PHYS 2426.02E, University Physics II: Electricity & Magnetism

COURSE SYLLABUS: Spring 2024

This syllabus will be updated by the first day of class; See D2L for the latest version!!

INSTRUCTOR INFORMATION

Instructor: Blake Head
Office Location: STC 340
Office Hours: [Mon, Wed: 4:00-5:00 PM], or by appointment
Office Phone: 903.886.5359
Class Time: MWF: 2:00pm - 3:50pm, STC 135
University Email Address: thomas.head@tamuc.edu
Preferred Form of Communication: Office Hours or E-mail! Or just chat with me after class.
Communication Response Time: I will do my best to respond to your e-mails as soon as possible, definitely within 24 hours.

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required: *Introductory Physics: Building Models to Describe our World* – Ryan Martin, Emma Neary, Joshua Rinaldo, Olivia Woodman

This is an Open Source Textbook (free!). It has been adapted for this course, and will be available on D2L.

Access to D2L. This is the university's learning management system, accessed through MyLeo. This will serve as the central hub for the course. All deadlines and announcements will appear here. All links to videos and other material will appear here. ***If in doubt, go to the 2426 course shell in D2L and it will tell you what you are supposed to be doing.***

An account on EdPuzzle; the class is called "Physics 2426 Spring 2023 Newton" and the access code is tuhgooj. There will be some video lectures from Dr. Newton (another physics professor here at TAMUC) that will be very helpful!

Course Description

Physics 2426 is the second semester of a calculus-based physics sequence. University Physics II introduces electrical and magnetic phenomena in nature, including the concepts of electrical charges, electric and magnetic fields, the application of Gauss' Law, electric potential, conductors and insulators, currents, basic circuits, and induction.

Student Learning Outcomes

- Students will be able to demonstrate the following skills when analyzing situations involving electrostatic fields and potentials and their sources, currents, voltage, capacitance, power, basic electrical circuits, magnetic fields and their sources, and induction:
- Students will be able to conduct qualitative analysis of electromagnetism problems which demonstrates conceptual understanding as measured by performance in visualizing problems through diagrams, estimating answers, assessing and justifying answers, analyzing graphs and clear, written explanations.
- Students will be able to perform quantitative calculations in situations involving electric and magnetic fields, and demonstrate knowledge of the relevant basic units, vector addition, and application of basic calculus. Students will be able to assess answers to questions for plausibility.
- Students will be able to use simple laboratory demonstrations and computer simulations to explain the basic properties of electric and magnetic fields, and electrical circuits.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students should be able to use D2L (myLeo Online), view videos on YouTube, use a calculator, use Excel and/or a graphing calculator or app, convert work to a pdf, take screenshots, use a variety of online communication methods such as Zoom, Discord, D2L, and email.

Instructional Methods

This class is being taught in studio mode. Studio mode is a student-centered active learning environment that concentrates on group work. A good analogy is with a sports coach: you can't learn a sport from sitting in lecture – only by practicing it yourself with a coach present to give you instruction and feedback. Physics is no different – you can only learn by doing. The majority of class time will be focused on group activities. Activities will include conceptual work, labs, and problem solving. Activities will be completed in groups of 3-4. The instructor will assign groups. Groups will be changed 2-3 times during the semester. The instructor, learning assistant and graduate assistant will go from table to table, frequently sitting and observing your discussion. Our role is to help you ask the right questions that lead to you solving the problems yourselves. Physics education research has shown that students learn best when actively engaged in class. Studio mode has been implemented at many universities and has been found to have positive impacts on conceptual understanding and problem-solving ability.

Student Responsibilities or Tips for Success in the Course

The vast majority of class time will be spent working in groups. Students are expected to participate fully in group-work in their assigned roles. Students are expected to have completed the reading by the due date. Students are expected to take notes on all problems you solve in class, any notes shared by other groups on whiteboards. For work displayed on whiteboards, the easiest thing to do is to just take photos of the work using camera phones. All students are expected to complete the tutorial worksheets; although the in-class tutorials are not graded, you will need complete worksheets to do the tutorial homework and to revise for the exams.

GRADING

We will be utilizing a Standards Based grading system in this course. In simple terms, your performance in this class will be assessed based on a set of standards that I'm hoping for you to achieve throughout this course. This is counter to more traditional grading systems, where each assignment is given a single numerical score. Instead, I will provide feedback on each of your assignments. Using this feedback, you will have the opportunity to revise your work and resubmit. Remember, college is a bout **learning**, so as long as you are making the effort to learn, that is what is most important.

Your grade will be mostly determined by *homework assignments.* You are to complete these as homework assignments, and as the name implies, individually. Everything we do in class is group work, but homework is individual. I assign one of these nearly every class day, and they are due before the next class starts unless I say otherwise. You MUST turn your work in on time. I don't accept late work outside of extenuating circumstances! It is okay, however, if your first attempt simply says something like, "I think this has something to do with X, but I feel really lost." That will allow you to submit revisions.

