

5/11/02

Chaminade University of Honolulu  
2002 Spring, Physics 152  
January 14-May 10, 2002

Course: Physics 152 College Physics  
Location: Henry Hall, H-37  
Time: 9:00-9:50 MWF  
Instructor: Dr. James W. Miller  
Communications: Office: 735-4811  
Home: (808)521-1634  
55 South Kukui Street #1908  
Honolulu, HI 96813  
email: jmiller@chaminade.edu  
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Office Hours: 10:30-12:00 MWF  
Additional times by appointment

- I. Textbooks (Req): Hecht, Eugene, Physics: Algebra/Trig, Second Edition  
Pacific Grove (CA): Brooks/Cole Publishing Co., 1998
- II. Textbooks (Rec): TBD
- III. Other Requirements: Scientific Calculator  
Notebook
- IV. Course Description: Physics 152 College Physics is an introduction to the principles of electric charges, electric fields, electric energy, and electric circuits, electromagnetism, E-M waves, geometrical and wave optics, applied optics, special relativity, electrons, photons, atoms, the nucleus, and selected topics in modern physics.
- V. Course Intent: The intent of the course is to provide for students the opportunities to build foundations of the principles of physics, which may assist them in growing their academic backgrounds and building their areas of specializations.
- VI. Course Objectives:
  - A. For each of the topics in the required textbook, gain a working understanding appropriate to an academic background and to fields of specialization.

- 15. Electrostatics--Forces  
Build your own overview
- 16. Electrostatics--Energy  
Understand magnitude and direction of velocity
- 17. ~~Direct~~ **Current**  
Understand change of velocity
- 18. Circuits  
Understand how to apply the laws in situations
- 19. Magnetism  
Understand Newton's concept of Gravity

**First Hour Exam**

- 20. Electromagnetic Induction  
Understand operational definitions of energy
- 22. Radiant Energy/Light  
Understand what "it" is
- 23. Propagation of Light/Scattering  
Understand movements in circles.
- 24. Geometrical Optics and Instruments  
Understand what they are and how they interact

**Second Hour Exam**

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Assignments

Day	Assignment	Topic	Reading	Homework
1 M	01/14	Charge	15.1-15.3	Ch. 15 1, 3, 5/ 21, 27, 29
2 W	01/16	Electric Fields	15.4-15.5	Ch. 15 31, 35, 41, 49, 71
3 F	01/18	Equipotentials	16.1-16.3	Ch. 16 1, 3, 29, 37
4 W	01/23	Capacitance	16.4-16.7	Ch. 16 49, 61, 73, 81, 87
5 F	01/25	Current	17.1-17.3	Ch. 17 1, 3, 5, 29, 39, 43
6 M	01/28	Energy/Power	17.4-17.5	Ch. 17 53, 61, 69, 77
7 W	01/30	Series/Parallel	18.1-18.3	Ch. 18 1, 3, 5, 17, 27, 35
8 F	02/01	Kirchhoff's Laws	18.4-18.5	Ch. 18 71, 73, 83
9 M	02/04	Magnetic Fields	19.1-19.2	Ch. 19 1, 3, 15
10 W	02/06	Ampere's Law	19.3-19.4	Ch. 19 25, 35,
11 F	02/08	Magnetic Force	19.5-19.6	Ch. 19 59, 67
FIRST HOUR EXAM (CH 15-19)				
12 M	02/11	Faraday's Law	20.1-20.2	Ch. 20 1, 3, 7
13 W	02/13	Generators	20.3-20.4	Ch. 20 27, 43, 47
14 F	02/15	Inductance	20.5-20.7	Ch. 20 67, 73, 85
15 W	02/20	AC Basics	21.1-21.3	Ch. 21 1, 3, 5, 13
16 F	02/22	LCR Circuits	21.3-21.5	Ch. 21 37, 49, 53
17 M	02/25	Electronics	21.6-21.7	Ch. 21 85, 89, 89
18 W	02/27	Light	22.1-22.7	Ch. 22 1, 3, 5, 25
19 F	03/01	E-M Spectrum	22.1-22.14	Ch. 22 29, 33, 45
20 M	03/04	Scattering	23.1-23.3	Ch. 23 1, 3, 15,
21 W	03/06	Refraction	23.4-23.6	Ch. 23 27, 29, 41, 49
22 F	03/08	Color	23.7-23.8	Ch. 23 57, 63
23 M	03/11	Thin Lenses	24.1-24.3	Ch. 24 1, 3, 5
24 W	03/13	Lens Combinations	24.4-24.6	Ch. 24 21, 27, 31

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- 25. Physical Optics  
Understand stresses and restoring forces on matter
- 26. Special Relativity  
Understand the characteristics of wave phenomena
- 27. Origins of Modern Physics  
Understand thermal effects on matter
- 28. The Evolution of Quantum Theory  
Understand heat effects and the transfer of heat energy
- 29. Quantum Physics  
Understand the concept of entropy
- 30. Nuclear Physics
- 31. High Energy Physics

**Final Exam**

- B. In addition, a course objective is to provide for each student the repertoire of physics sufficient to score well above the mean in such tests as the MCAT.
- C. In addition, a course object is to provide for each student a command over the methods of algebraic problem solving in physics.
- D. In addition, a course objective is to provide each student with an awareness of the implications of the principles of physics to comprehend issues that occupy the national and international scientific stage.

