Physics II (1240) **Syllabus** Spring 2021 Clifton Murray, UNM-Valencia

Class meets Online, via Zoom, T Th 3-4:15p

Prerequisites: Physics I (1230) with grade of C or better, or Instructor permission.

Recommended (but not required) concurrent course: Physics II Lab (152L) Tuesdays, Noon-2:45p

Instructor's office & hours Hours W 10:30a-12:30p; Th 11:45a-12:15p, 1:35 -2:45p, 4:15-6:15p.
wcmurray@unm.edu

Text: College Physics 7th ed., Wilson, Buffa, & Lou
A scientific calculator (having trig and powers-of-ten functions) is required.

Student Learning Goals & Objectives: To be able to explain or/and solve problems involving: electric fields, forces, and potential (voltage); d.c. and a.c. circuits, and therefore voltage, current, resistance, capacitance, inductance, and impedance; magnetism, including electromagnets as well as permanent magnets and transformers.; electromagnetic induction; electromagnetic waves; concepts of quantum, atomic, and nuclear physics, recent hypotheses and observations of elementary particles and the Universe; selected results from Einstein's relativity theory.

Policies and Notices:
**After four accumulated absences, the student may be dropped by the instructor without further notice*.

*"*Makeup" tests will be given only at the instructor's discretion*—in other words, the instructor is free to **not** give a makeup. If a makeup is given, expect a *maximum score of 85%,* because of (i) the unfair advantage of a makeup over students who took the test on time, and (ii) the additional time and effort required of the instructor in preparing, scheduling, administering, and grading the makeup.

**Late homework*. Credit may be reduced by 50% if one day late; minus 100% if two or more days late. Homework due dates are indicated on the schedule accompanying this syllabus. Extensions may be granted if late turn-in is due to covid-related circumstances.

**Persistent disruptive behavior,* such as loud talking, ridiculing or intimidating the instructor or other students, or other forms of distraction, will result in the offender being dismissed and dropped from the class.

**Reporting Sexual Misconduct:* Any report of sexual misconduct or gender discrimination made to a UNM faculty member, TA, or GA must be reported to the Office of Equal Opportunity and the Title IX Coordinator (acatena@unm.edu, 505-277-5251).. For more information on UNM policy re sexual misconduct see https://policy.unm.edu/university-policies/2000/2740.html

Homework Format: Homework problems should be clearly separated, either by whitespace (that means more space between main problems than within the problem), or by a separation line between main probs (not between subprobs a, b, c…). Turn homework in by *day*—not by section. That is, if sec 3.1 and 3.2 are presented on the same day, 3.1 and 3.2 should be grouped together—stapled—not separate.

Also, please make the **main** prob #--5, 11, 21, … (**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 the main problems fast. Finally, most homework problems in physics pertain to a physical situation. For such problems, a simple **sketch** is required (it's not pure math; it's Physics.)
Homework is due on Review days, at the 1st of class. Turn in homework by chapter, do not split chapters. Only one grading will be done on each homework—on whatever is turned in 1st. Once part of a chapter is turned in, no further parts will be scored.

A *Formula/Equation sheet* will be provided before each test. Only minor notations on the sheet are allowed. No example problems are permitted. The Instructor may inspect any formula sheet any time during tests; if example problems or excessive notes are found, the sheet will be confiscated, and the test grade lowered at the Instructor's discretion.

An *Honor Statement* will accompany tests. The statement must be signed and dated in order to receive credit for the test.

Tutoring is available, free. Hours https://valencia.unm.edu/campus-resources/the-learning-center/learning-center.html
To sign up https://esurvey.unm.edu/opinio/s?s=131505

****Final Exam Minimum Grade*** is **70%** in order to receive above a "D", regardless of other test or homework scores.

Grading:	Maximum points
Homework	100
4 tests	400
Drop lowest one of tests or homework:	-100
Final exam (not dropped)	150 (**min 105 (70%) to receive higher than a "D"**.)
	550 Max poss course total

("x" = student's total accumulated points)

$536 \leq x \leq 550$	A+	(unless a test is missed, or homework score is less than 50%).
$509 \leq x < 536$	A	(unless a test is missed, or homework score is less than 50%)
$495 \leq x < 509$	A-	
$481 \leq x < 495$	B+	
$454 \leq x < 481$	B	
$440 \leq x < 454$	B-	
$426 \leq x < 440$	C+	
$399 \leq x < 426$	C	
$385 \leq x < 399$	C- *Note: a C- may not meet the prereq for some courses or requirements of some programs	
$330 \leq x < 385$	D	
$x < 330$	F	

No "Incomplete" (I) grades will be given.

