



EE 340-01&02 Electromagnetics
COURSE SYLLABUS: SPRING 2026

INSTRUCTOR INFORMATION

Instructor:	Dr. Sharif, Sheikh
Office Location:	AG/ET #219
Office Hours:	Monday and Wednesday, 10:00-10:40 AM. Tuesday, 2:00-2:30 PM or by appointment
Office Phone:	903-886-5960
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University Email Address:	Sharif.Sheikh@etamu.edu
Preferred Form of Communication:	Email
Communication Response Time:	within 48 hours (weekdays)

COURSE INFORMATION

Textbook(s): F. T. Ulaby and U. Ravaioli, Fundamentals of Applied Electromagnetics (7th Ed), Pearsons.

Software(s): MATLAB Electromagnetic/Antenna module. Microsoft Office, LABVIEW, HFSS software

Optional Material(s): M. O. Sadiku, Elements of Electromagnetics, 5th Ed, Oxford Univ. Press, 2010.

D. K. Cheng, Field and wave electromagnetic, 2nd Ed, Addison- Wesley, 1989.

J. Edminister, Schaum's Outline of Electromagnetics, 3rd Ed, McGraw-Hill, 2010

COURSE DESCRIPTION

The course presents the principles of electromagnetic (EM) fields and their propagation, power and energy contents, and their properties in guided and unguided structures. It aims to bridge between circuit theory and the EM fields through detailed treatment of guided structure, particularly transmission lines. The course introduces Maxwell's equations for the general case of time-varying and dynamic EM fields. Characterization of electrostatics, magnetostatics and dynamic fields and their associated laws and principles are discussed, and the electric and magnetic boundary conditions are also explained in detail. The course is supported by simulation software (e.g. MATLAB, LABVIEW).

Student Learning Outcomes (Should be measurable; observable; use action verbs)

1. Bridge the gap between circuit theory and electromagnetics.

2. Apply knowledge of orthogonal systems and coordinates.
3. Acquire knowledge on wave propagation in a guided structure.
4. Practice the use of Maxwell's equations and their applications.
5. Describe the characteristics of static and dynamic electromagnetic fields.
6. Practice boundary conditions for analyzing and interpreting electric and magnetic fields.
7. Demonstrate effective oral and written communication skills through teamwork discussions.
8. Use software and numerical techniques to solve EM problems.

COURSE REQUIREMENTS

Minimal Technical Skills Needed:

Prerequisites: [PHYS 2426](#) with a minimum grade of C, [MATH 2320](#) with a minimum grade of C, [MATH 2415](#) with a minimum grade of C, [EE 309](#) with a minimum grade of C. Software's: Microsoft Office - MS Word, Excel, PowerPoint; MATLAB, LABVIEW, and/or EM & TL simulators.

Instructional Methods:

The instructional methods will include lectures (modules), class discussions, course projects, assignments, problem-solving exercises, simulations using software and experimental measurements. Instructions will be based on the course textbook. Course materials, announcements, and lecture notes will be posted on the course website (D2L).

Student Responsibilities or Tips for Success on the Course:

Students must attend classes, participate in classwork and discussions, and complete the required course assessments that support the anticipated learning objectives. Students are expected to regularly log into the course website (D2L) to download course material, submit their coursework as instructed, and follow up on new announcements. This course covers more advanced content that requires at least 6 hours of extensive study per week.

Assessments:

Assessments (assignments, reports, quizzes, exams) must be submitted by the specified due date mentioned on the D2L platform. Each assessment requires a separate solution report. Some assessments may require the submission of simulation files created using software. Any file that is flagged as infected with malware or viruses will not receive a grade. Make-up assessments are generally not offered without valid, documented justification. When approved, make-up work should be completed within one week of the missed assessment (if possible). Early communication is essential, and approval is not guaranteed.

Exams and Quizzes

The comprehensive exams (midterm and final) will be closed-book & closed-notes. Relevant scientific formulas will be provided in the supplementary sheet. The student will need to bring a scientific calculator for the exam. The use of a personal phone (or any other smart device) is strictly prohibited during exams. A makeup exam may be offered, but an official permit for absence that fulfills University procedures should be available on time.

