

# PHYS134 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.

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## Course Summary

### Description

**Course Description:** This fundamental physics course is the second of two courses that examine basic physics using algebraic techniques. The course covers electric forces and fields, electric currents and circuits, magnetic forces and fields, electromagnetic induction, alternating current, electromagnetic waves, reflection and refraction of light, optical instruments, interference and diffraction, and an introduction to quantum and particle physics. NOTE: This course requires the student to purchase additional materials that are not covered by the book grant. Please refer to the Course Materials section for additional details.  
Prerequisite: PHYS133

#### Course Scope:

This Calculus based course is designed to provide students with an overview of Physics. A survey course, students will learn to apply classic electromagnetism principles to the fundamental topics of electricity and magnetism. Basic Modern Physics is introduced.

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### Objectives

The successful student will fulfill the following objectives:

**CO-1** Describe the electric field using vectors and scalars.

**CO-2** Solve direct-current circuits.

**CO-3** Describe the magnetic field using vectors and scalars.

**CO-4.** Explain the basic principle of the electric generator.

**CO-5** Understand the differences between E-M and mechanical waves.

**CO-6** Explain the dual nature of light.

**CO-7** Summarize the concepts of the Special Relativity.

**CO-8** Explain the basic principles of Quantum Physics.

**CO-9** Illustrate the successive models of the atom from the planetary model to the quantum mechanical model.

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## Outline

### Week 1: Electric Forces And Electric Fields

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Learning Objective(s)

CO-1

Reading(s)

Cutnell and Johnson, Chapter 18,

Week 1 Lesson including lectures slides and video

Assignment(s)

Introduce Yourself Forum

Assignment 1

Experiment 1

### Week 2: Electric Potential Energy And The Electric Potential

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Learning Objective(s)

CO-2

Reading(s)

Cutnell and Johnson, Chapter 19,

Week 2 Lesson including lectures slides and video

Assignment(s)

Week 2 Social Homework Forum

Assignment 2

Lab 1

Experiment 2

### **Week 3: Electric Circuits**

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Learning Objective(s)

CO-2

Reading(s)

Cutnell and Johnson, Chapter 20,

Week 3 Lesson including lectures slides and video

Assignment(s)

Week 3 Social Homework Forum

Assignment 3

Experiment 3

### **Week 4: Magnetic Forces And Magnetic Fields**

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Learning Objective(s)

CO-3

Reading(s)

Cutnell and Johnson, Chapter 21,

Week 4 Lesson including lectures slides and video

Assignment(s)

Week 4 Social Homework Forum

Assignment 4

Lab 2

Experiment 4

Quiz 1

### **Week 5: Electromagnetic Induction**

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Learning Objective(s)

CO-4

Reading(s)

Cutnell and Johnson, Chapter 22,

Week 5 Lesson including lectures slides and video

Assignment(s)

Week 5 Social Homework Forum

Assignment 5

## **Week 6: Electromagnetic waves**

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Learning Objective(s)

CO-5

Reading(s)

Cutnell and Johnson, Chapter 24, Week 6 Lesson including lectures slides and video

Assignment(s)

Week 6 Social Homework Forum

Assignment 6

Lab 3

## **Week 7: The reflection of light: mirrors**

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Learning Objective(s)

CO-6

Reading(s)

Cutnell and Johnson, Chapter 25,

Week 7 Lesson including lectures slides and video

Assignment(s)

Week 7 Social Homework Forum

Assignment 7

## **Week 8: The refraction of light: lenses and optical instruments**

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Learning Objective(s)

CO-6

Reading(s)

Cutnell and Johnson, Chapter 26,

Week 8 Lesson including lectures slides and video

Assignment(s)

Week 8 Social Homework Forum

Assignment 8

## **Week 9: Review**

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Learning Objective(s)

CO-1, CO-2, CO-3, CO-4, CO-5, CO-6

Reading(s)

Cutnell and Johnson, Chapters 18 through 22 and 24 through 26,

Week 1 through 8 Lessons including lectures slides and video

Assignment(s)

Week 9 Social Homework Forum

Midterm Exam (covers weeks 1 through 8)

## **Week 10: Interference and the wave nature of light**

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Learning Objective(s)

CO-6

Reading(s)

Cutnell and Johnson, Chapter 27,

Week 10 Lesson including lectures slides and video

Assignment(s)

Week 10 Social Homework Forum

Assignment 9

Lab 4

## **Week 11: Special relativity**

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Learning Objective(s)

CO-7

Reading(s)

Cutnell and Johnson, Chapter 28,

Week 11 Lesson including lectures slides and video

Assignment(s)

Week 11 Social Homework Forum

Assignment 10

Lab 5

## **Week 12: Particles and waves**

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Learning Objective(s)

CO-5

Reading(s)

Cutnell and Johnson, Chapter 29,

Week 12 Lesson including lectures slides and video

Assignment(s)

Week 12 Social Homework Forum

Assignment 11

Quiz 2

## **Week 13: The nature of the atom**

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Learning Objective(s)

