

# CURRICULUM PROPOSAL

## APPROVAL PAGE

Proposal Title: Breaking PHYS 2420 & 2421 into separate lecture/seminar & labs

College: COS      Department: Physics

**DEPARTMENT CHAIR- Mark Pederson**

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I have read the enclosed proposal and approve this proposal on behalf of the department.



October 31, 2021

Signature

Date

**COLLEGE CURRICULUM COMMITTEE CHAIR – Nancy Marcus**

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I have read the enclosed documents and approve the proposal on behalf of the college curriculum committee.



11-1-2021

Signature

Date

**COLLEGE DEAN – Robert Kirken**

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I have read the enclosed documents and approve the proposal on behalf of the college. I certify that the necessary funds will be allocated by the college in support of this proposal.



11/1/2021

Signature

Date

## UNDERGRADUATE CURRICULUM CHANGE MEMO

**Date:** 10/31/2021

**From:** Mark R Pederson, Professor Department of Physics on behalf of unanimous vote from Department of Physics Faculty

**Through:** Dr. Mark R. Pederson, Chair, Department of Physics

**Through:** Dr. Robert Kirken, Dean College of Science

**To:** Chair, Undergraduate Curriculum Committee

**Proposal Title:** Breaking PHYS 2420 & 2421 into separate lecture/seminar & labs

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In order to better reflect the fact that our introductory calculus-based physics courses are actually taught as a lecture/seminar and separate laboratory, we propose breaking PHYS2420 (Introductory Mechanics) a combined lecture/seminar and laboratory course into PHYS 2320 (Introductory Mechanics) a separate lecture/seminar course to be taken along with PHYS 2120 (Laboratory for PHYS 2320) a separate laboratory course. The content of both courses will be identical to the content that existed when both courses were combined. Similarly we propose breaking PHYS2421 (Introductory Electromagnetism) a combined lecture/seminar and laboratory course into PHYS 2321 (Introductory Electromagnetism) a separate lecture/seminar course to be taken along with PHYS 2121 (Laboratory for PHYS 2321) a separate laboratory course. The content of both courses will be identical to the content that existed when both courses were combined. In addition to this splitting better reflecting the actual structure, it will also better meet the needs of students who fail one course but pass the other. It will also better meet the needs of transfer students and physics majors as it affords the department with the flexibility needed to develop modern experiential learning protocols.

The Curriculum Director has said that a report will be run to identify all programs that include these courses so we can update the degree plans.

**Subject:** Vote on changing the structure of undergraduate instruction.  
**Date:** Friday, April 30, 2021 at 9:18:13 AM Mountain Daylight Time  
**From:** Pederson, Mark R  
**To:** Marcus, Nancy  
**CC:** Rivera, Julie A, Kirken, Robert, physics\_faculty, Konrardy, Rachael, Flores, Sergio  
**Attachments:** image001.png

Dear Nancy,

The physics department voted today to authorize splitting 2420, 2421, 1404, and 1403. The faculty voted 15-1 to split the courses. As chair of the department, I am also in favor of this decision. All faculty members and Sergio Flores were present.

I guess we now need to understand the process and timeline for implementation.

Thanks,  
Mark



**Mark R Pederson, PhD FAPS**  
Professor and Chairman  
Dr. C. Sharp Cook Chair of Physics  
  
Department of Physics, PSCI 209A  
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Office: 915-747-8869  
[www.utep.edu/science/physics](http://www.utep.edu/science/physics)

University of Texas at El Paso  
PHYS 2420 Introductory Mechanics  
(CRN: 12702)

**Term:** Fall 2021  
**Lecture:** TR 12:00 pm - 1:20 pm  
**Location:** PSCI 115

**Prerequisites:** MATH 1411 may be taken concurrently

**Instructor:** Luis Basurto  
**Office:** Physical Science Building 215-A  
**E-mail:** lbasurto3@utep.edu  
**Office hours:** MW 12:00PM-1:00PM

**Lab Coordinator:** Karla Carmona  
**Office:** Physical Science Building 317  
**E-mail:** kcarmona@utep.edu

**Grading Policy:**

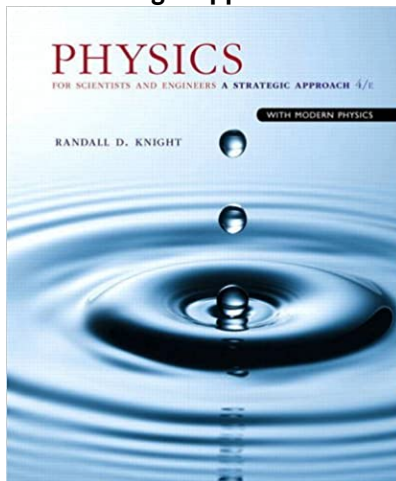
In-class exams	45% (3 exams)
Homework	10%
Final	20%
Quizzes	10%
Lab	15%

