

Teaching Portfolio

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Teaching Experience

I started to experience teaching when I was an undergraduate student at Sharif University of Technology. I served as Teaching Assistant three times for Electric Circuits I and II. My responsibilities were leading discussion sections and solving homework problems.

At the University of Michigan, I served as Graduate Student Instructor four times. My responsibilities were holding office hours, solving homework problems and posting the solution to the Web, and leading lab and discussion sections. Two of the courses I taught were graduate-level and two of them were undergraduate-level courses. The list of these courses and excerpts of their syllabi follow.

1. Graduate Student Instructor, *Electromagnetics Theory I*, Fall 2002
2. Graduate Student Instructor, *Introduction to Circuits*, Winter 2003
3. Graduate Student Instructor, *Electromagnetics Theory I*, Fall 2003
4. Graduate Student Instructor, *Electromagnetics II*, Winter 2005

EECS 530

Electromagnetic Theory I (Fall 2002)

Instructor

John L. Volakis

Text

C.A. Balanis, *Advanced Engineering Electromagnetics*, J. Wiley and Sons, 1989, Chapters 1-11, 14

Handouts

The great majority of the class lectures will be given as handouts; these handouts will be posted on the Web. You are expected to print these notes and bring them to class. Lectures will mostly follow these handouts. The handout notes and homework assignments are expected to serve as a guideline for the covered material. The book covers the same material but will only serve as reference and will not be followed during lectures.

Homework

Approximately 8-10 homework sets will be given. Regardless of the day of assignment, homework is due exactly one week after the date of assignment unless noted otherwise. Delayed homework causes substantial inconvenience to the grader schedules. You must turn in homework by 5:00 p.m. the day they are due. Place them in my faculty mailbox by 5:00 p.m. (3411 EECS, 3rd floor), if not delivered in class on the due date. Please do not use any other mailbox. If you deliver late homework, you run the risk of your homework not being graded. Most definitely, it will not be graded if the solution has already been posted on the web. Homework solutions will be posted on the web within approximately one week from assignment.

Grading

Homework: 30%

Midterm: 30% (on a date to be announced – last year it was given Nov. 6)

Final: 40% (Thursday, December 19, 2002, 4:00 – 6:00pm)

Books for Reference

- Harrington, *Time Harmonic Electromagnetic Fields*, 1961 (the classic first-year graduate EM book, a concise version of Balanis)
- Collin, *Field Theory of Guided Waves*, 2nd ed., 1992 (excellent source for waves propagation in guided structures and related Green's functions)
- Stratton, *Electromagnetic Theory*, McGraw-Hill, 1941 (a classic, most often referenced book in EM theory)
- Cheng, *Fundamentals for Engineering Electromagnetics* (a popular basic undergrad textbook)
- Ulaby, *Fundamentals of Applied Electromagnetics* (our most recent undergraduate textbook used at UM)

Course Outline

- Maxwell's Equations (Balanis, Chapters 1, 2 and 3) and handouts: Differential and integral forms; continuity equation; constitutive relations; media classification; Poynting theorem; time harmonic fields; complex Poynting vector, homogeneous wave equation and its solution.
- Plane Waves (Balanis, Chapters 4 and 5) and handouts
- Field Representations and Wave Solution in Unbounded Space (Balanis, Chapters 6 and 14) and handouts: Electromagnetic sources, solutions of 2D and 3D inhomogeneous wave equation, vector and scalar potentials, Hertz potentials, potentials for static fields, near zone and far zone representations.
- Waveguides and Guided Waves (Balanis, Chapter 8) and handouts: Parallel plate waveguide, grounded dielectric slab, rectangular waveguide and cavity.
- Green's Functions and Waveguide Excitation (Balanis Chapter 14) and handouts: Green's functions and their construction, sources in waveguides and cavities, Green's identities, integral equations.
- Cylindrical Waves and Structures (Balanis, Chapters 9 and 11): Cylindrical wave functions, circular metallic guide, dielectric rod, cylindrical wave transformations, scattering by metallic cylinder.
- Spherical Waves (Balanis, Chapter 10): Spherical waves and spherical cavity.
- Electromagnetic Theorems (Balanis, Chapter 7): Duality, uniqueness, image theory, equivalence principle, reciprocity and reaction theorem, Babinet's principle.
- Applications to Radiation, Scattering and Propagation: Antennas, aperture radiation, scattering and radar cross section of metallic, dielectric modeling, waveguide perturbations.