On each *Individual Assignment*, you will receive 1 of 3 overall marks:

Label	What it means
Accepted	This work is completed for the most part correctly. Any errors are fairly minor. You are done!
Revise	You have attempted the work, but there are some things you need to work on learning better. You should revise your assignment.
No credit	You either submitted nothing, accidentally submitted the wrong assignment, or submitted work that is barely started.

You should expect most of your assignments first attempts to be marked *Revise*. This is not a bad thing. You should not feel discouraged. Everything I submit in my professional career needs to be revised. This is really closer to how real projects work. I am just holding you to a high standard and trying to support you in learning as much as possible.

If you work comes back *Revise*, that means you have one week to revise it. You have unlimited revision attempts, but you always need to complete your next revision within 1 week of when I last sent you feedback.

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- You must complete your revisions **individually** because these are how I see how much you can do on your own.
- However, you are **required to meet with an instructor** to discuss your revision and provide proof of this discussion with your submitted work. Have one of us (myself or one of the LAs) sign a note saying they talked to you about the assignment. You can upload this note with your work as an image/pdf file, or give it to me in class.
- You can meet with me during office hours or with the LAs during tutoring sessions. If your time on campus is limited, we can do this via Zoom. Time permitting, we can do some of this in class.

Each assignment comes with associated learning goals. These are where grade calculations come from, and this is where you will get more concrete feedback on how much you have learned. In your professional careers, you will get good at self evaluation and reflecting on how you are doing. We're working on this skill now, but I have learned that my customized feedback sentences can be difficult to parse. Anyway, hopefully you find these helpful.

For each learning goal/standard associated with an individual assignment, you will be given one of three marks:

Label	What it means
Satisfactory	You got this! You know how to solve this type of problem or use physics concepts to explain a physical situation with words or diagrams. If you had to do this next semester, I'm pretty sure you would be fine.
Minimum	You know how to do some parts of the problem or parts of your written explanation make sense, but you are still missing some important points.
Goals not met	Either I am having a really hard time understanding your work, you don't appear to understand something pretty fundamental to the concept or problem, or you didn't do the work.

You might notice that Satisfactory does not show up as green in D2L, depends where you are looking. That's because D2L actually has 4 levels, and the top level *exceptional* is green, but I don't need a 4th level, so just ignore that.

These learning goals are where grade numbers will actually come from. I have built a cool spreadsheet that will help you see how this all works. This probably seems confusing. I hope the spreadsheet helps.

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Satisfactory's correspond to a 3, Minimum to a 2, and Goals not met to a 1. We'll average together all of your work for a standard together, so you'll have a number for each standard, and we'll average all the standard numbers together to get an overall number that indicates what letter grade you would get. The scale goes like this:

A	2.7-3.0
B	2.4-2.7
C	2.1-2.4
D	1.8-2.1
F	0-1.8

Beyond the individual assignments are the group work and tutorials in class. You will take pictures of these and upload them to the proper location in D2L as well. Each student will need to submit their own copy, but of course your entire group can submit the same thing (after all, it IS group work).

This is also a new grading system for me! I am working closely with my colleagues here at TAMUC to make sure that your experience learning in this class is the best that it can be. I believe this system will be much better for everyone, but if you ever have questions please let me know!

Assessments

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce 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

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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**.**

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

Interaction with Instructor Statement

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

General Classroom

Students are expected to be on time and present for all class meetings. If an emergency results in an absence, the student should contact the instructor as soon as possible informing the instructor of the emergency and inquiring about ways to make up the missed class. The instructor will make judgment on how to handle the situation. Possible reasons for excused absence are listed in the "Student's Guidebook" under class attendance policy. Attendance and tardy

records will be maintained and both may result in deductions from your overall grade. Five unexcused absences will automatically result in a failing grade.

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

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: https://www.britannica.com/topic/netiquette

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
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:

Undergraduate Academic Dishonesty 13.99.99.R0.03
Undergraduate Student Academic Dishonesty Form

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/documents/13.99.99.R0.03UndergraduateStudentAcademicDishonestyForm.pdf

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Graduate Student Academic Dishonesty Form

http://www.tamuc.edu/academics/graduateschool/faculty/GraduateStudentAcademicDishonestyFormold.pdf

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

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
Texas A&M University-Commerce
Velma K. Waters Library Rm 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

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

AI Use in Courses

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

Department or Accrediting Agency Required Content

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TENTATIVE COURSE OUTLINE / CALENDAR

Week	Topic
1	Class Intro / Introduction to Electrostatics
2	Coulomb's Law (1D)
3	Coulomb's Law (2D)
4	Finish Coulombs Law, begin discussing electric field
5	Electric Field of Point charges
6	Electric Field from multiple charges
7	Charge Distributions
8	Fields from Charges distributions
9	Electric Potential Energy
10	Electric Potential Difference (Voltage)
11	Electric Flux / Gauss's Law
12	DC Circuits
13	Introduction to Magnetism
14	Ampere's Law and Lenz's Law
15	AC Circuits

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