

# Embry-Riddle Aeronautical University Prescott Campus

<b>Course</b>	<b>PS250.02</b>	<b>Physics for Engineers III (Spring 2019)</b>	<b>3 credit hours</b>
<b>Time</b>	T Th	2:50 – 4:05 pm	Location: AC1-104
<b>Instructor</b>	<b>Dr. Darrel Smith</b>		
<b>Office Hours</b>	See my web page: <a href="http://physicsx.pr.erau.edu/">http://physicsx.pr.erau.edu/</a>		
<b>Office</b>	AC1 Room 253		
<b>Phone</b>	777-6663		

## Course Description

This course is a calculus-based study of the fundamental principles of electricity and magnetism. It is the third course of a three-semester sequence, intended for science and engineering students and is designed to provide the students with an appropriate background for more advanced physics and engineering course work. Topics of discussion include: electric forces, electric fields, Gauss's law, Ohm's law, Ampere's law, Faraday's law, Lenz's law, Kirchhoff's law, and Maxwell's equations; electric potential and electrostatic potential energy; capacitance; simple DC circuit theory; magnetic force, magnetic field; inductance; electromagnetic oscillations and wave propagation; linear accelerators, and cyclotrons. **Prerequisites: PS160 and MA242.**

## Goals

The fundamental aim of the course is to provide a rigorous introduction to classical physics at a realistic level of conceptual and mathematical sophistication for students who are concurrently taking a third-semester course in calculus. The emphasis is on developing an understanding of the basic physical principles. Problem solving is central to this aim and practical applications are introduced where appropriate.

**Textbook**                      **University Physics (14th edition)** by Young and Freedman, Pearson, © 2016  
**ISBN-13: 978-0321982582**

**Attendance**                      "Regular attendance and punctuality, in accordance with the published class schedule, are expected at all times in all courses." . . . . ***Don't miss class !!***

## Course Outline

Chapter 21 Electric Charge and the Electric Field  
Chapter 22 Gauss's Law  
Chapter 23 Electric Potential  
**1<sup>st</sup> Exam (10%) "Electrostatics"**

Chapter 24 Capacitance and Dielectrics  
Chapter 25 Current, Resistance, and Electromotive Force  
Chapter 26 Direct Current Circuits

**2<sup>nd</sup> Exam (15%) "DC Circuits"**

Chapter 27 The Magnetic Field and Magnetic Forces  
Chapter 28 Sources of Magnetic Field  
Chapter 29 Electromagnetic induction  
Chapter 30 Inductance and Magnetic Materials

**3<sup>rd</sup> Exam (20%) "Magnetic Fields"**

Chapter 31 Alternating Current Circuits

**Final Exam (30%)      Comprehensive Final**  
**8:00 – 10:00 am      May 2, 2019      (Thursday)**

<b>Grading</b>	<b>Weight</b>	
Homework	25%	A = 90 - 100%
Exams	10/15/20% each    3 exams = 45%)	B = 80 - 90%
Comprehensive Final	30%	C = 70 - 80%
		D = 60 - 70%

### Homework Assignments

Homework Assignments are posted on the Mastering Physics website. If you did not purchase a Mastering Physics license with your textbook, you can obtain one by logging in to **masteringphysics.com** and requesting (i.e., paying for) a student license. The Mastering Physics ID for this course is shown below:

**MPSMITH69419**

Make sure you **enter the correct Mastering Physics ID**. The homework assignments, along with the exams, are shown in Mastering Physics once you register into my Mastering Physics class. [More details for opening a Mastering Physics account are found at the end of this syllabus.](#)

### Classroom Notebook

I encourage you to keep and maintain a notebook for taking class notes and recording the solutions to your MasteringPhysics homework problems. When you prepare for your 3 exams and your final, you will discover that your notebook is a useful study tool.

**The best way to prepare for the exams** is to understand how to solve the homework problems. You are responsible for understanding the solutions to homework problems as well as the material presented in class.

## **LEARNING OUTCOMES:**

1. Describe the interaction of static electric charges, utilizing the concept of electric field and compute the electric field produced by simple charge distributions by direct integration and by employing Gauss's Law.
2. Define electric potential, potential energy, and capacitance, solve related problems.
3. Analyze the behavior of simple direct-current circuits, including resistance-capacitance arrangements.
4. Describe the interaction of moving electric charges utilizing the concept of magnetic field.
5. Describe Gauss' law for magnetism, creation of electric fields from changing magnetic fields (Faraday's Law) and the creation of magnetic fields from changing electric fields (Amperes' Law with displacement current).
6. Solve problems involving electromagnetic induction and motional EMF.
7. Define inductance and analyze the behavior of resistance-inductance and inductance-capacitance circuits.
8. Describe the interplay of oscillating electric and magnetic fields required for propagating electromagnetic waves.

## **Tutoring**

Tutoring will begin the 2<sup>nd</sup> or 3<sup>rd</sup> week of the semester with additional times and tutors added throughout the semester. Go to: **ERNIE → Services → Academics → Tutoring Schedule**

Tutoring is free and unlimited for all ERAU students. Always check the online schedule for updates and changes.