EECS 215

Introduction to Circuits (Winter 2003)

Instructors

Section 1

Prof. Fred L. Terry, Jr.

Section 2

Prof. Leo C. McAfee

Chief Lab Instructor

Dr. Alexander Ganago

Text Books

- Fundamentals of Electric Circuits, Charles K. Alexander and Matthew N.O. Sadiku, McGraw-Hill, 2000, accompanying Problem Solving Made *Almost* Easy
- Circuits Make Sense: A New Lab Book for Introductory Circuit Courses, 2nd Edition, Alexander Ganago, Wiley, 2002

Computing Resources and Skills

You must have access to a computer running MATLAB (CAEN workstations or any PC running the Student Edition of MATLAB or better). Only very basic MATLAB knowledge will be necessary. Specific examples will be given the lab materials. MATLAB 6 (release 12) is preferred.

Prerequisites

Math 116, PHYS 240 (or 260), Co-requisite: Math 216, EECS 206. Cannot receive credit for EECS 210 and EECS 215. **BSEE Majors:** Co-requisite TechComm 215

Additional Comments

In this class you will acquire the basic tools for analyzing electronic circuits (and many other physical systems). These tools alone will not make you great circuit designers, but without them, you cannot become a great designer. It is analogous to becoming fluent in a language. Here, you will learn the basic syntax and some vocabulary, but you will not become a great French poet by taking French 101 (but try it without it!). The labs will help you develop practical skills and to connect classroom “theory” with the “real world.” They are designed to be both educational and often fun, but are aimed first at educating future engineers not at training future technicians; therefore, some lab exercises may be basic in nature.

Homework

Homework assignments may be done with partners, but you are warned that failure to work enough significant problems on your own will almost certainly result in poor exam scores. Overt, mindless duplication (including photocopying) will result in no credit for the assignment.

Midterm and final exams will be given under the CoE Honor Code and will be individual efforts. The exams will be closed book. Basic scientific/engineering calculators will be required for the exams, but no use of laptop or other higher level computers will be allowed on exam. Use of any form of communication (wireless or otherwise) during exams will constitute an Honor Code violation.

Grading

The class will be graded “on-the-curve” with the median grade centered on the B/B-boundary (2.85/4). At the instructor’s discretion, a higher overall performance by the class will result in a higher average overall grade.

Labs - 30%

Problem Sets - 15%

Midterm Exams (2) - 30%

Final Exam - 25%

Course Outline

- Introduction to electrical circuits
- Kirchhoff's voltage and current laws
- Ohm's law; voltage and current sources
- Thévenin and Norton equivalent circuits
- Energy and power
- Time-domain and frequency-domain analysis of RLC circuits
- Operational amplifier circuits
- Basic passive and active electronic filters
- Laboratory experience with electrical signals and circuits

EECS 530

Electromagnetic Theory I (Fall 2003)

Tuesdays and Thursdays, 1:00 PM – 2:30 PM, 185 EWRE

Instructor

Mahta Moghaddam

Primary Text

J. A. Kong, *Electromagnetic Wave Theory*, EMW Publishing, 2000, Chapters 1,3,4,5

Handouts

Several will be given throughout the course; will be on Web site.

Other References

Balanis, *Advanced Engineering Electromagnetics*, Wiley and Sons
Harrington, *Time-harmonic Electromagnetic Fields*, McGraw-Hill

Grading

Homework (10 sets) – 30%

Hour-exams (two 60-minute tests) – 20% each

Final Exam – 30%

Office visit – 3% deducted for no-shows

Homework

All homework is due by 5pm on Thursday of week following assignment. Late homework is discounted at 20% per day (penny stock after Tuesday). Solutions will be posted on website one week after due date. It's best to turn in homework in class or at my office. At your own risk, you can also place it in my mailbox in 3411 EECS.

