

2013

330-01 Modern Physics I

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Modern Physics I
PHYS 330-01 Fall 2013
MWF 9:00-9:50 LND 101

Instructor: Dr. Stephen Yerian

Phone: 513-745-3407

Office Hours: Monday, Wednesday, Friday 10-11 AM; and by appointment.

Office: LND 104

E-Mail: yerian@xavier.edu

Text: Modern Physics, 6th ed., by Paul A Tipler and Ralph A. Llewellyn. Blackboard will also be your lifeline to the course materials. A companion website is available and contains downloadable files like the CCR's and the More sections referred to in the book. We will use many of these files in the class. They are free.

The website is <http://bcs.whfreeman.com/tiplermodernphysics6e/>

Course Content: The atomic view of matter, electricity, and radiation will be discussed via topics such as relativity, the atomic models of Rutherford and Bohr, x-rays, the uncertainty principle, and an introduction to quantum mechanics. The content of the course is taken primarily from the material presented in the above text and follows the historical development of our modern understanding of the atomic and subatomic world. The concepts can be challenging and are often contrary to our everyday view of nature. The math behind them, however, involves no more than basic calculus (to this point, anyway).

Course Objectives: This course fulfills requirements for the Physics Major(s) and Minor and does not count toward the core curriculum. After completing this course, students should:

- Have an understanding of the basic theoretical and experimental concepts of modern physics.
- Be able to apply the ideas of modern physics to solve qualitative and quantitative problems.
- Obtain a historical perspective on the growth of physics since the late nineteenth century to today.
- Have a greater appreciation for the rigor, meticulousness, and innovation of discussed scientific breakthroughs.
- Experience the satisfaction of realizing that physics is everywhere in our daily lives.

Homework: Homework assignments must be legible, organized, and turned in on time for credit to be given, late assignments will not be graded and count as a zero. Once again, late assignments will not be accepted unless prior arrangements are made with your professor. A total homework grade will be assigned based on the total number of homework points available. Students are strongly encouraged to work collaboratively on homework assignments but must turn in his/her own written solutions. Please prepare your homework in the order of the assignment, even if you worked them in a different order.

Quizzes: Quizzes will be given every Friday or so except for weeks when exams are given. The lowest quiz grade will be dropped. Quizzes are worth 10 points each unless otherwise stated.

Tests: All tests must be taken on the designated day. In case of emergencies on or before the exam date, all reasonable attempts to contact me must be made. **If a person misses a test, a written excuse must be submitted before any consideration of a make-up exam is possible, otherwise a zero for that test will be recorded.** Class material which is not in the text is always fair material for tests and quizzes. The cumulative final is on **Wednesday, December 18th at 8 AM.** Below is a *tentative* schedule.

Test 1: Chapters 1&2

Test 3: Chapters 5&6

Test 2: Chapters 3&4

Final Exam: Chapters 1-6

Class Attendance, Communication, & Academic Misconduct: Attendance is expected for all classes. All email correspondence **must** be from your Xavier University account. No grades will be discussed via email. Academic misconduct will not be tolerated and disciplinary action will be pursued according to the student handbook.

Any student who feels s/he may need an accommodation based on the impact of a documented disability should contact the Learning Assistance Center at 513-745-3280 on the Fifth Floor of the Conaton Learning Commons, Room 514, to coordinate reasonable accommodations. Further information can be found at <http://www.xavier.edu/lac/>

Courtesy Rules: Please leave cell phones, i-Pods, i-Pads, i-Whatever, etc. **turned off** during class. Please try not to leave the room during class unless it is a real emergency.

Grading: Semester grades will be based on:

| | |
|-------------|----------------|
| Homework | 15% |
| Quizzes | 15% |
| Three Exams | 45% (15% each) |
| Final Exam | 25% |

Grades will be assigned on the following scale:

| | | | | |
|----------|----------|----------|----------|------------|
| | 87-89 B+ | 77-79 C+ | 67-69 D+ | Below 60 F |
| 93-100 A | 83-86 B | 73-76 C | 60-66 D | |
| 90-92 A- | 80-82 B- | 70-72 C- | | |

The instructor reserves the right to alter this syllabus if circumstances dictate