Academic Integrity:

The first incident of academic misconduct will result in a zero for the assessment; further violations may lead to a failing grade in the course. All incidents will be reported to the department chair. If you are unsure whether something constitutes academic dishonesty, consult the instructor before submission. The AMUC Academic Integrity policy is included in the following sections.

Attendance:

Attendance will be taken at the beginning of the class. Make-up for a missed In-class assignment may be given only if you contact the instructor before the end of the class and there is a valid reason for the absence. Excessive absences may result in an 'F' grade. Bluetooth earbuds or similar devices are not permitted while in the class. The ETAMU attendance policy is included in following sections.

FINAL DESIGN PROJECT (Experimental verification is optional):

Students will be divided into Final Design Project Groups that are required to complete a course design project highlighting the knowledge gained through this course. The project should demonstrate the student’s ability to link the theoretical knowledge and practical skills acquired in the course to real world applications. Students will work in a group of up to four students as assigned by the instructor.

The Final Design Project consists of multiple deliverables:

- 1) Final Design Project Proposal (Group Submission) Students will submit their project proposal to the instructor for approval.
- 2) Final Design Project Demo/Presentation/Report (Group Submission) Group PowerPoint presentations and report submissions are to be provided on D2L by due date/time.

The Final Design Project Presentation consists of:

- a) Final Design Project Presentation – Project Groups will present a PowerPoint presentation before class highlighting the design, (optional) construction, and (optional) testing process for their final design project. This will be a PowerPoint presentation using the template found on D2L.
 - b) Final Design Project Report – Project Groups will deliver a comprehensive report that captures group experiences in words and pictures concerning the design, construction, and testing of their project.
- 3) Final Design Peer Review (Individual Submission) All students are required to evaluate the performance of all group members including themselves.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%	A = 451- 500 Points (or equivalent)
B = 80%-89%	B = 401- 450 Points
C = 70%-79%	C = 351- 400 Points
D = 60%-69%	D = 301- 350 Points
F = 59% or Below	F = 300 & less Points

ASSESSMENTS

Weights of the assessments in the calculation of the final letter grade. The instructor reserves the right to adjust the schedule to serve the needs of the class, and any changes will be communicated.

Assessment/ task	Weight	Tentative Date
Attendance	15%	
Assignments (5)	15%	Weeks: 3, 5, 7, 10, 13
Class Quizzes (3)	15%	Weeks: 3, 6, 12
Midterm Exam	20%	Week 8
Final Exam	20%	Week 16
Project	15%	Week 15

Relationship between Assessments and Course/Student Learning Outcomes

1. Bridge the gap between circuit theory and electromagnetics.	Assignments, Exams
2. Apply knowledge of orthogonal systems and coordinates.	Exams
3. Acquire knowledge on wave propagation in a guided structure.	Exams
4. Practice the use of Maxwell's equations and their applications.	Assignments, Exams
5. Describe the characteristics of statics and dynamic electromagnetic fields.	Exams
6. Practice boundary conditions for analyzing and interpreting electric and magnetic fields.	Assignments, Exams
7. Demonstrate effective oral and written communication skills through teamwork discussions.	Assignments, Project
8. Use software and numerical techniques to solve EM problems	Assignments, Project

COURSE OUTLINE

The instructor reserves the right to adjust the schedule to serve the needs of the class, and any changes will be communicated.