Course Outline

- Topic 1 – Maxwell's Equations
 - Review of vector analysis
 - Continuity equation
 - Dispersion relation
 - Spatial and temporal frequencies
 - Homogeneous wave equation and its solution
 - Energy conservation, Poynting theorem, Poynting vector
 - Time-domain and time-harmonic fields
 - Polarization
- Topic 2 – Waves in Unbounded Space
 - Hertzian dipole and waves
 - Vector and scalar potentials
 - Plane waves
- Topic 3 – Waves in Media
 - Constitutive relations and media properties

- Dispersion relations
- Group and phase velocity
- Conductive media and plasmas
- Reflections and transmission at planar boundaries
- Boundary conditions
- Topic 4 – Wave Guidance and Resonance
 - Rectangular structures (plane waves)
 - Parallel-plate and rectangular waveguides
 - Rectangular cavity resonator
 - Dielectric-slab rectangular waveguides
 - Layered media
 - Cylindrical structures (cylindrical waves)
 - Cylindrical waveguides
 - Cylindrical cavity resonators
 - Spherical cavities (spherical waves)
- Topic 5 – Theorems of EM Waves and Media
 - Equivalence/duality/reciprocity/Babinet's principle
 - Quasi-static limit, geometric optics limit
- Topic 6 – Radiation and Elementary Antennas
 - Cerenkov radiation
 - Green's functions (scalar/vector/dyadic)
 - Waves due to EM source radiation
 - Near- and far-field approximations
- Topic 7 – Introduction to Scattering (if time allows)

EECS 330

Electromagnetics II (Winter 2005)

MWF, 9:30-10:30, 1017 DOW

Instructor

Prof. Mahta Moghaddam

Primary Text

F. T. Ulaby, *Fundamentals of Applied Electromagnetics*, 2004 Media Edition, Chapters 6-10

Handouts

Several will be given throughout the course; will post to website

Other References

J. Kraus, *Electromagnetics with Applications*, McGraw-Hill, 1999

U. Inan and A. Inan, *Electromagnetic Waves*, Prentice Hall, 2000

W. Hayt, *Engineering Electromagnetics*, McGraw-Hill

Grading

Homeworks (12 sets) – 20%

Laboratory – 20%

Discussion participation – 5%

Hour-exams (two 90-minute tests) – 15% each

Final Exam – 25%

All exams are closed-book and closed-notes. But you can bring one hand-written double-sided sheet of notes. Course letter grades assigned according to customary linear scale unless otherwise warranted.

Homework

All homework is due in class on Wednesday of week following assignment. Late homework is discounted at 20% for the first day, not accepted if more than a day late.

Solutions will be posted on website one day after due date. It is OK, in fact encouraged, to collaborate on homework and discuss them with your classmates. However, each of you need to turn in your own separate homework. Carefully doing your homework problems is very important in your overall success in the class. Not only is each homework set worth roughly 2% of your overall score, but also is needed for you to fully grasp the concepts covered in class.

Laboratory and Discussion Section Schedule

The first lab will meet during the week of January 17, 2005. There will be 4 labs for this class, held every other week. You may download the lab manuals from the course web page. The last lab will be during the week of March 7th, after which the lab project starts. You will get more information and instructions about the project from your lab GSIs.

During the weeks when there are no labs, the discussion section will be held. They will continue throughout the semester (every other week, starting Thursday 01/13/04), even during the project period. Your discussion GSI will go over additional problems or topics that are more challenging, and which you might want to see emphasized more. The GSI will explain the attendance and participation requirements. Remember that these discussion sections are meant to reinforce the class material, and they also account for 5% of your grade. So go to them and use them to your best advantage.

Evaluations

The chart below is based on student responses to the Office of Evaluation and Examinations (E&E) Teaching Questionnaires (TQ) that were distributed in my classes at the end of each semester. The questionnaires are available upon request.

