

**Physics II/1320 Syllabus** UNM-Valencia Spring Semester 2023 Clifton Murray (Mr., Dr., Professor)

Class meets T&Th 10:30-11:45a.

Office hours MW 1:30-3:15p, TTh 4:15-5:15p, also Th 11:45a-12:15p

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*Prerequisite:* Completion of calc-based Physics I with course grade of C or higher.

*Useful Materials:*

Text: Fundamentals of Physics 10<sup>th</sup> ed. Extended, by Halliday, Resnick, & Walker. Nearly all homework assignments, and even some test problems, will come from the text.

Calculator: A scientific calculator will often be needed for arithmetic, scientific notation, trig/inv trig functions, exponents and 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 reasoning &/or mathematics behind it, will result in little or no credit. No cell-phone calculators allowed on tests.

*Credit Hours* This is a three credit-hour course. Class meets for two 65-minute sessions of direct instruction for fifteen weeks during the Spring 2023 semester. Please plan for a *minimum* of six hours of out-of-class work each week.

*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: *In Electricity and Magnetism:* 1) electric charges and Coulomb's Law; 2) electric fields; 3) electric flux and Gauss's law; 4) electric potential, and its relation to the electric field; 5) capacitance and capacitors, singly and in combination; 6) the relation between voltage, current, and resistance, in Ohm's law and in circuits; 7) resistors, singly and in combination; 8) electric power in d.c. circuits; 9) RC circuits and their behavior when charging or discharging; 10) magnetic fields; 11) how magnetic fields are produced; 12) the use of magnetic and electric fields to accelerate charge; 13) the relation between current and the magnetic field it produces (Ampere's law); 14) magnetic induction, inductance, inductors; 15) the relation between the rate of change of magnetic flux and the induced emf (Faraday's law); 16) electromagnetic oscillations and a.c. circuits; 17) the voltage-current transformer; 18) capacitive reactance, inductance, and impedance in RLC a.c. circuits; 19) rms voltage, current, and power in a.c. circuits; 20) magnetism in matter, incl. the Earth's magnetic field; 21) Maxwell's equations. *In Temperature, Heat, and Thermodynamics:* 22) the meaning of temperature and heat, and their units of measure; 23) the First Law of Thermodynamics; 24) how to calculate the amount of heat for change-of-temperature processes and for change-of-state processes; 25) the 3 classical ways of thermal energy transfer; 26) the kinetic theory of gases; 27) entropy; 28) the 2<sup>nd</sup> Law of Thermodynamics, and its consequence for heat engines; 29) the first law of thermodynamics applied to heat engines.

*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".

*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.

*Title IX* Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: <https://policy.unm.edu/university-policies/2000/2740.html>.

*Accommodations:* UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact me during office hours, and/or Student Services here on campus.

*COVID-19 Health and Awareness.* UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's [Administrative Mandate on Required COVID-19 vaccination](#). If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the [Centers for Disease Control \(CDC\) guidelines](#). If you do need to stay home, please communicate with me via the phone or email listed above; I can work with you to provide alternatives for course participation and completion.

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.

*Homework Format:* Make the **main** prob #--**5, 11, 21**, ...etc (**not a,b,c...**).— **Extra Big**. This is to help make the separation between main problems really obvious, so the instructor can find and check off the main problems fast.

**Homework problems pertaining to a physical situation**—which nearly all of them do-- **require a sketch**.

Physics homework should be turned in **by chapter**, stapled. **DO NOT split chapters**, even though the schedule might split problems from the same chapter across different days. A chapter will be graded only once--whatever comes in first. No credit will be given for later, partial turn-ins on the same chapter.

*Makeup Work:* Tests: There are no makeup tests, except in genuine emergencies. (If needed for good reason, the Professor may arrange an *early* test for the student.) The lowest of the tests or homework 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.

**Homework : 1 class day late: -50%. 2 class days late: Zero credit.**

All homework assignments are to be turned in before class on the before-test Review day.

*Tutoring* is available and free. For hours and to sign up, contact The Learning Center here on Valencia Campus (in the Library building.)

*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
Homework	100
4 tests	400
Drop lowest one of tests or homework:	-100
<b>Final exam</b> (not dropped, comprehensive)	<u>150</u>
<b>min to pass course with greater than D—105/150 (70%)</b>	550 Max poss course total

$532 \leq x \leq 550$	A+	(unless a test is missed or homework total is less than 50%)
$512 \leq x < 532$	A	(unless a test is missed or homework total is less than 50%)
$495 \leq x < 512$	A-	
$477 \leq x < 495$	B+	
$457 \leq x < 477$	B	
$440 \leq x < 457$	B-	
$422 \leq x < 440$	C+	
$402 \leq x < 422$	C	
$385 \leq x < 402$	C-	*note that a C- may not satisfy the prerequisite for certain courses or programs
$330 \leq x < 385$	D	
$0 \leq x < 330$	F	