

EE 3407. ELECTROMAGNETICS. 4 Hours

Fall semester 2018

Instructor: Robert Magnusson

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Office Hours: TuTh 1:00-2:00pm

Section Information: EE 3407-001 lecture; labs EE 3407 sections 101-105

Time and Place of Class Meetings: TuTh 11:00AM-12:20PM in GACB 103

Laboratory classroom: NH 129

Description of Course Content:

Time varying electric and magnetic fields, displacement current, Maxwell's equations and transverse electromagnetic waves; plane waves in an unbounded medium, waves in media with planar interfaces, boundary conditions, reflection and transmission, plane waves in lossless and lossy media; electromagnetic waves in a bounded medium, guided waves, wave guides, propagation modes; transmission lines, circuit models of transmission lines, transmission line equations, reflection at discontinuities, terminations, transient response, steady state waves on transmission lines, open and short circuited lines, power flow, impedance matching and the Smith chart, antennas. Problems and experimental demonstrations will be covered during recitation and laboratory sessions.

Student Learning Outcomes:

Understanding of fundamentals of electromagnetic waves

Ability to solve basic problems in simple geometries

Ability to develop mathematical models and understand their limitations

Ability to conduct elementary electromagnetic laboratory experiments

Appreciation of applications and importance of EM

Requirements:

Prerequisite: C or better in both EE 2347 and PHYS 1444. Co-requisite is EE 3446.

Required Textbooks and Other Course Materials:

Fundamentals of Applied Electromagnetics, 7th edition, F. T. Ulaby and U. Ravaioli, Pearson Education Inc 2015. We will follow the authors' plan for a one-semester course.

Reference:

D. K. Cheng, Field and Wave Electromagnetics, 2nd Edition, Addison Wesley, 1989.

Descriptions of major assignments and examinations with due dates:

Grading: 2 in-class exams at 25% each: 50%

Laboratory 25%

Final exam: 25%

Homework: 10%---bonus

Homework: Homework will be assigned but turning it in is optional. Due 1 week from date of assignment, at the beginning of class. **Late homework is not accepted.** You may copy/paste problem statement to top of page, then present solution in a systematic organized manner. Upload your solution to Blackboard. Your grade on the homework counts as a bonus towards your final class grade.

In-class exam dates: October 4, 2018

November 15, 2018

Final exam: Per final exam schedule

Grading Policy:

The standard academic scale of A, B, C, D, F will be used.

UT Arlington Attendance Policy: At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of **a letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.*

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.*

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located next to the window overlooking the Atrium. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Students are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and


information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

Active threat response

A message from the UTA Police department regarding potential active threat situations:

Stop. Think. Protect Yourself. You Have Choices.

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. This graphic provides each member of the UTA community with information and options for responding to an active threat. These options are not chronological, but are designed to address dynamic situations. Assess the situation (your location, the location of the threat, type of threat, etc.), identify and weigh your options, develop a plan of action and commit to it.

YOUR OPTIONS TO AN ACTIVE THREAT		
You Have Choices!		
A V O I D	<ul style="list-style-type: none"> AVOID the situation. <u>Stay away</u> from the area and campus. If you can safely leave the area, RUN. Get others to leave the area, if possible. Prevent others from entering the area. 	<ul style="list-style-type: none"> Know your exit and escape options. If in a parking lot, get to your car and leave. If in an unaffected area, stay where you are. When you are safe, call UTA PD at 817.272.3003 or 911 with information you have.
D E N Y	If you can't leave the area safely, DENY or slow entry to the intruder: <ul style="list-style-type: none"> Lock/barricade doors with heavy items. Turn off lights/projectors/equipment. Close blinds and block windows. Stay away from doors and windows. Silence phones and remain quiet. <u>Don't let your phone give you away.</u> HIDE and take cover to protect yourself. Be prepared to run or defend yourself. 	
D E F E N D	If you can't AVOID or DENY entry to the intruder, DEFEND your location: <ul style="list-style-type: none"> As a last resort, <u>FIGHT for your life.</u> Use physical force and any weapons available - fire extinguishers, books, chairs, belts, umbrellas, pens/scissors, hot coffee/drinks, trash cans, etc. Use the element of surprise. Work together as a team. Develop a plan. Commit to your actions. Your life depends on it. Be aggressive, loud, and determined in your actions. 	
<p align="center">Follow ALL instructions.</p> <p align="center">For more information, go to: police.uta.edu/activeshooter</p> <div>  <div> <p>Emergency: 817.272.3003</p> <p>Non-Emergency: 817.272.3381</p> <p>police.uta.edu</p> </div> </div> <p>THE UNIVERSITY OF TEXAS AT ARLINGTON</p>		

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381