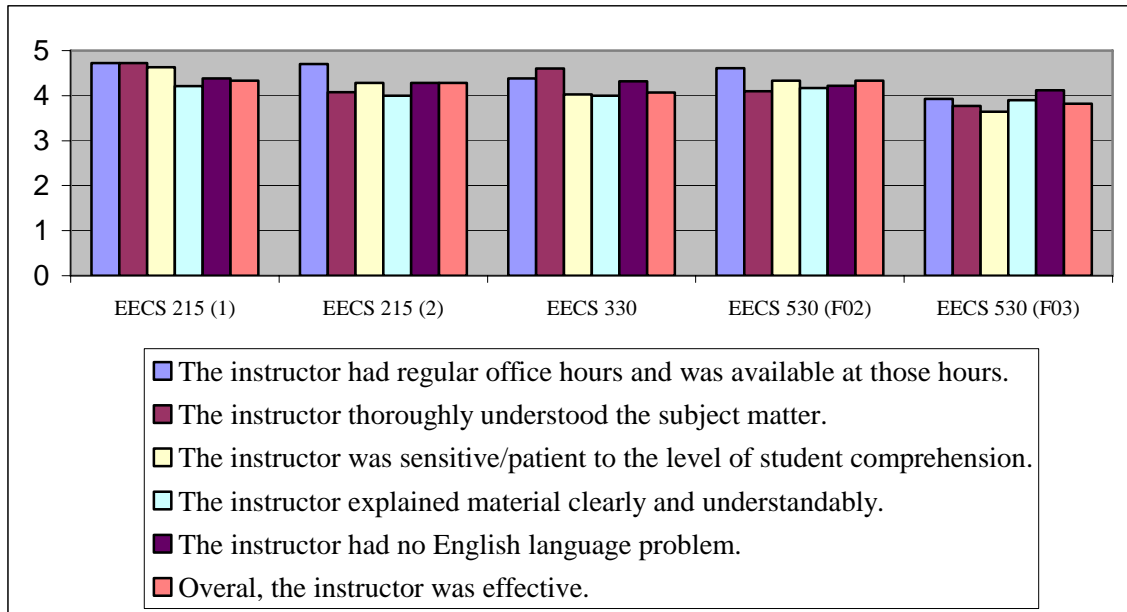


Chart shows the median responses of students to Teaching Questionnaires.

Questions above are course-guide questions which focus on areas that students consider top concerns. Students sometimes use results on these questions in their selection of courses. The chart above shows the median responses. For E&E Teaching Questionnaires, the median is a value between 1.0 and 5.0. When all students respond “strongly agree” to a question, the class median is 5.0; when all students respond “strongly disagree,” the class median is 1.0. A value between these extremes can be interpreted as the point on a continuous scale below which 50% of all responses fall.

Testimonials

Some selected testimonials from my students

Introduction to Circuits (EECS 215)

- *“My instructor (Ali) was very responsive to any questions we had.”*

Electromagnetics II (EECS 330)

- *“Both Ali and Tsai were helpful in so far as possible on homeworks, labs, and projects. Ali was clear, concise, a bit too theoretical, but also knew his stuff and helped out as much as he could.”*
- *“The GSI was very skilled in the classical sense...”*
- *“Ali was an excellent GSI. He explained things clearly and patiently during office hours and I enjoyed his quiz.”*
- *“Well prepared, extremely thorough knowledge of subject matter, which caused some explanation to be too in depth or too advanced.”*

Electromagnetic Theory I (EECS 530), Fall 2003

- *“Mr. Alireza Tabatabaenejad was my Graduate Student Instructor (GSI) for EECS 530, a graduate- level course on electromagnetics held at The University of Michigan – Ann Arbor during the Fall semester of 2003. I primarily interacted with Alireza through email discussions and during his office hours. His academic credentials aside, Alireza had impressed me as a truly dedicated and meticulous professional. For EECS 530, in addition to holding office hours twice a week to answer questions from the students, he was in charge of providing solutions to the weekly assignments as well as grading them. In my opinion, he carried out those duties of the GSI seriously: the solutions were well-written and timely-delivered to the students, the grading was fair and consistent, and the office hours were conducted in a productive and professional manner. Above all, he was always courteous and considerate toward the students-both inside and outside of the classroom; and, although he knew more about the subject of course than the students, he approached each conversation-whether it was through emails or in person-with a sincere sense that he wanted to learn from you just as much as you wanted from him.*

Speaking as a student who has interacted with many GSIs over the years, I feel that teaching requires not only the proper academic qualifications but also-perhaps

more importantly-the patience and interpersonal skills to convey ideas and concepts to the student; Alireza certainly is one of those rare individuals who exemplifies the confluence of these essential skills. Looking back at my both undergraduate and graduate years, I consider Alireza to be one of the finest GSIs I've encountered.” DaHan Liao

Electromagnetic Theory I (EECS 530), Fall 2002

- *“Alireza was the graduate student instructor for EECS 530 which I took during the fall semester of 2002. He was always patient and willing to spend time explaining things more than once in order to help students understand. I thought his explanations of the concepts from class were clear; beyond knowing the material himself, he was able to present it in an understandable way too. He also seemed to maintain a good balance of being willing to help students but not do their work for them. In my experience taking graduate classes at UM, the last two traits are especially rare.” Amelia Buerkle*

Graduate Student Mentor Feedback

When I was teaching EECS 330, I asked my Graduate Student Mentor to conduct a midterm student feedback session in my class. My mentor's feedback as well as students feedback is coming below. The report provided by my mentor is available upon request.

