PHYS 2514 SYLLABUS
General Physics
An Online Course

PURPOSE OF THE COURSE:
This course covers the following concepts:
• Significant figures and scientific notation;
• Order of magnitude estimation and dimensional analysis;
• Work with velocity and acceleration;
• Vectors and scalars;
• Motion in one and two dimensions;
• Newton’s Laws and Gravity;
• Conservation Laws;
• Rotation and static equilibrium;
• Fluids and how density and pressure affect them;
• Archimedes’ principle
• Equation of continuity and Bernoulli’s equation;
• Different types of oscillations;
• Harmonic motion;
• Waves, transverse and longitudinal waves;
• Wavelength and amplitude
• Sound and the Doppler effect.

COURSE DESCRIPTION:
To learn how physics affects the universe using mathematics and Newton’s Laws and the Laws of Conservation, among other topics, to describe the motion of the things around us.

COURSE OBJECTIVES:
Upon completion of this course, students will be able to do the following:
1. Solve problems pertaining to motion in one direction and in two directions.
2. Explain Newton’s three laws and use them to solve problems.
3. Describe the laws of conservation of energy and momentum.
4. Describe and apply concepts related to rotational motion, angular momentum, and static equilibrium.
5. Define concepts associated with fluids, oscillations, wave motion, and sound.

REQUIRED TEXT & MATERIALS:


Scientific calculator
You will need access to a computer equipped with high-speed internet access, Adobe Flash Player 9.0 or newer, and Adobe Reader 9.0 or newer. You can access the Adobe Flash Player and Adobe Reader programs from the Required Tech page of the orientation to this course.

**LESSON ASSIGNMENTS:**
You are required in each lesson to:

- Read the lesson objectives.
- Read the assigned chapter in the textbook.
- Read and study the Study Notes
- Answer the Chapter Questions
- Solve the Chapter Problems
- Answer the Lesson Assignment questions

Viewing the modules and solving the problems on the CD will also be helpful.

**EXAMS:**

Your grade will be based on five proctored exams given. Each exam will be worth 20% of your grade. Because the subjects covered will build on what you have already learned, each exam will contain information from the previous exams. For instance, many problems involving dynamics (Chapters 4-6) also incorporate kinematics (Chapters 1-3). So Exam 2 will concentrate on dynamics but will necessarily involve kinematics as well. Each exam will concentrate on the material covered since the previous exam but will contain all material studied through that point in the class. You will have 2 hours to complete each exam.

Exams must be proctored at either the OU Testing center in Norman or at a CIDL approved testing center.

I have included practice exams you can use to assess your readiness for each exam. You will find solutions for the practice exams under Appendix III. Don’t be discouraged if you find the exams difficult. The average grade on a physics exam tends to be about 60-70%. You will be able to use one equation sheet for each exam. An equation sheet has been included in the Appendix for your use. The equation sheet has all the equations listed that you will need throughout the semester, so that you don’t have to memorize equations. This equation sheet may also be used during exams. Your primary goal during the exams will be to apply the principles you have learned by reading the book, doing the homework, studying lesson questions, and working problems from the accompanying CD, to solve new problems on the exam.

**COURSE EVALUATION & GRADING CRITERIA:**
There are five (5) exams; each exam is worth 100. The total number of points for the class is 500.

A maximum of 500 points can be earned in this course.

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<th>Exams (5):</th>
<th>500pts</th>
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### GRADING SCALE:

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<tr>
<th>Percent</th>
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<tr>
<td>80%–100%</td>
<td>400–500</td>
<td>A</td>
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<tr>
<td>60%–79%</td>
<td>300–399</td>
<td>B</td>
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<tr>
<td>40%–59%</td>
<td>200–299</td>
<td>C</td>
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<tr>
<td>20%–39%</td>
<td>100–199</td>
<td>D</td>
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<tr>
<td>19% and below</td>
<td>Fewer than 99</td>
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*Syllabus subject to change with notice.*

### ACADEMIC INTEGRITY

As a student taking a course at the University of Oklahoma, you are expected to uphold the academic integrity code. Please visit [http://integrity.ou.edu](http://integrity.ou.edu) and familiarize yourself with the standards you will be held to while taking your course.

### RELIGIOUS OBSERVANCE

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

### REASONABLE ACCOMMODATION POLICY

Students requiring academic accommodation should contact the Disability Resource Center for assistance at (405) 325-3852 or TDD: (405) 325-4173. For more information, please see the Disability Resource Center website [http://www.ou.edu/drc/home.html](http://www.ou.edu/drc/home.html) Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

### TITLE IX RESOURCES AND REPORTING REQUIREMENT

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on call 24/7. To learn more or to report an incident, please contact the Sexual Misconduct Office at 405-325-2215 (8 to 5, M-F) or OU Advocates at 405-615-0013 (24/7). Also, please be advised that a professor/GA/TA is required to report instances of sexual harassment, sexual assault, or discrimination to the Sexual Misconduct Office. For more information, please see [http://www.ou.edu/eco](http://www.ou.edu/eco).
Course Plan PHYS 2514

Unit 1: Kinematics

Lesson 1: Introduction

1. Read the Lesson 1 Objectives.
2. Read Chapter 1.0-1.7, pages 1-13 in the textbook.
3. Read and study the Lesson 1 Study Notes.
5. Chapter problems: 10, 16, 21, 28, 36, and 45, pages 14-17.
6. View Module 1 Core Concepts in Physics CD.
7. Answer the Lesson Assignment questions.

Lesson 2: Motion in One Dimension

1. Read the Lesson 2 Objectives.
2. Read Chapter 2.0-2.9, pages 18-43 in the textbook.
3. Read and study the Lesson 2 Study Notes.
4. Answer Chapter questions: 4, page 43.
5. Complete Chapter problems: 16, 23, 41, 43, 63, 72, 89, and 90, pages 44-49.
7. Complete workbook problems: 7, 8, 9, and 10: Core Concepts in Physics CD.
8. Complete Lesson 2 Questions in Desire2Learn.

Lesson 3: Motion in Two Dimensions

1. Read the Lesson 3 Objectives.
2. Read Chapter 3.0-3.9, pages 51-74 in the textbook.
3. Read and study the Lesson 3 Study Notes.
4. Answer Chapter questions: 8, and 10, page 75.
5. Complete Chapter problems: 9, 10, 21, 24, 33, 34, 48, 62, 70, 82, 85, and 88, pages 75-82.
7. Complete workbook problems: 2, 3, 4, 11, 12, and 14: Core Concepts in Physics CD.
8. Complete Lesson 3 Questions in Desire2Learn.
9. Complete Unit 1 Practice Exam.
10. Schedule Unit 1 Exam.
11. Take Unit 1 Exam.

Unit 2: Dynamics

Lesson 4: Newton’s Laws

1. Read the Lesson 4 Objectives.
2. Chapter 4.0-4.8, pages 83-102.
3. Read and study the Lesson 1 Study Notes.
4. Answer Chapter questions: 20, 22, page 104.
7. Complete workbook problems: 15, 16, 17, 18, 19, 20, and 21 Core Concepts in Physics CD.
8. Complete Lesson 4 Questions in Desire2Learn.
Lesson 5: Newton's Laws Continued

1. Read the Lesson 5 Objectives.
2. Read Chapter 5.0-5.6, pages 112-13 in the textbook.
3. Read and study the Lesson 5 Study Notes
4. Answer Chapter questions 1, 6, page 130.
7. Complete workbook problems 13 and 23 Core Concepts in Physics CD.
8. Complete Lesson 5 Questions in Desire2Learn.

Lesson 6: Gravity

1. Read the Lesson 6 Objectives.
2. Read Chapter 6.0-6.7, pages 139-155 in the textbook.
3. Read and study the Lesson 6 Study Notes
4. Answer Chapter questions: 2 and 17 page 157.
5. Solve Chapter problems: 7, 9, 29, 44, 56, 58, and 60, pages 158-162.
6. Complete Lesson 6 Questions in Desire2Learn.
7. Complete Unit 2 Practice Exam
8. Schedule Unit 2 Exam
9. Take Unit 2 Exam

Unit 3: Conservation Laws

Lesson 7: Work and Energy Introduced

1. Read the Lesson 7 Objectives.
3. Read and study the Lesson 7 Study Notes
5. Solve Chapter problems: 13, 18, 59, 73, 76, 79, and 82, pages 172-182.
6. View Modules 2.6, 5.1-5.5, 5.7 Core Concepts in Physics CD.
7. Complete workbook problems: 5, 6, 25, 26, 27, 29, and 30 Core Concepts in Physics CD
8. Complete Lesson 7 Questions in Desire2Learn.

Lesson 8: Conservation of Energy

1. Read the Lesson 8 Objectives.
2. Read Chapter 8.0-8.9, pages 183-205 in the textbook.
3. Read and study the Lesson 8 Study Notes
5. Solve Chapter problems: 15, 20, 36, 56, 85, 90, and 91, pages 207-217.
6. View Modules 5.6, 5.8-5.10 Core Concepts in Physics CD.
8. Complete Lesson 8 Questions in Desire2Learn.
Lesson 9: Conservation of Momentum

1. Read the Lesson 9 Objectives.
3. Read and study the Lesson 9 Study Notes
4. Answer Chapter questions: 1, 3, and 28, pages 239-240.
6. View Modules 6.1-6.9 *Core Concepts in Physics* CD:
7. Complete workbook problems: 34, 35, 36, 37, 38, 39, and 40 *Core Concepts in Physics*.
8. Complete Lesson 9 Questions in Desire2Learn.
9. Complete Unit 3 Practice Exam
10. Schedule Unit 3 Exam
11. Take Unit 3 Exam

Unit 4: Rotation and Static Equilibrium

Lesson 10: Rotational Motion

1. Read the Lesson 10 Objectives.
3. Answer Chapter questions: 4, and 10, page 275. See Appendix IIA.
4. Solve Chapter problems: 12, 19, 25, 30, 38, 41, 46, 59, 67, 75, and 93, pages 276-283. See Appendix IIB.
5. View Modules 7.1-7.7 *Core Concepts in Physics* CD.
7. Complete Lesson 10 Questions in Desire2Learn.

Lesson 11: Angular Momentum

1. Read the Lesson 11 Objectives.
2. Read Chapter 11.0-11.6, 11.8-11.9, pages 284-302 in the textbook.
3. Read and study the Lesson 10 Study Notes
5. Solve Chapter problems: 3, 10, 27, 47, 48, 49, 65, pages 303-310.
6. View Modules 2.7, 4.8, 7.8-7.10 *Core Concepts in Physics* CD:
8. Complete Lesson 11 Questions in Desire2Learn.

Lesson 12: Static Equilibrium

1. Read the Lesson 12 Objectives.
2. Read Chapter 12.0 - 12.5, pages 311-323 in the textbook.
3. Read and study the Lesson 12 Study Notes
5. Solve Chapter problems: 12, 13, 16, 20, 21, 28, 45, 47, 63, 80, 87, pages 322 - 331.
7. Complete Unit 4 Practice Exam
8. Schedule Unit 4 Exam
9. Take Unit 4 Exam
Unit 5: Fluids, Oscillations, and Waves

Lesson 13: Fluids

1. Read the Lesson 13 Objectives.
3. Answer Chapter questions: 12, 17, and 24, page 362.
4. Solve Chapter problems: 16, 17, 18, 28, 35, 60, 87, 93, 95, 96. 97 pages 363-368
5. Complete Lesson 13 Questions in Desire2Learn.

Lesson 14: Oscillations

1. Read the Lesson 14 Objectives.
3. Read and study the Lesson 14 Study Notes
8. Complete Lesson 14 Questions in Desire2Learn.

Lesson 15: Wave Motion

1. Read the Lesson 15 Objectives.
2. Read Chapter 15.0 - 15.11, pages 395-416 in the textbook.
3. Read and study the Lesson 15 Study Notes
4. Answer Chapter question 2, page 417.
8. Complete Lesson 15 Questions in Desire2Learn.

Lesson 16: Sound

1. Read the Lesson 16 Objectives.
2. Read Chapter 12.0 - 12.5, pages 311-323 in the textbook.
3. Read and study the Lesson 16 Study Notes
4. Answer Chapter question 8, page 447.
5. Solve Chapter problems: 21, 39, 40, 59, 66, 89, 90, and 95, pages 448-453.
6. Complete Lesson 16 Questions in Desire2Learn.
7. Complete Unit 5 Practice Exam
8. Schedule Unit 5 Exam
9. Take Unit 5 Exam