GENERAL INFORMATION
PHYSICS 230 & 231

INSTRUCTOR:	Takashi Nakajima (PHYS230 & PHYS231)
OFFICE:	NS-250
OFFICE HOURS:	Fall: M, T, W, & Fri: 11– 12 p.m. & Th: 3 – 4 p.m. Spring: M, W, & Fri: 11– 12 p.m., T: 2 – 3 p.m. & Th: 3 – 4 p.m.
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INSTSRUCTOR:	Art Gerwig (PHYS230)
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INSTSRUCTOR:	Hector Garcia (PHYS230)
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The following statements constitute only a partial summary of some but not all rules, policies, instructional philosophies, grading systems, materials required, etc., for Physics 230 and 231. Additional or amended rules, policies, etc., may be announced during scheduled class times in the future.

REQUIRED AND RECOMMENDED READING MATERIALS

Physics 230

Required textbook:	Physics, 5th ed., by Halliday, Resnik, and Krane. Assigned reading will include chapters 1 - 17, and 21 – 24
Required lab pack:	Physics 230 Lab Experiments, by J.M. Wood
Recommended reading:	Physics, 4th ed. Vol. 1., by Halliday, Resnik, and Krane Physics for Scientists and Engineers, Vol. 1, 2nd ed., by Fishbane, Gasiorowicz, and Thornton.

Physics 231

Required textbook:	Physics, 5th ed., by Halliday, Resnik, and Krane. Assigned reading will include chapters 25 – 45
Required lab pack:	Physics 231 Lab Experiments, by J.M. Wood
Recommended reading:	Physics, 4th ed. Vol. 2., by Halliday, Resnik, and Krane Physics for Scientists and Engineers, Vol. 2, 2nd ed., by Fishbane, Gasiorowicz, and Thornton.

Grading Policies

Grades are determined by scores received on quizzes, exams, and laboratory work according to the following plan. However, to receive a "C" or better for the course grade, each student **must** receive "C" or better in each lecture and laboratory work:

Quiz :	15%
Exam 1:	10%
Exam 2:	20%
Exam 3:	30%
Exam 4:	10%
Lab:	15%

Exams are principally composed of physics problems which required quantitative solutions.
The grading, rules, policies, etc., for lab will be discussed more fully during the first lab period. Assigned homework will not be collected or graded but the solutions are available.

For all work submitted for credit (exams, lab report, etc.), the student must show his/her work or method appropriately, completely, and clearly. One may lose academic credit for any questions problem, or other course work if the method or reasoning is not correct or is not properly shown. Partial credit may be given for a partially correct method that is properly and clearly shown. **Each student can bring a simple, inexpensive, non-programmable scientific calculator for exams and quizzes.** This class is not designed for "How to use the most expensive calculator", but for "how to use your brain."

Special Rules and Policies

1. If any rule, policy, or regulation concerning this course is broken by a student, then, penalties may be imposed on the student at the discretion of the instructor.

2. The instructor reserved the right to alter or waive any commitments, policies, or rules. Usually such changes are relatively rare and are made when the instructor believes that necessity, fairness, or reasonableness indicates the need for such changes.

3. Generally, it is very difficult to obtain a make up exam. If a student misses or knows beforehand that he/she will miss an exam, the student must directly call or contact the instructor as soon as it is physically possible and arranged for a possible make up exam. If the student does not have a proven excuse that is acceptable to the instructor or is not prompt, then he/she will very likely receive a zero on the exam. If the make up exam is allowed, the student will be expected to take the make up exam without any delay.

4. Any student who violates exam or course rules, or who participates in plagiarism, cheating, fraud, dishonestly or unfairness with respect to the course will be subject to **heavy academic penalties** such as an F grade for the course.

5. The students are responsible for anything that is presented or announced to the class during any scheduled class period and material sent via email.

6. In addition to the rules and policies stated by the instructor of this course, the student is subject to the rules and policies of Palomar College.

7. If you have any documented disability, please see the instructor within the first week/ two weeks so that we can discuss regarding appropriate accommodations.

Instructional Methodology and Philosophy

Students are expected to read assigned chapter and to have a rough idea prior to the lecture.

During the lecture periods, the instructor will usually but not always discuss physics topics which are generally discussed in the required textbook and solve selected physics problems. The students are encouraged to ask questions related to the lecture material during the lecture period.

The lecture and course exams emphasize the conceptual, analytical, and quantitative understanding of the principles of physics. Critical thinking by the students must analytically solve quantitative physics problems for exams, lab experiments, and homework exercises. Calculus, vector mathematics, and other mathematical skills will be needed for this course. This course is basically intended for students whose major field is physics, astronomy, engineering, chemistry, or closely related field.

The lecture is not to cover or present all required course information or every needed detail. Therefore, it is expected and required that the student will study and think independently, be resourceful, and demonstrate good personal initiative. The student should carefully study the lecture notes, the textbook and other references, solve problems, ask questions, and study with others, etc. The physics lab requirement also involved resourcefulness, analytical skills, etc. The lab procedure, etc will be discussed in more detail during the first scheduled lab period and by a separate written syllabus. It is highly recommended to attend the lab prep sessions on Fridays.

Generally this course is difficult and demanding.