Mentor Feedback

Strength

- 1- Good use of visual aids; good handwriting and plots.
- 2- Very clear speech and good pace of speaking.
- 3- GSI has good control over the class and keeps the class focused on the purpose.
- 4- Good voice intonation...keeps class in the topic through his modulation.
- 5- Responsive to students when they raise their hands.

Suggestions for Improvements

- 1- GSI can regularly stop to make sure the class is following him and pause after asking the question allowing the student to think and catch up.
- 2- Personalizing the answers by recognizing the student by their names helps keep the students interested and encourages them to ask questions.
- 3- Talk to students before the class starts officially. Also try to start class ten minutes after the hour unless it is decided that you will be starting earlier.
- 4- Encourage students to sit up in the front, so that there is more scope for interaction.
- 5- Write your agenda on the blackboard or on a slide at the beginning.
- 6- Encourage active learning by giving out a discussion question before the discussion and asking the students to work on the problem/concept before coming in.

Student Feedback

Strength

- 1- Knowledgeable: good grasp on subject.
- 2- Helpful and approachable.

- 3- Patient and concerned: listens to all questions and does not get bugged with a slow learner; explains examples a couple of times.
- 4- Clear and concise.
- 5- Punctual and timely.
- 6- Good office hours.
- 7- Good blackboard use abilities: neat handwriting and plotting graphs.
- 8- Friendly and committed.
- 9- Speaks loudly and clearly.
- 10- Confident and efficient.
- 11- Treats students with respect.
- 12- Good amount of office hours: always in lab on time to help

Areas that Need Improvement

- 1- Need more homework examples in discussion.
- 2- Less derivation and more practical approaches; too theoretical.
- 3- Assumes we know too much; skips things, since they are supposed to be intuitive.
- 4- More physical interpretation, less monotonous...introduce transitions from one topic to another.
- 5- More coordination with the professor.
- 6- Have a blackboard based approach to the office hours also, where students with the same question can have their questions answered without waiting.
- 7- Not enough homework hints for people who can't get to the office hours.
- 8- Come into discussion with a set of prepared topics and not ask us to ask questions in discussion also.
- 9- Thursday office hours might be better scheduled to Monday.

Designed Syllabus

The syllabi of all courses I have taught were designed by their primary instructors. However, during the Rackham-CRLT Seminar on College Teaching and as an assignment, I designed my own syllabus. This syllabus was designed based on my teaching philosophy, and has been improved based on feedback I have received from my peers and my research advisor, Professor Mahta Moghaddam.

EECS 330: Electromagnetics II, Winter 2008

Monday, Wednesday & Friday, 9:00-10:00 AM, 1200 EECS

Course Description

- Prerequisites: EECS 230 or PHYS 505, or equivalent courses
- Frequency: Fall and Winter
- Credit: 4 Credits
- Recent Texts: F. T. Ulaby, *Fundamentals of Applied Electromagnetics*, Prentice Hall
- Past Instructors: M. Moghaddam
- Goal: To give students a solid, detailed understanding of basic time-varying electromagnetic phenomena
- Student Body: Undergraduate students in electrical engineering and applied physics
- Alternatives: None
- Subsequent Courses: EECS 530

Course Objectives

- To teach students fundamentals of time-varying fields, Maxwell's equations, and boundary conditions,
- To introduce students to propagating and standing electromagnetic waves in a consistent fashion starting from Maxwell's equations,
- To provide students with basic tools and approaches necessary to solve basic problems in electromagnetic wave propagation,
- To teach students how transmission lines work, how to design equivalent circuit elements, how to match a circuit to a load, and how to analyze the transient response of a pulse, and
- To introduce students to waveguides and to provide students with a general analysis of the characteristics of the waves propagating along uniform guiding structures.