**Objectives:**

In accordance with the UTEP Catalog, in this course you will learn dynamics of particles and rigid bodies using vectors and calculus, conservation of energy and momentum, and kinetic theory. These concepts are foundational in the physical sciences and many branches of engineering and if you are taking this class, chances are you will continue to apply these concepts in the rest of your college career and in your professional career. Putting some effort into this class will pay off.

- 1) You will learn about several physical concepts, how they are connected to each other, and how they are used in the real world. This will happen mostly in lecture.
- 2) You will learn how to setup and solve problems applying concepts and models learned in class. This will happen mostly in the recitations and by doing homework problems.
- 3) You will learn to think scientifically about the world and apply ideas from the class to both experiments and current events. This will happen mostly in lecture and in the lab.

**Text: Physics for Scientists & Engineers: A Strategic Approach 4th Edition by Randall Knight**



**Online homework:** Mastering Physics, Pearson <http://masteringphysics.com>

**Course name:** 2420BASURTOF2021

**Course ID:** basurto77742

The class will follow the textbook, and homework problems will come from the problems at the end of the chapters and as such, renting or buying the textbook is encouraged, but **access to the mastering physics website is required. Download the registration instruction sheet from Blackboard to register.**

**Exams:**

There will be 3 in-class exams, each covering 4 chapters. Although the material tested on the exams is not cumulative, new concepts in physics are built on previous ones.

**Final:**

The final exam will be a comprehensive exam.

**Lab:**

The lab is independent of the class, but there is synergism. Karla Carmona is the Lab Coordinator.

**Students with Disabilities:**

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to [cass@utep.edu](mailto:cass@utep.edu), or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at <https://www.utep.edu/student-affairs/cass/>. Accommodations might include but are not limited to note takers, readers, or extended time on exams and assignments. Please take care of this as soon as possible and before the first exam.

**Military statement:** Students being called for military duties need to contact the instructor as soon as possible.

**Academic dishonesty:**

It will be tough to cheat on this class. The main opportunity is to lie regarding which homework problems you have solved, but if you are asked to the board and evidently lied about you solving the problem, we will have a conversation. Science is incompatible with cheating, don't do it.

## Course overview

- Ch. 1 Concepts of Motion
- Ch. 2 Kinematics in One Dimension
- Ch. 3 Vectors and Coordinate Systems
- Ch. 4 Kinematics in Two Dimensions
- Ch. 5 Force and Motion
- Ch. 6 Dynamics I: Motion Along a Line
- Ch. 7 Newton's Third Law
- Ch. 8 Dynamics II: Motion in a Plane
- Ch. 9 Work and Kinetic Energy
- Ch. 10 Interactions and Potential Energy
- Ch. 11 Impulse and Momentum
- Ch. 12 Rotation of a Rigid Body

## Tentative Course Schedule

Week 1 Aug 24 & Aug 26	Introduction, Chapter 1
Week 2 Aug 31 & Sep 2	Chapter 2
Week 3 Sep 7 & Sep 9	Chapter 3
Week 4 Sep 14 & Sep 16	Chapter 4
Week 5 Sep 21 & Sep 23	Chapter 4, <b>Midterm 1</b>
Week 6 Sep 28 & Sep 30	Chapter 5
Week 7 Oct 5 & Oct 7	Chapter 5, Chapter 6
Week 8 Oct 12 & Oct 14	Chapter 6, Chapter 7
Week 9 Oct 19 & Oct 21	Chapter 7, Chapter 8
Week 10 Oct 26 & Mar 28	Chapter 8, <b>Midterm 2</b>
Week 11 Nov 2 & Nov 4	Chapter 9
Week 12 Nov 9 & Nov 11	Chapter 10

Week 13 Nov 16 & Nov 18	Chapter 11
Week 14 Nov 23 & Nov 25	Chapter 12, <b>Thanksgiving</b>
Week 15 Nov 30 & Dec 2	Chapter 12, <b>Midterm3</b>

