DEPARTMENT OF PHYSICS

Fall 2002	**PHYSICS 1B**	**27 September 2002**

INSTRUCTORS:

LECTURES: Prof. H. E. Smith
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LABORATORY TAs:

	Daniel Queen	Todd Sayles
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COURSE SCHEDULE:

Lectures:	MW	9:00 – 9:50am	WLH 2005
	T	6:00 – 6:50pm	Cntr 109
Quiz:	F	9:00 – 9:50am	WLH 2005
Problem Section:	Th	7:00 – 8:50pm	Cntr 113

- The first Problem Section will meet Thursday, 3 October. Attendance is strongly advised for those who may be rusty on the heat & thermodynamics (*Remember* $PV = nRT$?) you learned in high school.
- The first Reading Quiz will be on Monday, 30 September.
- The first Friday Quiz will be on 5 October.

Final Exam:	Th	12 Dec	8:00 – 11:00am	WLH 2005

COURSE WEBSITE: *http://casswww.ucsd.edu/physics/ph1b/*

All course materials, including reading assignments, homework assignments & solutions, grades, etc. will be linked to the WebSite. In addition we'll include other sites with good background material in support of lectures & reading.

COURSE TEXT:

- **Hecht:** *Physics – Calculus*, Second Edition, (Brooks-Cole: 2000).

The First Edition is acceptable if you have it, but note that the assigned problems have different numbers.

PREREQUISITES: Physics 1B covers the subjects *Heat & Thermal Physics* and *Electricity & Magnetism* - Chapters 12–21 in the text. Physics 1A and concurrent enrollment in Math 10C or Math 20B are prerequisites. Trigonometry, vectors and calculus will be used in lecture, problem sets and exams.

HOMEWORK ASSIGNMENTS: Problem sets will be assigned weekly; a list of assignments is included in the lecture schedule. Assignments will not be collected or graded, but will be discussed in the Problem Section meetings on Thursday following their assignment. Solutions will be posted on the Course Website. Students who work the problem sets will frequently find that the weekly quiz problems look vaguely familiar.

GRADING:

Reading Quizzes: There will be 9 reading quizzes, given each Monday (except Nov 11) at the beginning of lecture. These will test your reading of the material for that week's lectures and will provide us with guidance on subjects for discussion in lecture. Quizzes will typically have two questions in multiple choice format. You will have an opportunity to discuss your answers with your colleagues before quizzes are collected. Each quiz will count 4 points; reading quiz score calculated from the best 8 of 9 quiz scores will comprise 10% of your grade.

Problem Solving Quizzes: A closed-book quiz will be given each week on Friday, with the exception of Nov 29 (Thanksgiving) and Dec 6 (Last Class). The quiz will consist of multiple choice conceptual questions plus a couple of problems. Some questions and problems will likely be similar to homework problems (*Level II*). Quizzes & exams will be closed book and notes. Relevant formulae will be provided.

No make-ups will be given either for Reading (Monday) Quizzes or for Problem (Friday) Quizzes. Your grade will be calculated from the best 8 of 9 Reading Quiz scores and best 7/8 Problem Quiz scores so that one quiz of each type may be missed without penalty.

You will need Scantron forms (#20788-ERI, available at the bookstore) for *both* Reading and Problem quizzes. At the first Reading quiz, you will be assigned a code number, which you will write on each Scantron that you use during the quarter. Scantron forms will not be returned. Recorded grades will be posted on the Web (*http://casswww.ucsd.edu/physics/ph1b/grades.html*). Check to be certain your grade has been recorded correctly.

Laboratories: Physics is an Experimental Science. Virtually everything that we believe about the physical Universe is subject to experimental verification. Two laboratory experiments will be performed and the results described in a graded write-up; this will account for 20% of your grade. Labs will begin the week of 30 Sept. A detailed schedule of dates and other information will be posted on the WebSite.

Final Exam: Finally, there will be a comprehensive final exam which will comprise 35% of your grade.

Grades will be calculated as follows:

Reading Quizzes	40 =	10%
Friday Quizzes	140 =	35%
Laboratory	80 =	20%
Final	140 =	35%
	400 =	100%

HOW TO DO WELL IN PHYSICS 1: I suggest the following strategy:

Reading: Read the assigned chapters carefully, preferably before the relevant lecture (*remember the reading quiz!*), but at least before you attempt the homework. Use the Summary and Review Questions to check your understanding of the material.