CO-9

Reading(s)

Cutnell and Johnson, Chapter 30,

Week 13 Lesson including lectures slides and video

Assignment(s)

Week 13 Social Homework Forum

Assignment 12

## **Week 14: Nuclear physics and radioactivity**

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Learning Objective(s)

CO-8

Reading(s)

Cutnell and Johnson, Chapter 31,

Week 14 Lesson including lectures slides and video

Assignment(s)

Week 14 Social Homework Forum

Assignment 13

## **Week 15: Ionizing radiation, nuclear energy and elementary particles**

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Learning Objective(s)

CO-8

Reading(s)

Cutnell and Johnson, Chapter 32,

Week 15 Lesson including lectures slides and video

Assignment(s)

Week 15 Social Homework Forum

Assignment 14

## **Week 16: Review**

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Learning Objective(s)

CO-1, CO-2, CO-3, CO-4, CO-5, CO-6, CO-7, CO-8, CO-9

Reading(s)

Cutnell and Johnson, Chapters 27 through 32, all weekly lesson and lecture videos

Assignment(s)

Week 16 Final Exam Review Forum

Final Exam (covers weeks 1 through 15)

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## **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:**

<b>Name</b>	<b>Grade %</b>
Assignments	15.00 %
Assignment 1	1.07 %
Assignment 2	1.07 %

Assignment 3	1.07 %
Assignment 4	1.07 %
Assignment 5	1.07 %
Assignment 6	1.07 %
Assignment 7	1.07 %
Assignment 8	1.07 %
Assignment 9	1.07 %
Assignment 10	1.07 %
Assignment 11	1.07 %
Assignment 12	1.07 %
Assignment 13	1.07 %
Assignment 14	1.07 %
<b>Forums</b>	<b>15.00 %</b>
Forum 1 - Introduction Forum	0.94 %
Forum 2 - Social Homework	0.94 %
Forum 3 - Social Homework	0.94 %
Forum 4 - Social Homework	0.94 %
Forum 5 - Social Homework	0.94 %
Forum 6 - Social Homework	0.94 %
Forum 7 - Social Homework	0.94 %
Forum 8 - Social Homework	0.94 %
Forum 9 - Social Homework	0.94 %
Forum 10 - Social Homework	0.94 %
Forum 11 - Social Homework	0.94 %
Forum 12 - Social Homework	0.94 %
Forum 13 - Social Homework	0.94 %
Forum 14 - Social Homework	0.94 %
Forum 15 - Social Homework	0.94 %
Forum 16 - Final exam review	0.94 %
<b>Quiz</b>	<b>15.00 %</b>
Quiz 2	7.50 %
Quiz 1	7.50 %
<b>Lab</b>	<b>7.00 %</b>
Lab 1	1.00 %
Lab 2	1.00 %
Lab 3	1.00 %
Lab 4	1.00 %
Lab 5	1.00 %
Lab 6	1.00 %
Lab 7	1.00 %
<b>Midterm Exam</b>	<b>20.00 %</b>
Midterm Exam	20.00 %
<b>Final Exam</b>	<b>20.00 %</b>
Final Exam	20.00 %
<b>Experiments</b>	<b>8.00 %</b>
Experiment 1	2.00 %
Experiment 2	2.00 %
Experiment 3	2.00 %
Experiment 4	2.00 %



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## Materials

**Book Title:** PHYS134 eScience Lab Kit

**Author:** ESCIENCE LABS

**Publication Info:** ESCIENCE LABS

**ISBN:** 2607

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**Book Title:** Physics 10th ed. - The VitalSource e-book is provided via the APUS Bookstore

**Author:** Cutnell / Johnson / Young / Stadler

**Publication Info:** Wiley

**ISBN:** 9781118486894

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**Book Title:** Charge Sensor - This item is not covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** CRG-BTA

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**Book Title:** Differential Voltage Probe - This item is not covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** DVP-BTA

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**Book Title:** Electrostatics Kit - This item is not be covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** ESK-CRG

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**Book Title:** Instrumentation Amplifier - This item is not covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** INA-BTA

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**Book Title:** LabQuest 2 - This item is not covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** LABQ2

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**Book Title:** LoggerPro 3 Software - This item is not covered by the APUS Book Grant. If you purchase the electronic download, a link will be sent to you on the next business day.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** LP

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**Book Title:** Additional required items are available to order from the APUS Bookstore. If you buy these items from other vendors, you may not receive all the parts you need for your course. These items (as noted) are not covered by the APUS Book Grant.

**Author:** N/A

**Publication Info:** N/A

**ISBN:** N/A

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**Book Title:** Power Amplifier - This item is not covered by the APUS Book Grant.

**Author:**

**Publication Info:** Vernier Software & Technology, LLC

**ISBN:** PAMP

### **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](mailto: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.

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## University Policies

### [Student Handbook](#)

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

- [Appeals](#)
- [Disability Accommodations](#)

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