UNM-VALENCIA — aPHYSICS II/1240 — SPRING 2021

CLIFTON MURRAY

TUES 3:00-4:15 P

THURS

TURN HMWK IN GROUPED BY CHAPTER, DO NOT SPLIT OR COMBINE CHAPTERS

TUES	THURS
19 JAN CH 15 ELECTRIC CHARGE, FORCE, FIELD $F = k\frac{q_1 q_2}{r^2}$ HMWK #1, 2, 11a, 13, 18, 25, 30, 34a ← EXERCISES, UNLESS NOTED OTHERWISE	21 JAN CH 16 ELECTRIC POTENTIAL DIFFERENCE $\Delta V = \Delta U / q$ · IF UNIFORM E, $\Delta V = \Delta E / d$ QUES #1, EXER #1, 3, 29, 26 ...
26 JAN CH 16 CONTIN* CAPACITANCE $C = Q/V$ ... EXER 7a, 8, 10, 35, 37, 49 * REMEMBER: TURN CH 16 IN AS SINGLE PACKET *.	28 JAN RVW CH 15 CH 16
2 FEB CH 15 & 16 HMWK DUE BEFORE TEST TEST #1	4 FEB (CH 17) VOLTAGE, RESISTANCE CURRENT $V = IR$. CIRCUITS. ELECTRIC POWER $P = IV$ Ex #1, 2, 6, 10, 12a, 21, 35, 38, 44, 47
9 FEB (FINISH CH 17) CH 18 MORE CIRCUITS. R's IN COMBINATION. CH 18 EXER #1, 3, 5, 6, 11 ...	11 FEB CH 18 CONTIN. emf "$\mathcal{E}$". RC CIRCUITS. ... #30, 31, 34, 48, 50
16 FEB RVW CH 17 CH 18	18 FEB TEST #2 CH 17 & 18 BEFORE TEST SEPARATE
23 FEB CH 19 MAGNETIC FIELD $\vec{B}$: FORMULAS. RIGHT-HAND RULES FOR DIRECTION. Ex 4, 5, 13a, 15, 20, 21, 26, 30, 35, 36	25 FEB FIN 19. CH 20 MAG. FLUX, Φ. INDUCED $\mathcal{E}$. VOLTAGE TRANSFORMERS. CH 20 Ex #1, 2, 9a, 12a, 25, 27, 33, 39, 40, 41
2 MAR FIN 20. CH 21 A.C. INDUCTANCE, REACTANCE, IMPEDANCE. CH 21 Ex #1, 3, 16, 19, 22, 23a, 31, 32...	4 MAR CH 21 CONTIN. A.C. POWER. ELECTROMAGNETIC WAVES. A.C. OSCILLATORS. ... 34, 38, 39.
9 MAR RVW CH 19 CH 20 CH 21	11 MAR TEST #3 CH 19, 20, 21 HMWK DUE B4 TEST
16 MAR SPRING	18 MAR BREAK
23 MAR CH 22 LIGHT: RAY OPTICS. LAWS OF REFLECTION, REFRACTION. Ex #1, 2, 10, 11, 13, 16, 21, 31	25 MAR CH 23 LENSES & MIRRORS. $\frac{1}{f} = \frac{1}{o} + \frac{1}{i}$ IMAGES. MAGNIFICATION. Ex 3, 12, 13, 41, 47, 59, 60, 67, 68
30 MAR FINISH CH 23. CH 24 WAVE OPTICS. DIFFRACTION. INTERFERENCE OF LIGHT WAVES CH 24 Ex #27, 30, 31, 34, 35, 43	1 APR CH 25 RESOLVING IMAGES. HUMAN EYE. CH 25 EXER #1, 2, 50, 51, 52, 53
6 APR RVW CH 22, 23, 24, 25	8 APR TEST #4 CH 22, 23, 24, 25 DUE BY START OF TEST
13 APR CH 26 RELATIVITY OF MOTION, SPACE, TIME, #9, 11, 13, 14, 22, 25, 30, 49	15 APR FINISH 26. CH 27 QUANTUM PHYSICS. WHY IT WAS INVENTED. APPLIC. TO H-ATOM. Ex #1, 2, 5, 11, 13, 14, 15, 37, 42, 44
20 APR CH 28 MORE QUANTUM. IS ELECTRON A WAVE OR PARTICLE? MATTER-WAVES. #1, 2, 3, 4, 12, 28, 30	22 APR CH 29 NUCLEAR PHYSICS. RADIOACTIVITY. #1, 5, 10, 12, 15, 24, 27, 31, 49, 50, 53
27 APR CH 30 NUCLEAR ENERGY. #1, 3, 8, 10, 17...	29 APR CH 30 CONTIN. ELEMENTARY PARTICLES. COSMOLOGY. ... 34, 35, 52
4 MAY * HMWK CH 26, 27, 28, 29, 30 DUE B4 START OF CLASS * RVW FOR FINAL	6 MAY RVW FOR FINAL
11 MAY	13 MAY