Lecture: Attend Lectures and try to pay attention to the key principles (not just how to do the example problems). If you do not understand something *ask questions*. Please do not feel intimidated or self-conscious; if something in lecture is not clear to you it is probably unclear to many other students as well. It is far better to clarify ideas when they are presented than to attempt reconstruction later.

Assignments: It is unfortunately the case that there is no substitute for working problems; *work lots of problems*. Work the homework *before* looking at the solutions or attending the section meeting. If the solution eludes you, give it your best shot before seeking help elsewhere. The problems are sometimes complex, but are frequently straightforward if approached in methodical fashion without panic.

Problem Section: These are your principal means for help/contact. There will be a Problem Session on Thursday evenings in which the TA will work problems from the homework and from the previous quizzes. Experience shows that students who organize their questions/problems ahead of time and participate in the discussion obtain the greatest benefit.

If you need additional help, see the TA or Prof. Smith during office hours or make an appointment to see Prof. Smith.

Exams: Review the lecture material. Review the assigned problems and discussion questions; these will be the best guide as to what will be covered on the exams. Work a few more problems if there are areas where you still feel uncertain.

Synthesize!. It is very important to build upon the material studied in previous weeks and to gain a *comprehensive* understanding of the material. Focusing only on the particular formulae and principles to be applied on the weekly quiz is poor strategy. It is regrettably common that students score well on the quizzes where understanding of one or two key formulae may suffice, but perform poorly on the final exam which requires broader application of these principles and requires application of a whole quarter's worth of formulae (and counts 30% of your grade).

ACADEMIC DISHONESTY: Please read the "UCSD Policy on Integrity of Scholarship". The rules covering academic honesty will be rigorously enforced. For the purposes of this class cheating includes submitting another person's work as your own for grade consideration, copying from another student on assignments or exams or knowingly allowing another student to copy from you, and use of any unauthorized materials in an exam. *Any confirmed case of cheating will result in an "F" grade in Physics 1B and referral to the appropriate dean for disciplinary action.*

TENTATIVE COURSE SCHEDULE

Week	Lecture Topic	Reading/ Quiz	Homework
Sep 30	Thermal Properties	Ch. 12	M/C 2, 6, 10, 11, 12, 14, 17. Prob 1, 11, 21, 27, 31, 35, 39, 49, 54, 59, 67, 81, 85, 95, 99.
Oct 7	Heat & Thermal Energy	Ch. 13	M/C 1, 5, 12, 13, 20. Prob 11, 18, 21, 27, 31, 38, 39, 43, 61, 73, 77, 89, 92, 96, 99.
Oct 14	Thermodynamics	Ch. 14	M/C 2, 3, 4, 5, 9, 16. Prob 1, 5, 9, 13, 19, 29, 37, 43, 49, 63, 67, 73, 77, 87, 96.
Oct 21	Electrostatics	Ch. 15	Prob 1, 5, 11, 18, 25, 29, 31, 39, 45, 59, 65, 70, 83, 99, 104.
Oct 28	Electrostatic Energy	Ch. 16	Prob 1, 5, 13, 16, 21, 30, 43, 44, 53, 69, 74, 89, 109, 113, 118.
Nov 4	Direct Current	Ch. 17	Prob 1, 3, 5, 7, 11, 21, 23, 33, 41, 54, 57, 63, 79, 81, 85, 93.
Nov 11	*Veterans Day*		
Nov 12	Batteries & DC Circuits	Ch. 18	Prob 10, 11, 15, 17, 27, 32, 35, 41, 45, 55, 75, 81, 87, 89, 93.
Nov 18	Magnetism	Ch. 19	Prob 3, 5, 7, 15, 21, 22, 29, 42, 49, 59, 71, 81, 82, 83, 89, 97.
Nov 25	EM Induction	Ch. 20	Prob 1, 5, 11, 22, 27, 33, 41, 42, 57, 61, 65.
Nov 28 & 29	*Thanksgiving Holiday*		
Dec 2	AC Circuits & Electronics	Ch. 21	Prob 3, 7, 13, 53, 59, 99, 105.
Dec 12	Thursday	FINAL EXAM 8:00 – 11:00am	WLH 2005