

ECE 134: Introductory Field Theory

UNIVERSITY OF CALIFORNIA AT SANTA BARBARA
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

ECE 134 is an introductory course in applied electromagnetics for electrical engineers. The course builds on material covered in introductory physics courses, with an emphasis on applications relevant to future work in electrical engineering. We will cover electrostatics, magnetostatics, induction phenomena, and time-varying fields on transmission-lines. The goal is to provide a good foundation and working knowledge of electromagnetics (EM theory), in the language of electrical engineers, to enable you to intelligently approach new problems or advanced coursework in EM. Students interested in the fields of optoelectronics, optics, semiconductor devices, high frequency digital and analog circuits, wireless telecommunications, radar, satellite systems, etc., will want to master this material and move on to our senior-level EM elective sequence ECE 144-135.

The weekly homework assignments are an important part of the course, and the homework grade will be a significant fraction of the course grade. The final exam will be comprehensive. Discussion sections will be used for honing problem-solving skills and reviewing lecture material, but may also be used for make-up lectures and exam reviews. Attendance at discussion sections will be considered in the final grade.

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| Prerequisites: | Physics 3-4, Math 5A-B, or equivalents |
| Time and Place: | TR 12:30-1:45PM, Room 1924 Psych |
| Instructor: | Bob York, Room 2215F, ESB, x7113 |
| Office Hours: | Tentative proposal: One hour after each class, or by appointment |
| Discussions: | Monday — 2-3:50 PM Phelps 1431 to be cancelled Monday 6-7:50 PM LSB 1101 Wednesday 2-3:50 PM Phelps 1431 |
| Course Web: | http://my.ece.ucsb.edu/bobsclass/134 |
| Textbooks: | Required texts: <ul style="list-style-type: none"> • <i>Field and Wave Electromagnetics</i>, 2nd ed. by David K. Cheng Addison-Wesley, 1989, ISBN: 0-201-12819-5 • <i>A Student's Guide to Maxwell's Equations</i> by Daniel Fleisch Cambridge University Press, 2008 ISBN-13: 978-0521701471 Optional texts: <ul style="list-style-type: none"> • <i>Div, Grad, Curl, and all that</i>, 2nd ed. by H.M. Schey W.W. Norton & Company, 1992, ISBN: 0-393-96251-2 (pbk.) • <i>The Cartoon Guide to Physics</i>, by L. Gonick and A. Huffman Harper Perennial: New York, 1990, ISBN: 0-06-463618-6 (pbk.) |
| Homework: | Weekly homework assignments, due by 5pm on the posted due-date in the course homework box in HFH. <i>Late homeworks will receive zero credit.</i> |
| Grading: | Homework 25-35% (Final breakdown TBD) Mid-Term 25-30% Final exam 30-35% Discussion 0-10% |
| TAs: | Wenzao Li: wli@umail.ucsb.edu Julie Hoy: julie03@umail.ucsb.edu |
| TA Hours: | TBA |