Weeks	Lecture Topics
1: 12 th Jan.	Introduction to Electromagnetic Waves and Phasor Representation; Review of Previously Learned Laws and Mathematical Concepts
2: 20 th Jan. (Tuesday)	Introduction to Vector Calculus and Maxwell's Equations; Electromagnetic Wave Transmission in Guided and Unguided Media
3: 26 th Jan.	Transmission Line Analysis and Governing Equations, Characteristic Equations, Propagation constant, Lossless and lossy lines
4: 2 nd Feb.	Reflection and Transmission Coefficients; Standing Wave Ratio (SWR); Input impedance
5: 9 th Feb.	Power flow, Standing wave ratio, Impedance transformation.
6: 16 th Feb.	$\lambda/2$ and $\lambda/4$ Impedance transformers, Smith Chart and its applications, Stub matching, Applications (Microwave Filters, Amplifiers)
7: 23 rd Feb.	
8: 2 nd Mar.	Vector analysis. Electrostatics: Coulombs law, Electric Field and Flux
Break	
9: 16 rd Mar.	Gauss Law, Electrical potential, Dielectric Materials, Applications
10: 23 rd Mar.	
11: 30 th Mar.	
12: 6 th Apr.	Magnetostatics: Biot-Savart Law, Magnetic Dipoles, Related Law's and equations
13: 13 th Apr.	
14: 20 th Apr.	Faradays Law, Boundary Conditions, Polarization, Wave reflection, Applications (Antenna, Radar...)
15: 27 th Apr.	Review

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

Zoom Video Conferencing Tool

https://inside.tamuc.edu/campuslife/CampusServices/CITESupportCenter/Zoom_Account.aspx?source=universalmenu

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

STUDENT RESPONSIBILITIES FOR COURSE

CWID and Password

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@etamu.edu.

Technology-Related Issues

Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a ETAMU campus open computer lab, etc.

TECHNOLOGY REQUIREMENTS AND SUPPORT

Minimal Technical Skills Needed

Students will need reliable computer and internet access for this course. Students must be able to effectively use myLeo email, myLeo Online D2L, and Microsoft Office.

Learning Management System (LMS) – D2L

All course sections offered by East Texas A&M University have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are the technical requirements:

- View the [Learning Management System Requirements Webpage](#).
- Learn more on the [LMS Browser Support Webpage](#).

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found on the [Brightspace Support Webpage](#).

COMMUNICATION AND SUPPORT

Interaction with Instructor Statement

If you have any questions or are having difficulties with the course material, please contact your instructor. Correspondence will always be through university email (your “myLeo” mail) and announcements in myLeo online (D2L). You will not RECEIVE email through D2L, so be sure to check your ETAMU email for communication. Students are encouraged to check university email daily.

Include the Following in Emails with Instructor:

- Course name and subject in the subject line
- Salutation (Good afternoon, Dr. Jackson)
- Proper email etiquette (no “text” emails – use proper grammar and punctuation)
- Student name and CWID after the body of the email (possibly add to student signature on email)

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The [Code of Student Conduct](#) is described in detail online in the [Student Guidebook](#).

Students should also consult the [Rules of Netiquette Webpage](#) for more information regarding how to interact with students in an online forum.

ETAMU Attendance

For more information about the attendance policy, please view the [Attendance Webpage](#) and the [Class Attendance Policy](#)

Academic Integrity

Students at East Texas A&M University are expected to maintain high standards of integrity and honesty in all their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty University Procedure 13.99.99.R0.03](#)

[Undergraduate Student Academic Dishonesty Form](#)

[Graduate Student Academic Dishonesty University Procedure 13.99.99.R0.10](#)

[Graduate Student Academic Dishonesty Form](#)

Use of Artificial Intelligence

East Texas A&M University acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

East Texas A&M University
Velma K. Waters Library Rm 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@etamu.edu
Website: [Office of Student Disability Services](#)

Nondiscrimination Notice

East Texas A&M University will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information, or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in East Texas A&M University buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and ETAMU Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all East Texas A&M University campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

East Texas A&M Supports Students' Mental Health – Counseling Services

The Counseling Center at East Texas A&M University, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling 903-886-5145. For more information regarding Counseling Center events and confidential services, please visit <https://www.etamu.edu/counseling-center/>

Mental Health and Well-Being

The university aims to provide students with essential knowledge and tools to understand and support mental health. As part of our commitment to your well-being, we offer access to Telus Health, a service available 24/7/365 via chat, phone, or webinar. Scan the QR code to download the app and explore the resources available to you for guidance and support whenever you need it.