Course Outcomes

- Ability to use vector calculus

- Ability to calculate power densities, and directions of reflected and transmitted fields for plane wave of the media on each side of the interface
- Ability to solve basic problems in electromagnetic wave propagation
- Ability to compute the reflection coefficients, input impedances, voltage and current waveforms, and distribution of power on a given transmission line
- Ability to use the Smith Chart to analyze transmission-line circuits
- Ability to design a single-stub matching network
- Ability to analyze the transient response of a transmission-line circuit
- Ability to solve basic waveguide problems using boundary conditions

Course Outline

Chapter 2: Vector Analysis (week 1-2)

- Orthogonal Coordinate Systems
- Vector Calculus

Chapter 7: Time-Varying Fields and Maxwell's Equations (week 3-6)

- Maxwell's Equations
- Time Harmonic Fields and Phasors
- Wave Equations and Their Solutions
- Boundary Conditions

Chapter 8: Plane Waves (week 7-10)

- Plane Wave Solution in Lossless and Lossy Media
- Wave Polarization
- Power Density and Poynting Vector
- Reflection and Transmission of Plane Waves

Chapter 9: Transmission Lines (week 11-13)

- Transmission Line Equations and Solutions
- Transients on Transmission Lines
- The Smith Chart

Chapter 10: Waveguides (week 14-15)

- General Wave Behaviors along Uniform-Guiding Structures
- Parallel-Plate Waveguide
- Rectangular Waveguide

Instructor

Alireza Tabatabaenejad
 3124 EECS
 Phone: (734) 763-4185
 Email: alirezat@umich.edu

Instructor's Office Hours

Tuesday & Thursday, 3:00–5:00pm, or by appointment

Course GSI

Alireza Tabatabaenejad
 3124 EECS
 Phone: (734) 763-4185
 Email: alirezat@umich.edu

GSI's Office Hours

Monday, Wednesday & Friday, 4:00-5:00pm, 2420 EECS

Discussion Sections

Thursday, 12:30-1:30pm, 1200 EECS

Discussion sections are meant to reinforce the class material, and they also account for 20% of your grade. The attendance and participation requirements will be announced by the GSI. At discussion sections, your GSI will go over and emphasize on additional problems or topics that are more challenging. Discussion sections will run throughout the semester, starting Thursday, January 17, 2008. Please remember that homework problems are not supposed to be discussed at these sections.

Course Website

All course materials will be posted on <http://www.eecs.umich.edu/course/eecs330>; you need to check this Web site frequently for updates that are not necessarily announced in class or discussion sections.

Primary Text

David K. Cheng, *Field and Wave Electromagnetics*, Addison-Wesley, 1989

Other References

F. T. Ulaby, *Fundamentals of Applied Electromagnetics*, Prentice Hall, 2004 Media Edition
 J. Kraus, *Electromagnetics with Applications*, McGraw-Hill, 1999
 U. Inan and A. Inan, *Electromagnetic Waves*, Prentice Hall, 2000

Homework

There will be 10 comprehensive homework sets. Homework is assigned on Wednesday and is due in class on the following Wednesday. Late homework is discounted at 30% for the first day, not accepted if more than a day late. All homework sets and problems are equally weighted. You are allowed to discuss the homework problems with your classmates. However, you are required to observe the College of Engineering Honor Code, and turn in the result of your own labor and thought.

January 16	Homework #1 Assigned	
January 23	Homework #2 Assigned	Homework #1 Due
January 30	Homework #3 Assigned	Homework #2 Due
February 6	Homework #4 Assigned	Homework #3 Due
February 13	Homework #5 Assigned	Homework #4 Due

February 20		Homework #5 Due
February 27	No Homework during Spring Break	
March 5	Homework #5 Assigned	
March 12	Homework #6 Assigned	Homework #5 Due
March 19	Homework #7 Assigned	Homework #6 Due
March 26	Homework #8 Assigned	Homework #7 Due
April 2	Homework #9 Assigned	Homework #8 Due
April 9	Homework #10 Assigned	Homework #9 Due
April 16		Homework #10 Due

Honor Code

The Honor Code outlines certain standards of ethical conduct for persons associated with the College of Engineering at the University of Michigan. The policies of the Honor Code apply to graduate and undergraduate students, faculty members, and administrators. “It is a violation of the Honor Code for students to submit, as their own, work that is not the result of their own labor and thoughts.” See the College of Engineering Web site for more information about the Honor Code.

Exams

There will be no exam in this course! You will be evaluated based on your performance on homework assignments and participation in discussion sections.

Grading

Homework: 80%

Discussion Participation: 20%

Course letter grades are assigned according to customary linear scale.

