Embry-Riddle Aeronautical University
Prescott Campus

Course **PS208.01 Physics II Spring 2023**
3 credit hours

Time M W F 3:00-3:50 PM **Location** 52A

Instructor **Dr. Darrel Smith**
Office Hours **See my website:** http://physicsx.erau.edu/

Office Building 74 (AC1) Room 253
Phone 1.928.777.6663

Course Description

Rotational motion; conservation of angular momentum; simple harmonic motion; waves; fluids; sound; kinetic theory of gases; thermodynamics. Prerequisite: PS215 or PS150
Corequisite: MA242

Goals

This course is required for the Space Physics, Astronomy and Engineering Physics Programs. It is the second of a three-semester sequence of introductory, classical calculus-based physics, designed to provide the student with a solid foundation for more advanced course-work in physics and engineering.

Textbook **University Physics (15th edition)** by Young & Freedman, Addison Wesley, Inc © 2020.
ISBN: 978-0-13-521611-8 www.pearson.com
This book gives an exhaustive and detailed explanation of physics principles and how to apply them. As a result, it's sometimes difficult to *see the forest for the trees*. In my lectures, I will strive to show how each of the concepts fits in to the grander body of knowledge that we call *physics*. Do not sell this book. My lecture notes can be found at http://physicsx.erau.edu/

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 10 Dynamics of Rotational Motion (Torque and Angular Momentum)
Chapter 11 Equilibrium and Elasticity

1st Exam (10%)

Chapter 12 Fluid Mechanics
Chapter 13 Gravitation
Chapter 14 Periodic Motion

2nd Exam (15%)

Chapter 15	Mechanical Waves
Chapter 16	Sound and Hearing
Chapter 17	Temperature and Heat

3rd Exam (20%)

Chapter 18	Thermal Properties of Matter--Molecular Properties of Gases
Chapter 19	The First Law of Thermodynamics
Chapter 20	Entropy and the 2nd Law of Thermodynamics

Final Exam (25%) ***Comprehensive Exam***
Saturday, April 29, 2023 8:00 – 10:00 AM 52A

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

Mastering Physics

You will submit your homework assignments, quizzes, exams and final exam using Mastering Physics. Here are the instructions for registering in my course. Once you have a license, you can connect to my course and its contents using the course ID: **smith28937**. The first homework assignment (chapter 10) is due Thursday, January 19, 2023, so, you should start reading Chapter 10 and start submitting your answers to the homework problems soon.

Homework

Homework is an essential part of this course. The homework sections at the end of each chapter are designed to develop and improve (1) your critical thinking skills, and (2) your ability to apply physics principles when solving physics problems.

Learning Outcomes (from the university syllabus):

1. Define: General Properties of Matter, Simple Harmonic Motion, Postulates of kinetic theory, the first and second law of thermodynamics, entropy, basic temperature scales, specific heats at constant pressure and at constant volume, and Laws of Reflection and Refraction.
2. Solve problems involving: Oscillatory motions involving small linear or rotational displacement, Bernoulli's equation for laminar flow, standing and traveling waves, Doppler shifts, constructive and destructive interference, entropy, first and second law of thermodynamics, one and two dimensional thermal expansion for isotropic and non-isotropic materials, and calorimetry.
3. Analyze efficiencies of heat engines that utilize different cycles such the Carnot cycle, Sterling cycle, etc.
4. Calculate V_{rms} for gases using kinetic theory, the average momentum for particles of such gases and the temperature of these gases.
5. Explain the differences between kinetic theory and thermodynamics.

6. Discuss the application of the kinetic theory leading to the equipartition of energy and to the ratio of specific heats of monatomic, diatomic and polyatomic gases and of solids.

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 (Links to an external site.)**.

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- **Civil Rights Equity & Title IX (Links to an external site.)**
- **Disability Support Services (Links to an external site.)**
- **Safety and Security (Links to an external site.)**
- **Student Handbook (Links to an external site.)**
- **Academic Calendar (Links to an external site.)**
- **IRB (Links to an external site.)**
- **Vet Resources (Links to an external site.)**