**THE UNIVERSITY OF TEXAS AT EL PASO  
COLLEGE OF SCIENCE  
DEPARTMENT OF PHYSICS**

<b>Course #:</b>	PHYS 2421, CRN 12260 Three workshops: CRN 10977, 11626, 11627 (Enroll in one) Enroll in Labs: Instructor Karla Carmona <a href="mailto:kcarmona@utep.edu">kcarmona@utep.edu</a>
<b>Course Title:</b>	Introductory Electromagnetism
<b>Credit Hrs:</b>	4.0
<b>Term:</b>	Fall 2021
<b>Course Meetings &amp; Location:</b>	MW 12:00 – 1:20 p.m. Lectures and workshops online, exams on campus
<b>Prerequisite Courses:</b>	-
<b>Instructor:</b>	Dr. Chunqiang Li
<b>Office Location:</b>	PSCI 221E
<b>Contact Info:</b>	Phone #: (915) 747-7537 E-mail: <a href="mailto:cli@utep.edu">cli@utep.edu</a> Fax #: (915) 747-5447
<b>Office Hours:</b>	Monday 11am-12pm, or by appointment
<b>Final Exam:</b>	Friday, December 10 <sup>th</sup> 2021, 1:00-3:45 pm
<b>Safety Rules:</b>	<p>Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to <a href="mailto:covidaction@utep.edu">covidaction@utep.edu</a>, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.</p> <p>The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit <a href="http://epstrong.org">epstrong.org</a>.</p>
<b>Course Delivery:</b>	<p>1. I will give live lectures on Blackboard at scheduled times, i.e. MW 12-1:20 pm. These sessions will be recorded.</p> <p>2. TAs will give workshops and quizzes at scheduled times.</p>
<b>Textbook(s), Materials:</b>	<p><b>Physics for Scientists and Engineers</b>, by Randall D. Knight, 4<sup>th</sup> Ed., Pearson. Chapter 22-32. ISBN: 978-0134081496</p> <p>Please try to complete the weekly reading before lecture. Lectures will be more effective and you will be ready to ask questions on topics that may have not been clear from the reading.</p>



<b>Course Objectives (Learning Outcomes):</b>	This semester you will be learning about the amazing world of electricity and magnetism and it all revolves around the physical property known as “charge”. A simple way to think about EVERYTHING you will learn in this course is that you will learn about 1) stationary charges, 2) flowing charges (moving together with more or less constant velocity), 3) accelerating charges. Also you will learn the coupling between electricity and magnetism, which induces electromagnetic waves!
<b>Grading Policy:</b>	40% Final Exam: cumulative with emphasis on most recent 40% Midterm Exams: two exams during the semester 20% Lab: A student will receive an incomplete for the course if he/she doesn't pass the laboratory. 10% (extra) Quiz during workshops

<p><b>Course Activities/Assignments:</b></p>	<p><b>Workshop</b> TAs will solve exemplar problems during each workshop session, and give quizzes.</p> <p><b>Home work</b> Supplementary reading, answering questions, and solving problems will be assigned in advance in the lecture. Also, our textbooks come with problems at the end. Homeworks will be assigned after each chapter.</p> <p>It is essential that students become well versed in problem solving methods, which means developing the writing skills to set up a problem, including diagrams and mathematical manipulation to achieve the final answer. A numerical score will be assigned for each homework set based on graded and counted problems.</p> <p>Feel free to form study groups with your classmates and seek help from any lecture instructor during his or her office hours as you attempt to solve the problems. Make sure that you understand the solutions and write them up yourself. There is a strong correlation between homework scores and exam scores!</p> <p><b>Exams</b> Exams will consist of problems very similar to the worked example problems in the text and the assigned homework problems. Exams will be strictly closed-book. You should bring with you a pocket calculator to work out the answers to numerical problems: make sure the battery is charged!</p> <p>No cell phones allowed in the exams!</p> <p>Full credit on exams will be awarded for complete solutions including drawing a figure and deriving necessary relations if appropriate, and for numerically accurate answers with units. Partial credit may be given for correct derivations if the answer is numerically incorrect due to arithmetic errors. No credit will be given for relations written down at random or for numerical answers that are not supported by a reasonably complete derivation.</p> <p>The best way to prepare for the exams is to study the example problems and work out the assigned homework problems regularly. You should work as many additional problems from the text as you can: this is the best way to ensure your understanding of the material.</p>
<p><b>Make-up Policy:</b></p>	<p>An extension of the due date for the homework as well as the make-up of missing exams will be granted only in extraordinary circumstances.</p>
<p><b>Attendance Policy:</b></p>	<p>No credit will be granted for just attending the class.</p>
<p><b>Academic Integrity Policy:</b></p>	<p>Please see: <a href="http://academics.utep.edu/Default.aspx?tabid=23785">http://academics.utep.edu/Default.aspx?tabid=23785</a></p>

