

Physics III/2310 Syllabus UNM-Valencia Fall Semester 2020

Clifton Murray

Class meets Online, MW 1:30-2:45p. A Zoom link will be sent prior to each class. Attendance taken.

Instructor's Available-to-Help times (for now): Wed 10:30a-12:30p, Thurs 11:45a-12:15p, 1:15p-2:45p, 4:15p-6:15p, via Zoom or email wcmurray@unm.edu

Prerequisite: Completion of Physics II/1320 with course grade of C or higher.

Necessary Materials:

- Computadora, with Internet
- Text: Fundamentals of Physics 10th ed. Extended, by Halliday, Resnick, & Walker. Nearly all homework assignments, and some test problems, will come from the text.
- Calculator: A scientific calculator will often be used in basic ways—arithmetic, scientific notation, trig/inv trig functions, exponents, logs.... Calculators may be used on tests; however, all test problems requiring calculations must show those calculations, clearly and in detail, on paper--merely writing down results from a calculator (other than arithmetic), without giving the full reasoning &/or mathematics behind it, will result in reduced credit.

Student Learning Objectives: By the end of the course, the student should be able to explain the physical meaning of, and solve problems involving, at least the following: Electromagnetic waves, ray Optics, & wave optics; Special Relativity, incl. length contraction and time dilation, mass-energy and momentum in relativity; fundamental Quantum physics, espec. photons and matter waves, the difficulty of conceptualizing what an electron "is" (particle or wave), Schrodinger's equation and its solution for the hydrogen atom, and why quantum physics is intrinsically probabilistic; the quantum structure of atoms in general and how this leads to the quantized energy-level analysis of crystalline solids and semiconductors; how semiconductor devices (espec. diodes and transistors) work in circuits; basic physics of the nucleus, including nuclear decay modes, nuclear reactions (incl fission and fusion), the production of nuclear energy; elementary particles' properties and categorizations; and finally, concepts and basic calculations in general relativity and cosmological physics.

Academic Dishonesty as defined in the UNM-VC catalog includes copying work from other students. Any student found doing this on tests is subject to disciplinary action, ranging from "a reduced or failing grade for the work in question and/or the course" to "dismissal from the University". By implication, this applies to students receiving help during tests and/or having another person do the test or homework for them.

<http://pathfinders.unm.edu/campus-policies/academic-dishonesty.html>

Disruptive Behavior is any behavior which interferes with other student's learning or the instructor's ability to guide that learning. Examples include loud talking/ laughing/chatting with your buddy which require repeated warnings from the instructor, or derisive/ridiculing comments toward well-meaning students or the instructor—this is the quickest way to get expelled from the class. Keep your motives constructive, and it'll be a good educational experience.

* Please Keep *cell phones OFF* during class. **No use of cell phones during tests.***

Sexual Misconduct : Any report made to a faculty member, TA, or GA regarding sexual misconduct or gender discrimination must be reported to the Office of Equal Opportunity and the Title IX Coordinator. For more information on campus policy regarding sexual misconduct, see <https://policy.unm.edu/university-policies/2000/2740.html>

Disabilities: Should you have a disability which could interfere with learning in an online environment, contact UNM-Valencia Student Services, 505-925-8560.

A *formula sheet* will be provided for each test. Only minor notes, such as a word describing a formula or a quantity, may be added to the sheet. No example problems, whether partially or fully worked out, are allowed on the formula sheet. Any student found with such will have the formula sheet confiscated, and will be subject to disciplinary action.

Attendance is expected. After Four no-prior-notice, unarranged, or unexcused absence, the Instructor may drop you from the course without further warning.

Homework Format: Homework problems should be clearly separated, by whitespace (that means more space between main problems than within the problem), or by a bold line between main probs (not between subprobs a, b, c...). **Please make the**

Main problem number (not sub-parts a,b,c...) extra **BIG** –Yes, like # **1, 17_a, 22**, etc. The motive for all this is so I can find the Main probs Fast, and check them off (I have a lot of homework to grade.) Turn homework in by Chapter—do not split chapters, even though the calendar may split chapters across two or mor days—that is done so you know what problems are relevant to each day’s presentation. A list of homework problems relevant to each day’s presentation is provided on the Calendar which accompanies this document.

Nearly all homework problems pertain to a **physical situation**. For these type **problems**, a simple **sketch is required**.

Each chapter will be graded only once-by whatever is turned in the first time. No credit will be given for later, partial turn-ins on the same chapter.

Homework chapters are due on Review Day (the class-day prior to test-day.) **Late turn-ins: 1 class day late, minus 50%. 2 or more class days late: minus 100%.** Get'em in on time.

Homework and Tests can be submitted by scanning or taking photos of your work.

“*Makeup*” Tests: There are no makeup tests, except in genuine emergencies—in such cases, expect a maximum score of 80%. needed for good reason, the Instructor will try and arrange an *early* test for the student.) The lowest one test score is dropped, but note that if any test is not taken (or the end-of-course homework total is less than 50%) the student will not receive a grade higher than A-, regardless of total after the low-score drop. If you expect your work or other circumstances to make you repeatedly late on tests (or homework), you should drop the course, and take it in the future when you have less conflict.

Final Exam Minimum: Less than 70% on the final exam will result in a course grade no higher than “D”, regardless of semester point total.

Grade weighting:

| | Max possible points |
|--|--|
| 4 tests, worth 100 pts ea. | 400 |
| Drop lowest one of tests or homework: | -100 |
| Homework (not dropped) | 200 |
| Final exam (not dropped, comprehensive) | <u>150</u> ← min to pass course with greater than D—70% (105/150) |
| | 650 Max poss course total |

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|-----------------------|--|
| $634 \leq x \leq 650$ | A+ (unless a test is missed, or homework total is less than 50%) |
| $601 \leq x < 634$ | A (unless a test is missed, or homework total is less than 50%) |
| $585 \leq x < 601$ | A- |
| $566 \leq x < 585$ | B+ |
| $536 \leq x < 566$ | B |
| $520 \leq x < 536$ | B- |
| $504 \leq x < 520$ | C+ |
| $471 \leq x < 504$ | C |
| $455 \leq x < 471$ | C- * see note below re C-minus |
| $390 \leq x < 455$ | D |
| $x < 390$ | F |

* Be aware that a C-minus may Not satisfy the requirements for the program of study you are in. It is your responsibility to determine what grades are required for your future courses and/or degree.