VII. Course Format:

Each class session will contain three parts: Current assigned topic, clarifications of previous topics, problem solving strategies.

VIII. Requisite:

Concurrent registration in Physics 152 College Physics I Laboratory.

IX. Prerequisite:

Math 110 Pre-Calculus (comfortable with quadratic functions; manipulations of polynomials; functions and graphs; exponential and logarithmic functions, and trig functions and inverses).

X. Course Requirements:

**Attendance**

Homework

Quizzes (Chapter Quizzes)

Two hour exams

First (End of Chapter 19) 2/13/02

Second (End of Chapter 24) 3/18/02

Final Exam (Monday, 5/6/02, 10:30AM-12:30PM, H37)

XI. Grading System:

5%	Attendance
5%	Homework
30%	Quizzes (Chapter Quizzes)
30%	Two hour exams (15% each)
30%	Final Exam (12/11/01)
100%	Total for Final Grade

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Dual Grade System:

A dual grade system for all exams is available to students at their option. The system provides a level of comfort to students who, for whatever reason, want the safety of not being "wiped out" in exams.

In the dual grade system, each exam will contain three sections.

Section I. Required of all.

Section II. Dual Grade Section. Correct responses for Parts I and II will have a maximum score of 85%.

Section III. Dual Grade Section. Correct responses for Parts I and III will have a maximum score of 100%.

In any exam, students may choose to answer the required Section I and either Section II or Section III. Students may also choose to answer a mixture of problems from Section II and Section III. The student's exam grade is determined by the cumulative score.

Grading Scale:

A	90-100 %	Outstanding scholarship and excellent intellectual initiative with the coursework..
B	80-89%	Superior quality done in a consistent intellectual manner with the coursework
C	70-79%	Satisfactory grade showing competent understanding of the course work.
D	60-69%	Lowest passing grade but not sufficient to fulfill prerequisite work.
F	59% and lower	Unsatisfactory understanding of the coursework.; no credit given.
I		Grade is not automatic. Grade deferred because student did not complete work because of circumstances beyond his control. Student must enter into a contract with the instructor to complete work time certain.

XII. Timetable/Assignments/Schedule (Attached).

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25 F 03/15	Microscopes	24.6	Ch. 24 39, 47, 57
26 M 03/18	Mirrors	24.7	Ch. 24 69, 71, 73

SECOND HOUR EXAM (CH 20-24)

27 W 03/20	Polarization	25.1-25.3	Ch. 25 1, 3, 5, 19
28 F 03/22	Interference	25.4-25.6	Ch. 25 35, 41

Spring Recess

29 M 04/01	Diffraction	25.7-25.10	Ch. 25 73, 81, 89
30 W 04/03	Rel. Kinematics	26.1-26.5	Ch. 26 1, 7, 17
31 F 04/05	Special Relativity	26.6-26.9	Ch. 26 31, 41, 43, 67
32 M 04/08	Subatomic Particles	27.1-27.4	Ch. 27 1, 3, 15
33 W 04/10	Nuclear Atom	27.5-27.8	Ch. 27 43, 47, 51
34 F 04/12	Quantum Theory	28.1-28.4	Ch. 28 1, 3, 5, 31
35 M 04/15	Bohr Atom	28.5-28.7	Ch. 28 43, 51
36 W 04/17	QM	29.1-29.3	Ch. 29 1, 3, 5, 9
37 F 04/19	QM Phenomena	29.4-29.10	Ch. 29 31, 35
38 M 04/22	Nuclear Structure	30.1-30.4	Ch. 30 1, 3, 5, 9
39 W 04/24	Transmutation	30.5-30.10	Ch. 30 55, 59, 65
40 F 04/26	Elem. Particles	31.1-31.2	Ch. 31 1, 3, 5, 9
41 M 04/29	Quantum Fields	31.3-31.5	Ch. 31 25, 29, 33
42 W 05/01	QCD	31.6-31.7	Ch. 31 35, 37

43 F 05/03 REVIEW

Final Exam Monday, May 07, 2001, 10:30AM-12:30PM, H37

Other Topics:

General Relativity  
 Cosmology  
 Copenhagen Agreement  
 Strings