

# SUNY Orange SYLLABUS

DEPARTMENT OF SCIENCE AND ENGINEERING

**35102** – General Physics II

3 lect., 3 lab., 4 cr. (Spring)

35102 - General Physics 2

3 lect., 3 lab., 4 cr. (Fall)

A continuation of 35101. A treatment of wave motion, electricity and magnetism, optics, relativity, quantum theory, atomic and nuclear physics.

Prerequisite: Physics 35-101.

## TEXT AND MATERIALS:

This course will cover the topics presented in chapters 11-12 and 16-31 in the text: Douglas C. Giancoli, *Physics* (Fifth Edition), (New Jersey: Prentice Hall, 1998); ISBN 0-13-611971-9. The student will also need a ruled laboratory notebook and a scientific calculator. Laboratory materials will be distributed throughout the semester.

## RELATIONSHIP TO PROGRAMS:

Physics 35102 is designed for the physical science or biological/health related science major. It is also an excellent course for someone planning on a career in science or mathematics education. This course does not require calculus. There is a parallel calculus-based course entitled General Physics (Calc.) 35105-6. A student with a background in calculus should consider this sequence. If in doubt about the proper physics course to take, consult with your advisor or with the department chair.

## COURSE OBJECTIVES:

The student who successfully completes this course can

- move fluently through the Systeme Internationale rationalized MKS units.
- explain sound as a wave phenomenon involving energy transfer.
- relate the physics of sound to the creation of music.
- explain the fundamentals of electricity and magnetism as used in their everyday life.

- appreciate the elegance of Maxwell's Equations.
- place the revolution of modern physics in an historical context.
- adequately explain the role that atomic and nuclear forces play in the universe.
- translate physical problems into mathematical expressions and solve resulting equations.
- record laboratory data and explain results in a clear and professional fashion.
- reduce data using spreadsheets and prepare graphs using the computer.
- declare (with a clear conscience) that you have enjoyed learning the above.

#### GRADING SYSTEM:

The grading for this course will be determined as follows

Exam # 1 --	15 %
Exam # 2 --	15 %
Exam # 3 --	15 %
Final Exam --	20 %
Lab. Work --	20 %
Homework/Quizzes	15 %

For the most part the exams will consist of 80 % problem solving or derivations and 20 % multiple choice questions. The cumulative part of the final will be all multiple choice. These other percentages are to be considered approximate and will vary from test to test.

#### NOTE REGARDING LATE ASSIGNMENTS:

Assignments submitted beyond the stated deadline are discounted by 50 %. Further, you will not be permitted to submit the weekly quiz if you have not worked on the assignment. Should you even bother submitting a late assignment? Of course you should. Fifty % is better than nothing. However, it is clearly in your best interest to meet the deadline. Homework is an ongoing project. At the beginning of each lecture questions from the previous lecture's content and homework will be briefly addressed.

#### INSTRUCTOR OFFICE HOURS:

Instructor: Dr. John F. Cummins.      Office: Harriman Hall # 317 or Horton Hall # 4  
 Phone Ext: 341-4562  
 Email: [jcummins@sunyorange.edu](mailto:jcummins@sunyorange.edu)

Hours: M-W 09:00 a.m. to 10:00 a.m. & 11:00 a.m. to 12:00 p.m.  
 TH 12:00 p.m. to 1:00 p.m.  
 FRI 09:00 a.m. to 10:00 a.m.

I am around most of the day and you should feel free to stop by any time. However, you might have to contact me in the departmental office in Horton Hall # 4, across the campus. It is to your advantage to seek me out and to clear up difficulties as soon as

possible. Without organized hard work, you will not do well in this course. On the other hand, if you work diligently you should have every hope of success.

#### ATTENDANCE AND WITHDRAWAL:

Perfect attendance is assumed in this course. Without this attendance and dedication to the homework one will not be successful in Physics. The student's grade will reflect any lack of attendance. It is the student's responsibility to speak with the instructor and withdraw from the course if things are not going well. The instructor will not withdraw a student unilaterally. An early consult with the instructor can save a great deal of later confusion.

#### SUPPORT SERVICES:

Tutoring services are available in the learning resource center. Keep in mind that the instructor is also part of your "support service."

Also, there are services available for students with disabilities. Any such conditions should be communicated privately to the instructor on the first day of class so that any necessary special arrangements or accommodations can be made.

The following texts are on reserve in the Library. They can be very helpful to you if you take advantage of them.

Joseph J. Boyle, Study Guide for Giancoli Physics With Applications. (Reserve # 182.) This book is matched to the text we are using. There is also a solutions manual for the text (Reserve # 243) on reserve. It is important that you consult this book only after you have worked independently on the assignment for a significant amount of time. Using this resource unwisely can seriously impact on your performance in the course. Simply transcribing these solutions for submission to the instructor will result in an F for the course, since you will not be able to pass the examinations without your own hard work.

Arthur Beiser, Schaums Outline, Applied Physics. The solved problems in this book are at a lower level than the problems in the text. They are good confidence builders and can be helpful in this regard. Reserve # 180

Fredrick Bueche, Schaum's Outline of College Physics. This text has excellent, clearly worked out problems related to every section of the text. Reserve # 179

Alvin Halpern, Schaums Outline -- Beginning Physics 1 -- Mechanics and Heat. This text is similar to Reserve # 179, but contains only material covered during the first semester of 35101 and 35106 (General Physics).

Serway and Faughn, College Physics and Faughn & Tigue, Instructors Manual With Solutions for Serway and Faughn. These two books should be used together. The complete solutions manual matches this non-calculus text and this resource should be helpful - especially if you have missed some of the material the first time around.  
(Reserve # 183)

#### NOTE REGARDING CLASS SYLLABUS:

The following weekly lecture schedule should be viewed as tentative to the extent that some adjustments may seem advisable as the course progresses.

A detailed syllabus with HW assignments is distributed during the first class meeting.

#### SYLLABUS

35101 – General Physics I

3 lect., 3 lab., 4 cr. (Fall)

WEEK	TOPIC	CHAPTER
1.	Harmonic Motion and Waves	11 -1 to 11- 11
2.	Waves and Sound	12 - 1 to 12 - 8
3.	Electric Charges and Fields	16 -1 to 16 - 10
4.	The Electric Potential	17 -1 to 17 – 7
5.	Electric Current and Power	18 -1 to 18 - 7
6.	DC Circuits	19 - 1 to 19 - 7
7.	The Magnetic Force	20-1 to 20- 7
8.	Ampere’s Law/Forces Between Wires	20-8 to 20-12
9.	Faraday’s Law; Generators and Transform.	21-1 to 21-7
10.	Geometric and Physical Optics	23-1 to 24-10
11.	Relativity	26-1 to 26-11
12.	Waves and Particles	27-1 to 27 -5
13.	Atomic Structure/Early Models	27 -6 to 28 - 5
14.	The Nucleus and Radioactivity	28-6 to 29-4
15.	Nuclear Processes	30-1 to 31 - 5