problem Sets: 0%

Exam 1 (Midterm Exam 1): 25%

Exam 2 (Midterm Exam 2): 25%

Exam 3 (Final Exam): 30%

**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. 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).

## Course description and detailed teaching schedules:

**Course Description:** Vector calculus; Electrostatics; Magnetostatics; Energy and elementary circuits; Maxwell's equations; Plane waves.

### Tentative Teaching Schedule: (60 lecture hours for **Lecturing + Discussion**)

Week	Date	Lecture Topics	Homework
1	May 11	Introduction, Ch2. Vector Analysis	
	May 13	Ch2. Vector Analysis	
2	May 18	Ch2. Vector Analysis	
	May 20	Ch3. Static Electric Fields	HW1 issued
	May 22	Ch3. Static Electric Fields	
3	May 25	Ch3. Static Electric Fields	HW2 issued
	May 27	Ch3. Static Electric Fields	
4	Jun 1	Ch3. Static Electric Fields	
	Jun 3	Ch3. Static Electric Fields	HW3 issued
	Jun 5	Ch4. Solution of Electrostatic Problems	
5	Jun 8	No lecture, Midterm Exam 1	
	Jun 10	Ch4. Solution of Electrostatic Problems	
6	Jun 15	Ch4. Solution of Electrostatic Problems	
	Jun 17	Ch5. Steady Electric Currents	HW4 issued
	Jun 19	Ch5. Steady Electric Currents	
7	Jun 22	Ch6. Static Magnetic Fields	HW5 issued
	Jun 24	Ch6. Static Magnetic Fields	
8	Jun 29	Ch6. Static Magnetic Fields	
	Jul 1	Ch6. Static Magnetic Fields	HW6 issued
	Jul 3	Ch6. Static Magnetic Fields	
9	Jul 6	No lecture, Midterm Exam 2	
	Jul 8	Ch7. Time-Varying Fields and Maxwell's Equations	
10	Jul 13	Ch7. Time-Varying Fields and Maxwell's Equations	
	Jul 15	Ch7. Time-Varying Fields and Maxwell's Equations	HW7 issued
	Jul 17	Ch8. Plane Electromagnetic Waves	
11	Jul 20	Ch8. Plane Electromagnetic Waves	HW8 issued
	Jul 22	Ch8. Plane Electromagnetic Waves	
12	Jul 27	Ch8. Plane Electromagnetic Waves	
	Jul 29	Ch8. Plane Electromagnetic Waves	HW9 issued
	Jul 31	Ch8. Plane Electromagnetic Waves	



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13	Aug 3	No lecture, Final Exam	
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