## **Academic Integrity/Conduct**

Embry-Riddle is committed to maintaining and upholding academic integrity. This includes carrying out one's own course of study within the parameters set by one's instructors, by academic administrators, and by University values. It includes avoiding cheating and plagiarism; maintaining the quest for excellence in study, written assignments, and other academic tasks; and reinforcing honesty and rigor in all one's academic behavior. All students, faculty, and staff have obligations to reinforce the above and take corrective action when necessary. To report issues of academic integrity, contact (in appropriate order); the course Professor, the academic Department Chair and/or the Dean of the College. For more information about academic integrity, please refer to the academic catalog and your course syllabi.

For more information see the Student Handbook:

<https://prescott.erau.edu/-/media/files/prescott/campus-life/dean-of-students/prescott-student-handbook.pdf?la=en&hash=4A933D54C706D4A969DFD66AC05357E3D6820F/>

## Quick Access to Institutional Policies and Services

- Civil Rights Equity & Title IX <https://erau.edu/leadership/title-ix/>
- Disability Support Services <http://prescott.erau.edu/about/disability-support>
- Safety and Security <http://prescott.erau.edu/about/security>
- Student Handbook <https://prescott.erau.edu/-/media/files/prescott/campus-life/dean-of-students/prescott-student-handbook.pdf?la=en&hash=4A933D54C706D4A969DFD66AC05357E3D6820F/>
- Academic Calendar <http://prescott.erau.edu/campus-life/academic-calendar>
- Institutional Review Board <https://erau.edu/research/resources/irb/>
- Vet Resources <https://prescott.erau.edu/veterans-resources/>

## Access To Learning

*ERAU is committed to the success of all students. It is University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to discuss and/or request accommodations, please contact Disability Support Services in Hazy Library Room 109, extension 6750, or 928/777-6750.*

	<b>PS250.05</b>	<b>Spring 2019</b>
	<b>T Th</b>	
<b>Day</b>	<b>Lecture</b>	<b>Date</b>
1	Chapter 21	10-Jan
2	Chapter 21	15-Jan
3	Chapter 21	17-Jan
4	Chapter 22	22-Jan
5	Chapter 22	24-Jan
6	Chapter 23	29-Jan
7	Chapter 23	31-Jan
8	Review	5-Feb
9	<b>Exam 1</b>	<b>7-Feb</b>
10	Chapter 24	12-Feb
11	Chapter 24	14-Feb
12	Chapter 25	19-Feb
13	Chapter 25	21-Feb
14	Chapter 26	26-Feb
15	Chapter 26	28-Feb
16	Review	5-Mar
17	<b>Exam 2</b>	<b>7-Mar</b>
	<b>Spring Break</b>	
18	Chapter 27	19-Mar
19	Chapter 27	21-Mar
20	Chapter 28	26-Mar
21	Chapter 28	28-Mar
22	Chapter 29	2-Apr
23	Chapter 29	4-Apr
24	Chapter 30	9-Apr
25	Chapter 30	11-Apr
26	Review	16-Apr
27	<b>Exam 3</b>	<b>18-Apr</b>
28	Chapter 31	23-Apr
29	Chapter 31	25-Apr
	<b>Final Exam</b>	<b>2-May</b>

## First, make sure you have these 3 things...

1. **Email:** You'll get some important emails from your instructor at this address.
2. **Course ID:** Ask your instructor for your Course ID!
3. **Access code or credit card:** An access code card may be packaged with your new book or may be sold by itself at your bookstore. Otherwise, you can buy instant access with a credit card or PayPal account during registration.



## Next, get registered and join your course!

1. Go to [Pearson Mastering Physics webpage](#).
2. Under **Register Now**, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's **Course ID** (ex. MAPprofessor12345), and choose **Continue**.
5. Enter your existing Pearson account username and password and select **Sign in**. You have an account if you've ever used a Pearson MyLab & Mastering product, such as MyLab Math, MyLab IT, or Mastering Chemistry.
  - If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
  - Enter the access code that came with your textbook or was purchased separately from the bookstore.
  - Buy access using a credit card or PayPal account.
7. From the "You're Done!" page, select **Go to My Courses**.
8. Select **Yes** and enter your **Course ID** to join your course. Click **Continue**.
9. If asked, enter your **Student ID** according to the instructions provided and click **Continue**. That's it! You should see the course home page for the course.

## To sign in later:

1. Go to [Pearson Mastering Physics webpage](#) and select **Sign In**.
2. Enter your Pearson account username and password from registration, and select **Sign In**.
  - If you forgot your username or password, select **Forgot your username or password?**

## To join another course for the same textbook (no additional purchase needed):

1. Sign in with the username and password that you specified during registration.
2. Select **My Courses** in the upper left and then choose **Join a Course**.
3. Enter the **Course ID** from your instructor and click **Continue**.
4. If asked, enter your **Student ID** according to the instructions provided and click **Continue**.
5. To switch courses, select **My Courses** from the course menu (left side).
6. Select any active course link that appears below **Switch to another course**.
7. The next time you sign in to Mastering, your course view will match the last course you chose.

*If you have a technical issue:* Contact [Pearson Support](#).