Course Suitability

After you have carefully considered all factors related to this course and you believe that this course is not in your best interest, too demanding, too time consuming, unreasonable, or etc., then, you may wish to seriously consider dropping this course. But, if you have a sincere desire to prepare yourself for future analytically rigorous science courses or other related endeavors and develop or improve your understanding of physics, problem solving skills, resourcefulness, etc., within the philosophy and structure to this

course, then, it may be in your educational interest to remain in the course.

If you have any question, be sure to ask the instructor.

You can find homework questions and solutions at pcpepso.com, our engineering club site. Visit the site and click “courses” and you will find “Physics 230 & 231” courses. You will find helpful information beyond the homework and their solutions. If you are going into any engineering or physics field, you will benefit a lot from the club by joining them.

Student Learning Outcome

What's a Learning Outcome?
Student learning outcomes are general skills, knowledge, or masteries which students are expected to have after completing a course or program of study. The faculty responsible for a course or program get together and decide what overall qualities or abilities a successful student should have after completing a course or program; those become the student learning outcomes. Faculty do assess their outcomes; that is, they find a way to determine if their students are achieving those desired outcomes. However, these assessments are not necessarily part of the students' grades in the courses.

Physics 230

Conservation of linear momentum. Students will be asked to calculate linear velocities of objects before and after collision. Furthermore, they will be asked to present Conservation of Linear Momentum of the system in both X and Y directions.
Work-Energy relations. Students will be asked to calculate % mechanical energy lost during the collision.
Conservation of angular momentum. Students will be asked to calculate angular velocities of objects before and after collision. Furthermore, they will be asked to present Conservation of Angular Momentum of the system with respect to the origin chosen.

Physics 231

Electrical Components: Students will be asked to identify each electrical component and its function in electrical circuits under different types of electric current.
Electrical Circuits: Students will be asked to build different electrical circuits following the given electrical circuit diagrams.
Behavior of Electrical components used in DC and AC circuits. Students will be asked to calculate and show impedances and phasor angles using four independent methods for each of two different LCR circuit settings.

CHAPTER	HOMEWORK(230)	CHAPTER	HOMEWORK(231)
3	31,37,49, extra-see the bottom	21	6,20,25,59,65,66
2	19,25,41,50,58,78,89,115	22	11,27,29,55,84,86
4	16,19,26,96	23	18,26,29,30,39,47,48,50,53,83,extra
5	3,8,42,51,72,82,83	24	16,21,28,29,34,35,36,37,104, 114
	EXAM #1		
6	4,7,8,20,21,26,35,49,52,53	25	12,23,42,43,44
7	2,5,35,46,50	26	1,2,21,43,79
8	7,8,23,29,70,85,135	27	8,18,27,41,42,52,53,67,68,89
	EXAM #2		**EXAM #1**
9	15,17,20,27,49,85,112,130	28	36,45,55,57,82
10	29,41,55,67,78,85	29	4,5,17,19,25,44,50
11	8,39,47,51,56,64,100	30	11,24,30,32,33,39,41,45,46,53 62,
15	1,10,11,37,43,44,72,96,102,		68,72,89,92
13	9,32,42,103	31	8,13,44,46,56,57,59,98
		32	7,16,17,18,21
	EXAM #3		**EXAM #2**
14	19,22,29,37,59,61	33	5,10,13,14,23,24,31,32,37,41,43,53, 62,63,85,87,89,111
18	21,30,37,39,41,42,43,45,49,54,59	34	4,19-31,34-40,41,45,58,69-79,89,90, 92,93,103,104,105,112
19		35	3,5,6,13,15,21,24,25,27,30,31,55,69, 75,76,77,79,81,82,85,113,121,extra
		36	11,13,30,31,35,38,41,42,47,51,52,54,
20			69,109
	EXAM #4		**EXAM #3**

Extra problems

Ch. 2: Two vectors of magnitudes a and b make an angle θ with each other when placed tail to tail. Prove, by taking components along two perpendicular axes (without rotating them), that the magnitude of their sum is $r = \sqrt{a^2 + b^2 + 2ab\cos\theta}$.

Ch. 23 A solid non-conducting sphere of radius R has a nonuniform charge distribution of volume charge density $\rho = \rho_s r/R$ where ρ_s is a constant and r is the distance from the center of the sphere. Show (a) that the total charge on the sphere is $Q = \pi\rho_s R^3$ and (b) that $E = \frac{1}{4\pi\varepsilon_0}\frac{Q}{R^4}r^2$ gives the magnitude of the electric field inside the sphere.

Ch. 35 S_1 and S_2 in Fig. 35-39 are point sources of electromagnetic waves of $\lambda = 1.00$ m. they are in phase and separated by d = 4.00 m, and they emit at the same power. (a) If a detector is moved to the right along the x axis from source S_1, at what distance from S_1 are the first three interference maxima detected? (b) Is the intensity of the nearest minimum exactly zero? (Hint: Does the intensity of a wave from a point source remain constant with an increase in distance from the source?)

Ch 35 The double horizontal arrow in Fig 35-12 marks the points on the intensity curve where the intensity of the central fringe is half the maximum intensity. Show that the angular separation of $\Delta\theta$ between the corresponding points on the viewing screen is $\Delta\theta = \lambda/2d$ if θ in Fig 35-10 is small enough so that $\sin\theta \sim \theta$.