Important Dates

First Day of Class: January 07, 2008

First Discussion Section: Thursday, January 17, 2008

No Class: January 28, 2008 and February 25 through February 29, 2008

Last Day of Class: April 18, 2008

Sample Quiz

I designed this take-home quiz when I was teaching EECS 330. The problem was discussed briefly at a discussion section a few weeks before the quiz, and the method of ray-tracing was presented to students. In that section, I did a few steps of the solution, and asked students to complete it at home. I then decided to give this problem to students as a quiz to 1) test their ability to solve this problem based on what was presented at that discussion section, 2) see who had been enthusiastic to complete the solution, and also 3) evaluate their participation—the method of ray-tracing was not presented in any of the introduced textbooks. The quiz was a take-home one, because students would find it very difficult to solve this problem in one hour, the length of each discussion section.

EECS 330, Winter 2005, Quiz 1

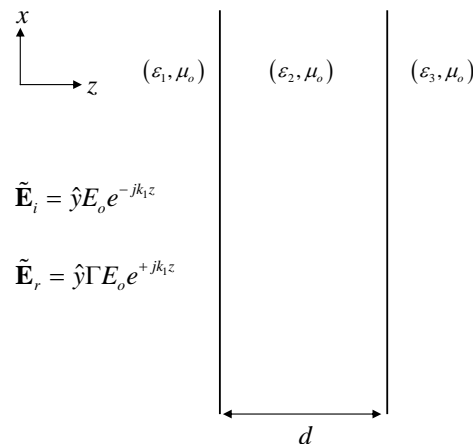
Thursday, March 24, 2005

- 1- The quiz will be due on Thursday, March 24, 2005, at 5:00 PM in 3411 EECS. Electronic submission is accepted.
- 2- No cooperation is allowed.
- 3- Show all your work.

A uniform plane wave is incident on a 2-dimensional, infinitely long dielectric slab. See Figure 1. Calculate

the total reflection coefficient Γ using the method of ray-tracing, and show that $\Gamma = \frac{\Gamma_{12}e^{jk_2d} + \Gamma_{23}e^{-jk_2d}}{e^{jk_2d} + \Gamma_{12}\Gamma_{23}e^{-jk_2d}}$,

where $\Gamma_{12} = \frac{\eta_2 - \eta_1}{\eta_2 + \eta_1}$ and $\Gamma_{23} = \frac{\eta_3 - \eta_2}{\eta_3 + \eta_2}$.



Efforts to Improve Teaching

Practice Teaching Sessions

I have facilitated several practice teaching sessions for the Center for Research on Learning and Teaching (CRLT) and the College of Engineering during their orientation programs designed for prospective graduate student instructors. I have also served as a GSI consultant for the English Language Institute during its training workshop designed for international graduate students being considered for GSI positions. In these practice sessions, each prospective GSI presents a short lesson for a few minutes, and other workshop participants provide the presenter with feedback on his or her strengths and also suggestions for improvement. Watching other people while they teach and listening to the feedback provided by other observers have helped me broaden my insight into teaching.

Design of CRLT Workshop “Ethics of College Teaching”

Fall 2006

Two other GSIs and I designed this workshop to address the ethical concerns that can arise in various aspects of college teaching, such as developing course material, grading, and interacting with students inside and outside the classroom. Since many ethical questions have no clear-cut answers, we presented to participants ways of thinking that would help them decide how to act ethically when difficult situations arise.

CRLT Seminar: Consulting with GSIs: Early Feedback and Student Ratings

September 2006

Consulting with GSIs around student ratings is more common with the use of early, midterm, and end-of-semester evaluations in many departments. In this interactive workshop, participants will learn techniques to interpret student ratings and practice consulting with their peers. In addition to providing time for practice and reflection, we will discuss the various roles a consultant can play in the process of consultation.

CRLT Seminar: Analyzing Video Clips in Lectures and Discussions

March 2006

This session presented numerous ways to frame video clips so that students learn to see what the instructor is showing them. Examples emphasized materials with complex social implications such as issues of social justice, cross-cultural representations, and historically specific contexts. Clips shown in the session were from documentaries, popular films, art films, and videos of performance art. Strategies help students follow instructors' analyses of video-graphic materials, do close readings of their own, and discuss video clips. The session also covered ways of linking lecture presentations and film screenings with section discussions.