<b>Civility Statement:</b>	<ul style="list-style-type: none"> <li>• Cell phones and pagers should be turned off during class time.</li> <li>• When absences occur, it is your responsibility to obtain handouts and notes from your peers. When possible you will complete the activities you have missed.</li> <li>• Academic integrity is to be practiced at all times.</li> </ul>
<b>Disability Statement:</b>	<p>If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to <a href="mailto:cass@utep.edu">cass@utep.edu</a>, or visit their office located in UTEP Union East Building, Room 106. For additional information, please visit the CASS website at <a href="http://www.sa.utep.edu/cass">www.sa.utep.edu/cass</a>.</p> <p>The student is responsible for presenting to the instructor any accommodation letters and instructions.</p>
<b>Military Statement:</b>	<p>If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor at the beginning of the semester.</p>
<b>Recruitment of Note-Taker</b>	<p>The Center for Accommodations and Support Services (CASS) provides services for students with disabilities. Some students can benefit from Peer Note Takers. If you are a good note taker and are interested in earning a stipend of \$100 for being a Note-Taker for the semester, please log into <a href="http://cassportal.utep.edu">http://cassportal.utep.edu</a> to sign up. Help a fellow student in being successful at UTEP, do not forget to include your Note Taker assignment in your resume.</p>

## Course Tentative Schedule

Instructions: PHYS 2421, Instructor: Chunqiang Li

Week 1 Readings	In preparation for Week 1's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 22 Electric Charges and Forces</li></ul>
Week 2 Readings	In preparation for Week 2's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 23 Electric Field (part)</li><li>• Field models and some examples</li></ul>
Week 3 Readings	In preparation for Week 3's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 23 Electric Field (part)</li><li>• Parallel plate capacitor</li></ul>
Week 4 Readings	In preparation for Week 4's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 24 Gauss's law</li></ul>
Week 5 Readings	In preparation for Week 5's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 25 Electric Potential (part)</li><li>• Electric potential energy</li></ul>
Week 6 Readings	In preparation for Week 6's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 25 Electric Potential (part)</li><li>• Electric potential of several examples</li></ul>
Week 7 Readings	In preparation for Week 7's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Ch 26 Potential and Energy</li><li>• Prepare for midterm exam 1 (Ch 22-26)</li></ul>
Week 8 Readings	In preparation for Week 8's objectives, please read the following course materials. <ul style="list-style-type: none"><li>• Midterm exam 1 Ch 22-26</li></ul>

# Blackboard

	<ul style="list-style-type: none"><li>• Review of midterm exam</li><li>• Ch 27 Currents and resistances (part)</li></ul>
Week 9 Readings	<p>In preparation for Week 9's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 27 Currents and resistances (part)</li><li>• Conductivity and resistivity</li></ul>
Week 10 Readings	<p>In preparation for Week 10's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 28 Fundamental of circuits</li></ul>
Week 11 Readings	<p>In preparation for Week 11's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 29 Magnetic field (part)</li></ul>
Week 12 Readings	<p>In preparation for Week 12's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 29 Magnetic field (part)</li><li>• Ch 30 Electromagnetic induction (part)</li></ul>
Week 13 Readings	<p>In preparation for Week 13's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 30 Electromagnetic induction (part)</li></ul>
Week 14 Readings	<p>In preparation for Week 14's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 31 Electromagnetic Fields and Waves (part)</li><li>• Prepare for midterm exam 2 (Ch 27-31)</li></ul>
Week 15 Readings	<p>In preparation for Week 15's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Ch 31 Electromagnetic Fields and Waves (part)</li><li>• Prepare for midterm exam 2 (Ch 27-31)</li><li>• Midterm exam 2 (Ch 27-31)</li></ul>
Week 16 Readings	<p>In preparation for Week 16's objectives, please read the following course materials.</p> <ul style="list-style-type: none"><li>• Review of midterm exam 2</li><li>• Ch 32 AC Circuits (part)</li></ul>