



PHYS 589 Classical Electromagnetic Theory

COURSE SYLLABUS: Spring 2024

INSTRUCTOR INFORMATION

Instructor: Dr. Robynne Lock

Office Location: STC 238, or by Zoom

Office Hours: TBD

Office Phone: 903-213-5864

Office Fax: 903-886-5480

University Email Address: robynne.lock@tamuc.edu

Preferred Form of Communication: Email

Communication Response Time: Within 48 hours on weekdays and weekends

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Garg, A.K. (2012) Classical Electromagnetism in a Nutshell. Princeton University Press, Princeton. ISBN 9780691130187

Course Description

This course covers advanced classical electrodynamic theory including electrostatics, magnetostatics, induced electromagnetic fields, and electromagnetic waves. This includes a review of relevant of relevant mathematical concepts such as vector calculus. The mathematics is meant to illuminate, rather than overshadow, the physics.

University Catalog Description

The syllabus/schedule are subject to change.

Electrostatics, magneto-statics, multiple expansions, solution of boundary value problems, slowly varying currents, electromagnetic energy and momentum, Maxwell's equations and applications.

Student Learning Outcomes

1. Students will be able to use Maxwell's equations to explain physical situations.
2. Students will be able to apply Maxwell's equations to explore physical situations in detail.
3. Students will be able to explain how Maxwell's equations fit into the larger picture of physics.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students need to be able to use myLeo Online.

Instructional Methods

As this is an independent study, the instructor and student will meet and work through relevant material together on a regular schedule. Discussion is encouraged. The student will complete homework assignments on their own time but they are encouraged to discuss the assignment with the instructor as needed.

Student Responsibilities or Tips for Success in the Course

Students are expected to put in a good faith effort to learn the course material.

GRADING

In this course, we will be using specifications-based grading. This is a form of "mastery-based" grading or standards-based grading. In specs-based grading, the focus is not on assigning specific number grades to assignments and calculating averages, but rather completing specific assignments at sufficient quality. I expect anybody who makes a good faith effort throughout the course to be able to obtain an A or a B.

Grade of A:

Complete 5 out of 5 Homework assignments at sufficient quality

Grade of B:

Complete 4 out of 5 Homework assignments at sufficient quality

Grade of C:

Complete 3 out of 5 Homework assignments at sufficient quality

Grade of D:

Complete 2 out of 5 Homework assignments at sufficient quality

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Grade of F:

Complete fewer than 2 Homework assignments at sufficient quality

There are 5 problem sets, assigned approximately every other week. See schedule at the end of the syllabus. Sufficient quality for full credit requires a good faith effort on the majority of the problems and for there to be evidence of solid understanding of the material. Revisions are permitted and encouraged.

TECHNOLOGY REQUIREMENTS

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A

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Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or point release of that major version) and the previous major version of iOS (the latest minor or point release of that major version). For example, as of June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
 - 512 MB of RAM, 1 GB or more preferred
 - Broadband connection required courses are heavily video intensive

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- Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
 - Sound card, which is usually integrated into your desktop or laptop computer
 - Speakers or headphones.
 - *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp)
- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.

JavaScript is enabled.

Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
 - [Adobe Reader https://get.adobe.com/reader/](https://get.adobe.com/reader/)
 - [Adobe Flash Player \(version 17 or later\) https://get.adobe.com/flashplayer/](https://get.adobe.com/flashplayer/)
 - [Adobe Shockwave Player https://get.adobe.com/shockwave/](https://get.adobe.com/shockwave/)
 - [Apple Quick Time http://www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

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@tamuc.edu.

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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

Brightspace Support

Need Help?

Student 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 or click on the **Live Chat** or click on the words “[click here](#)” to submit an issue via email.



System Maintenance

D2L runs monthly updates during the last week of the month, usually on Wednesday. The system should remain up during this time unless otherwise specified in an announcement. You may experience minimal impacts to performance and/or look and feel of the environment.

Perusall

Interaction with Instructor Statement

The best method to reach the instructor is through email. You can send an email to robynne.lock@tamuc.edu with **PHYS 532 in the subject line**. If you do not receive a response within 48 hours, send a reminder email.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

1. You are responsible for knowing when all deadlines are.

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2. You are responsible for asking for clarification whenever directions are unclear to you.
3. **When emailing the instructor, include the course number in the subject line.**
4. You are expected to check your email and myLeo Online/D2L for class announcements at least once per day. Emails will be sent to the email addresses you provided to MyLeo.
5. Homework assignments are due at the times indicated in D2L. Late work will be accepted in extenuating circumstances.
6. Students are expected to be professional and respectful.

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.

University Specific Procedures

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 in the [Student Guidebook](http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx).
<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](http://www.albion.com/netiquette/corerules.html)
<http://www.albion.com/netiquette/corerules.html>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx) webpage and [Procedure 13.99.99.R0.01](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx).
<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

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

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

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

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

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Plagiarism

Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action. This includes self-plagiarism. Do not reuse work from another course.

AI use policy

Texas A&M University-Commerce 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.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

ADA Statement

Students with Disabilities

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:

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Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce 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 Texas A&M University-Commerce 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 A&M-Commerce 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.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

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

A&M-Commerce Supports Students' Mental Health

The Counseling Center at A&M-Commerce, 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

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regarding Counseling Center events and confidential services, please visit www.tamuc.edu/counsel

Resources for Students

Life is hard. I understand that you have a life beyond this class. I am here to support you as best I can, but there are many university offices on that can help you. I put this list together myself after helping previous students through some tough times. I wanted to make it easier for you to find what you need. I hope you find it helpful.

Title IX: Sexual harassment and assault

If you have experienced or are aware of sexual harassment, sexual misconduct, domestic violence, dating violence, or stalking, you can report this to the Title IX office.

TitleIX@tamuc.edu
McDowell Administration (BA) Building 259
903-468-3104

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the additional resources here:

Crisis center of NorthEast Texas: <http://www.cnetx.org>
Know your IX: <http://knowyourix.org>
End rape on campus: <http://endrapeoncampus.org>
Clery Center for Security on Campus: <http://clerycenter.org>
Not Alone: <https://www.notalone.gov>

Concerns and incident reporting

If you have experienced <https://www.tamuc.edu/office-of-student-rights-and-responsibilities/concerns-incident-reporting/>

Forms available for:

- Help a student when there is a concern for homelessness, food insecurity, or harm to self or others
- Civil rights/Title IX
- Student misconduct
- Organization misconduct
- Hazing
- Disruptive students
- Issue with grade, professor, university service, etc.

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Don't know where to go?

If you need help and you do not know where to go, Campus Life and Student Development can direct you to the most relevant office.

Campuslife@tamuc.edu
Halladay 201
903-886-5195

COURSE OUTLINE / CALENDAR

Schedule

Classes begin Wednesday, 1/10, and end Tuesday, 4/30.

Week 0 (1/10-1/12)	Introduction
Weeks 1-2 (1/16-1/26)	Review of mathematical concepts
Weeks 3-5 (1/29-2/16)	Electrostatics in vacuum
Weeks 6-8 (2/19-3/8)	Magnetostatics in vacuum
	Spring Break
Weeks 9-11 (3/18-4/5)	Induced electromagnetic fields
Weeks 12-15 (4/8-4/30)	Electromagnetic waves
Finals week (5/6)	

Homework Deadlines:

Homework 1: Review of mathematical concepts	1/31
Homework 2: Electrostatics in vacuum	2/21
Homework 3: Magnetostatics in vacuum	3/20
Homework 4: Induced electromagnetic fields	4/10
Homework 5: Electromagnetic waves	5/6

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