

Course web page: Blackboard

Class meets TTh 12:30-2:00 in ENS 126

Unique No. 17010

Professor:	Hao Ling	Office Hrs:	TTh 11am - noon
Office :	ENS 622		W 3:30-4:30 pm
Phone :	471-1710		all other times by appointment
e-mail :	ling@ece.utexas.edu		

Text: C. A. Balanis, *Advanced Engineering Electromagnetics*, Wiley, 1989.

Prerequisites: Graduate standing and consent of instructor.

Grading:	Homework (~11)	10%
	2 75-min. tests	52%
	3-hour final	38%

Course Outline: This is an introductory graduate course in electromagnetic field theory. We shall examine the fundamental solutions of time-varying Maxwell's equations in problems involving wave propagation, radiation and guidance. The following topics are planned:

1. Introduction and Review (Balanis Chaps 1, 2)
Maxwell's equations, charge conservation, Poynting's theorem, time-harmonic fields, constitutive relations, boundary conditions
2. Plane Wave Propagation (Balanis Chaps 3, 4, 5)
Solution to the source-free wave equation, plane waves, dispersion relation, waves in materials, polarization, reflection and transmission at media interfaces, Fresnel coefficients, total internal reflection, Brewster's angle
3. Radiation from Sources (Balanis Chaps 6, 7, 14)
Vector potentials, Green's function in 1D and 3D, solution to the inhomogeneous wave equation, near field and far field, electromagnetic theorems and principles, uniqueness, images, Huygens's principle, Lorentz reciprocity
4. Guided Waves (Balanis Chaps 8, 9)
Guided wave solution in cylindrical structures, TE/TM/TEM modes, parallel-plate/rectangular/circular waveguides, waveguides with arbitrary cross sections, mode orthogonality, attenuation of modes, waveguide excitation

Homework Policies:

- Homework will usually be assigned on Tuesday and due the following Tuesday in class.
- Solution will be posted on the course web page.
- The lowest homework score will be dropped in computing the final grade.
- **No late homework will be accepted. No excuses.**
- Show relevant steps and circle your final answer.
- You must do your own work.

Exams:

- There will be 2 in-class exams and 1 comprehensive final.

Tentative Exam Dates: Exam 1 10/5

Exam 2 11/18

Final Exam: Monday, Dec. 13, 9-12 am.

- You are expected to be present for every test. No make-up exams will be given.
- Additional office hours will be scheduled before each exam.

POLICY ON SCHOLASTIC DISHONESTY

The University defines academic dishonesty as cheating, plagiarism, unauthorized collaboration, falsifying academic records, and any act designed to avoid participating honestly in the learning process. Scholastic dishonesty also includes, but is not limited to, providing false or misleading information to receive a postponement or an extension on a test, quiz, or other assignment, and submission of essentially the same written assignment for two courses without the prior permission of the instructor. By accepting this syllabus, you have agreed to these guidelines and must adhere to them. Scholastic dishonesty damages both the student's learning experience and readiness for the future demands of a work-career. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University.

http://deanofstudents.utexas.edu/sjs/acint_student.php.

RELIGIOUS HOLY DAYS OBSERVANC POLICY

The Texas Education Code specifies that an institution of higher education shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall

be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible, so that arrangements can be made to complete an assignment within a reasonable time after the absence.

<http://www.utexas.edu/student/registrar/catalogs/gi03-04/ch4/ch4g.html#attendance>

STUDENTS WITH DISABILITIES

Please notify your instructor of any modification/adaptation you may require to accommodate a disability-related need. You will be requested to provide documentation to the Dean of Student's Office in order that the most appropriate accommodations can be determined. Specialized services are available on campus through Services for Students with Disabilities.

<http://www.utexas.edu/diversity/ddce/ssd>