

PHYS 1304, Spring 2022

Physics of a smartphone, or

Introduction to Electricity & Magnetism

General information

Time and location: Tuesday, Thursday, 11:00-12:20pm, 123 Fondren Science

Instructor: Pavel Nadolsky

E-mail: nadolsky@smu.edu

Phones: (214) 768-1756 (office)

Mailbox: 102 Fondren Science

Office: 203 Fondren Science

Office hours: Tuesdays, 1-2:30pm in 203 Fondren Science or on Zoom (by appointment). To sign up for an appointment, click on "Find Appointment" in the upper-right corner of the Calendar on Canvas.

TAs: TBA

TA's office hours: TBA

Course webpage: Posted on SMU Canvas (<https://smu.instructure.com/>), also accessible from <http://www.physics.smu.edu/~nadolsky/teaching.html>. To view, enter your 8-digit SMU ID and password.

Email me when...: ... your question takes more than 1 minute to answer. The breaks before and after the lecture are short (10 minutes each), and often several students line up with their questions. I may be able to answer better by email.

Textbook, learning objectives, grading, policies

Student learning outcomes The course will discuss physical principles of electrical and magnetic effects and aims to develop two equally important abilities:

- (1) to analyze and explain common electromagnetic phenomena in terms of standard concepts; and
- (2) to solve quantitative problems describing electromagnetic effects.

The course satisfies the University Curriculum (UC) requirement. Upon its successful completion, students will meet these expectations from **Pure and Applied Sciences student learning outcomes**:

- Students will be able to demonstrate basic facility with the methods and approaches of scientific inquiry and problem solving.
- Students will be able to explain how the concepts and findings of science or technology in general, or of particular sciences or technologies, shape our world.

Students will also meet these expectations from the **Quantitative Reasoning student learning outcomes**:

- Students will be able to develop quantitative models appropriate to problems in physics.
- Students will be able to formulate structured and logical arguments.
- Students will be able to apply symbolic systems of representation.

Textbook and digital learning systems Our course will use a classical text on introductory physics that is integrated with two modern online learning systems. Each student must get all three components. **Please watch this [short video](#)** recommending the cost-saving options to purchase the textbook and subscribe to the WileyPlus system.

1. **Textbook:** Fundamentals of Physics (12th edition, Chapters 21-36) by D. Halliday, R. Resnick, and J. Walker. The ebook version is available through the navigation link "[Wiley Course Resources](#)" on the right. A hardcopy (ISBN-13: 978-1119773511) is not required and can be purchased from the publisher through the same navigation link or from other vendors such as Amazon.
2. **WileyPlus:** You must subscribe to the WileyPLUS online learning system that comes with this textbook. Recommendations on the most economical options for buying the textbook and Wiley Plus system can be found in the above video.
3. Free **TurningPoint polling app** should be installed on your smartphone (available from [Apple App Store](#) and [Google Play](#)) or accessed via a web browser at [tpoll.com](#). The app will be used for in-class discussions. A part of your grade will be based on the participation in the discussions.

Elective material

1. [Introductory Physics II](#): free interactive summaries and practice quizzes (in Adobe Flash) on [www.hippocampus.org](#)
2. [YouTube lectures on introductory EM by Walter Lewin](#), videos from his highly regarded course taught at MIT

3. [Interactive E & M simulations at University of Colorado](#) -- hands-on HTML applets illustrating E & M concepts.
4. A problem-solving manual covering Introductory Physics II, for example:
 1. A. Halpern, A. Halpern, 3,000 Solved Problems in Physics (Schaum's Solved Problems), **ISBN-10:** 0070257345; **ISBN-13:** 978-0070257344
 2. T. Barrett, Introductory Physics with Calculus: Mastering Problem-Solving, **ISBN-10:** 0471739103, **ISBN-13:** 978-0471739104
 3. R. Oman, D. Oman, How to Solve Physics Problems (College Course), **ISBN-10:** 0070481660, **ISBN-13:** 978-0070481664

Structure of the course The lecture will be organized as a "flipped classroom". **You will learn the material before the class by reading the textbook, watching the videos, and taking online tutorials.** You will then clarify and enforce what you have learned through interactive activities in the class, homework assignments, and tests.

