



COURSE NUMBER: Ve230	COURSE TITLE: Electromagnetics I
CREDIT: 4	PREREQUISITES: Vv255 or Vv285, Vp240 (or Vp260), Ve215
TEXTBOOKS/REQUIRED MATERIAL: Field and Electromagnetics (2nd Edition), David K. Cheng, 清华大学出版社 9787302152125	PREPARED BY: Sung-Liang Chen LAST UPDATED: October 22, 2020 DATE OF DISCIPLINE GROUP APPROVAL: DATE OF UC APPROVAL:
CATALOG DESCRIPTION (No more than 100 words): This course is designed to cover basic concepts of electromagnetics. Specifically, students will learn the basic principles of electrostatics and magnetostatics. Besides, students will also learn Maxwell's equations and electromagnetic waves.	COURSE TOPICS: Vector analysis. Electrostatics. Steady electric currents. Magnetostatics. Time-varying fields and Maxwell's equations. Plane electromagnetic waves.
COURSE STRUCTURE and CONTACT HOUR: 48 hours of Lecture/ 36 hours of Lab/ 4 hours of recitation classes	
COURSE OUTCOMES [Student Outcomes* in brackets] <i>for each course outcome, links to the Student Outcomes are identified in brackets.</i>	(The following is an example. Please delete it when you compose your own document.) <ol style="list-style-type: none"> 1. Review the basic concepts of vector analysis. [1] 2. Understand the knowledge about electrostatics. [1, 2] 3. Understand the knowledge of steady electric currents. [1, 2] 4. Understand the knowledge of magnetostatics. [1, 2] 5. Understand time-varying fields and Maxwell's equations and be able to solve related problems. [1, 2, 7] 6. Understand the knowledge of planar electromagnetic waves. [1, 2, 7]
COURSE OBJECTIVES [Course Outcomes in brackets] <i>for each course objective, links to the course outcomes are identified in brackets.</i>	(The following is an example. Please delete it when you compose your own document.) <ol style="list-style-type: none"> 1. To provide students a review of vector analysis. [1] 2. To teach students electrostatics. [2] 3. To teach students steady electric currents. [3] 4. To teach students magnetostatics. [4] 5. To teach students Maxwell's equations and time-harmonic fields. [5] 6. To teach students planar electromagnetic waves. [6]
ASSESSMENT TOOLS [Course Outcomes in brackets] <i>for each assessment tool, links to the course outcomes are identified</i>	(The following is an example. Please delete it when you compose your own document.) <ol style="list-style-type: none"> 1. Attendance 5% 2. Midterm exam 1 [1, 2] 3. Midterm exam 2 [3, 4] 4. Final exam [5, 6]

ABET Student Outcomes* — Apply to Engineering, Math, and Science Courses Only

- 1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- 3) an ability to communicate effectively with a range of audiences
- 4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- 5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- 6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- 7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies