

SCIN233 16

STUDENT WARNING: This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

Course Summary

Description

Course Description: This fundamental Physics course is the first of two courses that examine basic Physics using Calculus techniques. Topics include Mechanics, Fluids, Oscillations, Waves, Temperature, Heat, and Thermodynamics. The course involves study through interactive simulation laboratories designed to help reinforce and build upon the concepts presented in the lectures. Prerequisite: MATH225

Course Scope:

This Calculus based course is designed to provide students with an overview of Physics. A survey course, students will learn to apply Newtonian principles to the fundamental topics of motion, gravitation, momentum, work and energy, heat, wave behavior and sound.

Objectives

The successful student will fulfill the following objectives:

- CO-1** Predict the motion of macroscopic objects in one and two dimensions using vectors and Calculus.
- CO-2** Apply the principles of conservation of momentum and energy to solve problems related with the motion of macroscopic objects.
- CO-3** Solve Fluid Dynamics problems.
- CO-4.** Predict the oscillatory motion of macroscopic objects in one dimension.
- CO-5** Explain how waves transfer energy without transferring matter.

CO-6 Describe the wave motion.

CO-7 Describe how waves are reflected and refracted at boundaries between media.

CO-8 Apply the Laws of Thermodynamics to solve problems related with the flow of heat.

CO-9 Apply the principles and laws of the Kinetic Theory of Gases.

Outline

Week 1: Kinematics (One Dimension)

Learning Objectives

CO-1

Readings

Chapter 1

Physics and Measurements.

Chapter 2

Motion in one Dimension.

Assignments

Introduction Forum (due Wednesday by 11:55 pm EST)

Forum W1

Assignment W1

Week 2: Kinematics (Two Dimensions)

Learning Objectives

CO-1

Readings

Chapter 3

Vectors

Chapter 4

Motion in Two Dimensions

Assignments

Forum W2

Assignment W2

Lab 1

Week 3: Dynamics

Learning Objectives

CO-1

Readings

Chapter 5

The Law of Motion.

Assignments

Forum W3

Assignment W3

Week 4: Circular Motion

Learning Objectives

CO-1

Readings

Chapter 6

Circular Motion and Other Applications of Newton's Laws.

Assignments

Forum W4

Assignment W4

Lab 2

Quiz 1

Week 5: Work and Energy

Learning Objectives

CO-1 & CO-2

Readings

Chapter 7

Energy of a System.

Assignments

Forum W5

Assignment W5

Week 6: Conservation of Energy

Learning Objectives

CO-1 & CO-2

Readings

Chapter 8

Conservation of Energy.

Assignments

Forum W6

Assignment W6

Lab 3

Week 7: Linear Momentum

Learning Objectives

CO-1 & CO-2

Readings

Chapter 9

Linear Momentum and Collisions.

Assignments

Forum W7

Assignment W7

Week 8: Rigid Body Rotation

Learning Objectives

CO-2

Readings

Chapter 10

Rotation of a Rigid Object About a Fixed Axis.

Chapter 11

Angular Momentum.

Assignments

Forum W8

Assignment W8

Lab 4

Week 9: Static

Learning Objectives

CO-1

Readings

Chapter 12

Static Equilibrium and Elasticity

Assignments

Midterm Exam

Week 10: Gravity

Learning Objectives

CO-1 & CO-2

Readings

Chapter 13

Universal Gravitation

Assignments

Forum W10

Assignment W10

Week 11: Fluid Mechanics

Learning Objectives

CO-3

Readings

Chapter 14

Fluid Mechanics

Assignments

Forum W11

Assignment W11

Lab 5

Week 12: Oscillatory Motion

Learning Objectives

CO-4

Readings

Chapter 15

Oscillatory Motion

Assignments

Forum W12

Assignment W12

Week 13: Waves

Learning Objectives

CO-5, CO-6 & CO7

Readings

Chapter 16

Wave Motion

Chapter 17

Sound Waves

Chapter 18

Superposition and Standing Waves

Assignments

Forum W13

Assignment W13

Lab 6

Quiz 2

Week 14: Thermodynamics (First Part)

Learning Objectives

CO-8

Readings

Chapter 19

Temperature

Chapter 20

The First Law of Thermodynamics

Assignments

Forum W14

Assignment W14

Week 15: Thermodynamics (Second Part)

Learning Objectives

CO-9

Readings

Chapter 21

The Kinetic Theory of Gases

Chapter 22

Heat Engines, Entropy, and the Second Law of Thermodynamics

Assignments

Forum W15

Assignment W15

Lab 7

Week 16: Review

Learning Objectives

From **CO-1** to **CO-9**

Readings

From Chapter 1 to Chapter 22

Assignments

Final debate W16

Final Exam

Evaluation

Forums

Participation is mandatory and will count towards the course grade. You are expected to provide a substantial comment of several well-written paragraphs in each session and a similar comment or reflection in reply to at least two other students' contribution. Statements such as "I agree" or "good post" will not count as a reply.

Quizzes and Exams

The quizzes and exams are on-line, open-book, and timed. They may include multiple choices, fill in the blank, and short essay type questions. An announcement will be posted when they are available to be taken.

Lab Reports

Each exercise is designed to have every student apply principles learned during that week. Most of them are "virtual labs" but hands-on experiments may be included.

Please see the [Student Handbook](#) to reference the University's [grading scale](#).

Grading:

Name	Grade %
Quizzes	10.00 %
Quiz 1	5.00 %
Quiz 2	5.00 %
Assignments	21.00 %
Week 1 - Assignment 1: Physics and Measurement / Motion in One Dimension	1.50 %
Week 2 - Assignment W2: Vectors / Motion in Two Dimensions	1.50 %
Week 3 - Assignment W3: The Laws of Motion	1.50 %
Week 4 - Assignment W4: Circular Motion and Other Applications of Newton	1.50 %
Week 5 - Assignment W5: Energy of the System	1.50 %
Week 6 - Assignment W6: Conservation of Energy	1.50 %
Week 7 - Assignment W7: Linear Momentum and Collisions	1.50 %
Week 8 - Assignment W8: Rotation	1.50 %
Week 10 - Assignment W10: Universal Gravitation	1.50 %
Week 11 - Assignment W11: Fluid Mechanics	1.50 %
Week 15 - Assignment W15: Thermodynamics II	1.50 %
Week 12 - Assignment W12: Oscillatory Motion	1.50 %
Week 13 - Assignment W13: Waves	1.50 %
Week 14 - Assignment W14: Thermodynamics I	1.50 %
Labs	14.00 %
Week 2 - Lab 1	2.00 %
Week 4 - Lab 2	2.00 %
Week 6 - Lab 3	2.00 %
Week 8 - Lab 4	2.00 %
Week 11 - Lab 5	2.00 %
Week 13 - Lab 6	2.00 %
Week 15 - Lab 7	2.00 %
Exams	40.00 %
Midterm Exam	20.00 %
Final Exam	20.00 %
Forums	15.00 %
Forum 1	0.94 %
Forum 2	0.94 %
Forum 3	0.94 %
Forum 4	0.94 %

Forum 5	0.94 %
Forum 6	0.94 %
Forum 7	0.94 %
Forum 8	0.94 %
Forum 9	0.94 %
Forum 10	0.94 %
Forum 11	0.94 %
Forum 12	0.94 %
Forum 13	0.94 %
Forum 14	0.94 %
Forum 15	0.94 %
Forum 16	0.94 %

Materials

Book Title: Physics for Scientists and Engineers, 8th Ed, Volume 1, Chapters 1-22 - The VitalSource e-book is provided via the APUS Bookstore; hard copy not available from the APUS Bookstore, please try other sources.

Author: Serway

Publication Info: Cengage

ISBN: 9781439048382

Book Title: You must validate your cart to get access to your VitalSource e-book(s). If needed, instructions are available here - <http://apus.libguides.com/bookstore/undergraduate>

Author: N/A

Publication Info: N/A

ISBN: N/A

Required Technology

- See the Technology Requirements section of the undergraduate catalog for the minimum hardware and software requirements.
 - Microsoft Office 365 is available to APUS students for free. To sign up, visit <http://products.office.com/en-us/student>. If you have questions about accessing the software, please contact Classroom support at classroomsupport@apus.edu.
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Course Guidelines

Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

Tutoring

- [Tutor.com](https://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

Turn It In

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

Academic Dishonesty

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

Submission Guidelines

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

Disclaimer Statement

- Course content may vary from the outline to meet the needs of this particular group.

Communicating on the Forum

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- "Substantive" means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says "I agree" is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful

and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

University Policies

[Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

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