Assignments and grading

To receive a high grade, you must complete most homework assignments AND perform well on in-class tests and final exam. The course provides opportunities to earn credit for extra work, which is added to your total homework score. The total homework score can exceed 100%, but the final grade will be high only if the score on the tests is high as well.

Weekly assignments. On a typical week plan to do the following:

Assignment	Due by	Instructions	Credit
1. Visit the assigned module in the Canvas Calendar. Read an assigned chapter in the textbook; watch elective materials, such as videos and tutorials on www.hippocampus.org	Monday	Plan at least 3 hours on this part	
2. Complete your conceptual assignment in the "Assignments/Warm-ups" on Canvas	First try: Tuesday, 8am; final version: Friday, 10pm	Answer warm-up questions by 8am on Tuesday to the best of your ability based on your reading. In Tuesday class, we will review your answers. After that, you may improve your answers on Canvas until Friday	6+ points per warm-up (5 points on Tuesday for submission, effort, originality; 1 point on Friday for correctness; 1 point if your answer is shown in the lecture slides)

3. Complete an adaptive learning assignment (KNEWTON) on WileyPLUS	By the due date on Wiley	Answer KNEWTON questions and discuss any problems with the TA.	10 points per 1 completed KNEWTON assignment								
4. Participate in all polls	N/A	Always respond to the TurningPoint polls	x = number of missed TurningPoint responses <table border="1"> <thead> <tr> <th>x</th> <th>Penalty</th> </tr> </thead> <tbody> <tr> <td><20</td> <td>0 points</td> </tr> <tr> <td>20-29</td> <td>-x points</td> </tr> <tr> <td>> 30</td> <td>-3x points</td> </tr> </tbody> </table>	x	Penalty	<20	0 points	20-29	-x points	> 30	-3x points
x	Penalty										
<20	0 points										
20-29	-x points										
> 30	-3x points										
5. [Optional] Other ways	During the semester	Additional opportunities to earn extra credit will be announced throughout the semester.	Ask me about it!								

Tests. There will be **three 50-minute tests** during the semester and **one final test**, counted as 3 midterm tests.

Manual grading. On select weeks, you will be asked to turn in a few **hand-written problems from a WileyPLUS assignment**.

Late submission. Hand-written solutions completed after the deadline will receive 25% of the credit. Warm-ups submitted after the deadline will be not graded.

The final grade will be calculated as follows. **[The targeted number of assignment points and grade ranges will be finalized after 1 month.]**

1. Find percentage scores on the tests and weekly assignments.

On the tests: 100% = maximal score in the section on all tests.

On the assignments: 100% = 150 points from all assignments (assuming 12 warm-ups and 11 KNEWTON assignments); or more than 100%, if more than 150 points were earned.

2. Find the total score for the in-class tests AND homework assignments.

$$(\text{Total Score})^2 = (\text{Percentage score on the tests}) * (\text{Percentage score on the homework})$$

3. Convert the total score into the letter grade according to the following approximate breakdown:

Letter grade	A range	B range	C range	D range
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Total score	>85%	70-85%	60-70%	50-60%
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The boundaries between the grade intervals may shift up or down by a few percent depending on the actual distribution of the scores.

Masks and other anti-COVID measures

All participants are required to wear N-95 or surgical face masks for the whole duration of in-person meetings. Vaccination against COVID is strongly encouraged, as well as social distancing in the classroom.

COVID-19 and other Medical-Related Absences

If students test positive for COVID-19, they must fill out a [CCC Form \(Links to an external site.\)](#) to report the case. Up-to-date information about the response to COVID-19 during the spring 2022 term can be found on the [Mustang Strong website. \(Links to an external site.\)](#) To ensure academic continuity and avoid any course penalties, students should follow the same procedures described by their instructors as they would for any other medical-related absence in order to be provided with appropriate modifications to assignments, deadlines, and exams. Documents validating excused medical absences shall have specific dates of time periods indicated. Encounter forms and walk-out statements from the Health Center verify a student's visit to the Health Center BUT DO NOT AUTOMATICALLY INDICATE AN EXCUSED ABSENCE.

Laptops, tablets, smartphones

Can be only used for activities related to our class, such as reading the Halliday's textbook or for mathematical computations. There is a penalty of -3 points for each photo of unrelated laptop activity collected throughout the semester.