CRLT Seminar: Using Active and Cooperative Learning in Large Courses

January 2006

Many faculty members are using cooperative learning (or some other form of active student engagement) in large-enrollment courses to encourage students to be active participants in their learning. But how do we structure these experiences to ensure that they lead to enhanced learning? How can faculty help facilitate powerful connections among students, between students and faculty, and among all of us and our subject matter? This hands-on, interactive workshop focused on the professor's role in designing and structuring cooperative learning. It included hands-on exercises and video examples from actual classes as well as the supporting theory and research. The workshop was presented by Professor Karl Smith, Morse-Alumni Distinguished Teaching Professor, Civil Engineering, University of Minnesota.

Graduate Student Mentor (GSM) Program, College of Engineering

Winter 2006

The Graduate Student Mentors (GSMs) at the College of Engineering are a group of experienced Graduate Student Instructors (GSIs) who serve as consultants and teaching mentors to the rest of the GSI population in the College of Engineering. The Graduate Student Mentors at the College of Engineering are centrally organized through the Office of the Associate Dean for Graduate Education, and are trained and supervised by staff from the Center for Research on Learning and Teaching (CRLT). Each GSM is accountable for 20 to 30 Engineering GSIs. While centrally organized, the GSMs are responsible for

Graduate Student Instructors in one, two or three departments; this arrangement allows GSMs to get to know one cadre of Graduate Student Instructors very well. The GSM program in the College of Engineering was founded on the belief that developing GSIs could benefit from the unique guidance, support, and experience that peer mentors provide. While all GSIs have access to mentoring from their advisors or other professors in their department, the peer mentor relationship provides a safe venue for exploration of teaching strategies and discussion of teaching initiatives and issues. GSMs in the College of Engineering are trained to mentor in a facilitative way, a model that appeals to their own sense of their role, and approaches the collegial style of supervision preferred by most GSIs. Additionally, the nature of the peer mentor-mentee interaction is such that it creates a reciprocity that benefits both individuals becoming a valuable learning experience for the GSMs themselves.

Academic Careers in Engineering & Science

October and November 2005

The Academic Careers in Engineering & Science (ACES) Program was designed to provide engineering graduate students and research fellows with the necessary skills to be successful as engineering/science faculty. Those who attend and fully participate in all three sessions received a certificate that designated them as an "Engineering Academic Scholar." It was the third year this program was being offered, and was sponsored by the Office of the Associate Dean for Graduate Education, the CoE Graduate Student Advisory Committee, and Rackham Graduate School. All three sessions were mandatory and included the following topics:

- 1) Finding an Academic Job
- 2) Managing Your Research Group
- 3) Funding Your Research Group

Rackham-CRLT Seminar on College Teaching

May 2005

The Preparing Future Faculty Seminar, sponsored by the Horace H. Rackham School of Graduate Studies and the Center for Research on Learning and Teaching (CRLT) at the University of Michigan, prepared a select group of University of Michigan graduate students from a variety of disciplines for their first faculty job positions. For this nationally-recognized Seminar, advanced graduate students who had achieved candidacy and had college or university teaching experience were sought. The Seminar included the following topics:

- 1) Preparation for the academic job search including assistance with the creation of a statement of teaching philosophy, a teaching portfolio, and a syllabus.
- 2) Information about higher education, e.g., institutional types, governance and accountability, the nature of today's students, tenure, and faculty work life.
- 3) Discussion of effective and reflective teaching including meetings with University of Michigan junior faculty members, conversations about multicultural teaching and learning, and demonstration of and reflection on the use of instructional technology.
- 4) Introduction to other types of institutions through a trip to one of four local campuses (Albion College, Eastern Michigan University, Kalamazoo College, or Oakland University) and discussion with Washtenaw Community College faculty.
- 5) Exploration of and reflection on various pedagogical techniques; with particular emphases on inclusive teaching, active learning and instructional technology

CRLT Seminar: Teaching Problem Solving

February 2005

In this session, participants discussed ways in which GSIs can help students acquire the problem solving skills and techniques they use in their careers. Several examples and situations were used to explore students' problem solving capabilities to determine where the problem solving process breaks down, and to discuss strategies for guiding students through difficult problems without simply providing the answers.

CRLT Seminar: Conversations about Refining Your Teaching Skills

January 2005

This session focused on Chapter 10 of P.C. Wankat and F.S. Oreovicz's *Teaching Engineering* (One-to-One Teaching and Advising). This excerpt emphasized the importance of the way in which a teacher/mentor interacts directly with a student. Specific skills and goals for creating a productive learning environment were covered.

Certificates are available upon request.