Disability Accommodations

Students who need academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit [http://www.smu.edu/Provost/SASP/DASS \(Links to an external site.\)](http://www.smu.edu/Provost/SASP/DASS) to begin the process. Once they are registered and approved, students then submit a DASS Accommodation Letter through the electronic portal, *DASS Link*, and then communicate directly with each of their instructors to make appropriate arrangements. Please note that accommodations are not retroactive, but rather require advance notice in order to implement.

Sexual Harassment

All forms of sexual harassment, including sexual assault, dating violence, domestic violence and stalking, are violations of SMU's Title IX Sexual Harassment Policy and may also violate Texas law. Students who wish to file a complaint or to receive more information about the grievance process may contact Samantha Thomas, SMU's Title IX Coordinator, at accessequity@smu.edu or 214-768-3601. Please note that faculty are mandatory reporters. If students notify faculty of sexual harassment, faculty must report it to the Title IX Coordinator. For more information about sexual harassment,

Pregnant and Parenting Students

including resources available to assist students, please visit www.smu.edu/sexualmisconduct (Links to an external site.).

Under Title IX, students who are pregnant or parenting may request academic adjustments by contacting Elsie Johnson (elsiej@smu.edu) in the Office of the Dean of Students, or by calling 214-768-4564. Students seeking assistance must schedule an appointment with their professors as early as possible, present a letter from the Office of the Dean of Students, and make appropriate arrangements. Please note that academic adjustments are not retroactive and, when feasible, require advance notice to implement.

Religious Observance

Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. [Click here for a list of holidays.](#) (Links to an external site.)

Excused Absences for University Extracurricular Activities

Students participating in an officially sanctioned, scheduled university extracurricular activity should be given the opportunity to make up class assignments or other graded assignments that were missed as a result of their participation. It is the responsibility of the student to make arrangements for make-up work with the instructor prior to any missed scheduled examinations or other missed assignments. (See [2020](#) (Links to an external site.)- (Links to an external site.)[2021 SMU Undergraduate Catalog](#) (Links to an external site.) under “Enrollment and Academic Records/Excused Absences.”)

Final Exams

Final course examinations shall be given in all courses where appropriate, and some form of final assessment is essential. Final exams and assessments must be administered as specified in the official examination schedule. Exams cannot be administered or due during the last week of classes or during the Reading Period. Syllabi must state clearly the form of the final exam or assessment, and the due date and time must match the official SMU exam schedule. Final exams are not required to be provided online.

Student Academic Success Programs

Students needing assistance with writing assignments for SMU courses may schedule an appointment with the Writing Center through Canvas. Students who would like support for subject-specific tutoring or success strategies should contact SASP, Loyd All Sports Center, Suite 202; 214-768-3648; <https://www.smu.edu/sasp> (Links to an external site.). (Links to an external site.)

Caring Community Connections Program

CCC is a resource for anyone in the SMU community to refer students of concern to the Office of the Dean of Students. The online referral form can be found at smu.edu/deanofstudentsccc (Links to an external site.). (Links to an external site.) After a referral form is submitted, students will be contacted to discuss the concern, strategize options, and be connected to appropriate resources. Anyone who is unclear about what steps to take if they have concerns about students should either consult the [CCC Reference](#) (Links to an external site.)[Guide](#) (Links to an external site.) or contact the Office of the Dean of Students at 214-768-4564.

Mental Health Resources: On-Call and On-going Counseling Services

Throughout the academic year, students may encounter different stressors or go through life experiences which impact their mental health and academic performance. Students who are in distress or have concerns about their mental health can schedule a same-day or next-day appointment to speak with a counselor by calling [Counseling Services](#) (Links to an external site.). Counselors are available at any time, day or night for students in crisis at this number: 214.768.2277 (then select option 2). They will be connected with a counselor immediately. Students seeking on-going counseling should

call the same number: 214.768.2277 (then select option 1) during normal business hours to schedule an initial appointment.

Campus Carry Law

In accordance with Texas Senate Bill 11, also known as the 'campus carry' law, and following consultation with entire University community, SMU chooses to remain a weapons-free campus. Specifically, SMU prohibits possession of weapons (either openly or in a concealed manner) on campus. For more information, please see: http://www.smu.edu/BusinessFinance/Police/Weapons_Policy