

DEPARTMENT OF PHYSICS

Winter 2011

January 3 – March 19

PHYSICS 2BL: Physics Laboratory – Mechanics and Electrostatics

WEB PAGE <http://www-physics.ucsd.edu/students/courses/winter2011/physics2bl>

INSTRUCTOR Mark Paddock, mpaddock@ucsd.edu
1623 Mayer Hall Addition, x4-2504
Office Hrs: Monday, 2-3pm, or by appointment

COURSE SCHEDULE

Lectures: Monday, 7:00-7:50 pm, York 2622

Laboratory Sections (Mayer Hall Addition/Annex # 2722)

Section		Days	Time
704064	A02	Tu	9:00a-11:50a
704065	A03	Tu	12:00p-2:50p
704066	A04	W	9:00a-11:50a
704067	A05	W	12:00p-2:50p
704069	A08	Th	9:00a-11:50a
704070	A09	Th	12:00p-2:50p

TAs:

Heemin Kang (heemin@ucsd.edu)

Stefan Progovac (sprogovac@physics.ucsd.edu)

Lilana Lopez (lil005@ucsd.edu)

Matthew Mui (mmui@ucsd.edu)

TA Coordinator: Ben Heldt (benheldt@physics.ucsd.edu)

TEXT

J.R. Taylor, *An Introduction to Error Analysis*, 2nd Edition (University Science Books, 1997).

May need to refer to Physics textbook such as Wolfson & Pasachoff

LABORATORY NOTEBOOKS

You will need a quad ruled 'comp' notebooks. You will turn in the finished lab report at the end of the experiment.

COURSE DESCRIPTION

In this course you will perform physics experiments and test physical models. We will explore different modes of scientific inquiry, from making observations to establishing relationships to testing and refining models of the physical world. The principle objective of this course is for you to gain some understanding of the methods scientists use to investigate nature, and to further your understanding of mechanics and electrostatics through hands-on experience. Other important objectives of this course include learning how to keep accurate records of lab work (i.e., your lab book), and to assess errors in measurement. Labs will not meet during first session. During session 2, experiment 1 will be started. Each lab takes two lab periods. The scientific inquiry (but not necessarily the physics) becomes increasingly complex through these first four labs. Come prepared.

COURSE FORMAT

Prerequisites:

Concurrent enrollment in physics 2B or 4C.

Lectures:

Lectures will be on Monday. Class time will be spent discussing the error analysis, and broader issues in the methods of scientific inquiry, including the interpretation and validity of scientific results. Lectures will consist of a mixture of error analysis (Taylor is very good) and some time on the physics of the individual experiments. However, you may need to review HRW for the more details.

Laboratories:

The labs for all sections are held in Mayer Hall Addition room # 2722. Descriptions of the experiments, as well as guidelines on the lab reports, will be posted on the website. The labs have a pre-lab component that is to be completed prior to the start of the lab meeting. This will prepare you for the short pre-lab quizzes. You should read the description of the experiment and review the relevant physics in HRW before you go to lab.

HOMEWORK ASSIGNMENTS

Weekly homework assignments will be posted on the web. They will be due at the beginning of lab period.

COURSE GRADE

Labs	50%
Homework/Quizzes	20%
Final	30%

ACADEMIC DISHONESTY

Please read "UCSD Policy on Integrity of Scholarship" in the UCSD General Catalog. These rules will be rigorously enforced. In other words, 'No cheating!' For the purposes of this class, cheating includes submitting another's work as your own, copying from another's homework or lab notebook or 'faking' data. Cheating also includes attempts to manipulate grades unfairly.

COURSE OUTLINE

Section Experiment Theme of Scientific Inquiry Reading (Taylor)

1: Jan 3-6 :	No lab Ch. 1 & 2
2: Jan 10-13:	1: Deduce the mean density of the Earth. Ch. 3
3: Jan 17-20:	1: Deduce the mean density of the Earth Ch. 4
4: Jan 24-27:	2: Racketball Earth Creating a NEW testable model Ch. 5
5: Jan 31- Feb. 3:	2: Racketball " Ch. 8
6: Feb. 7-10:	3: Shock Absorber Determine a relationship Ch. 6
7: Feb. 14-17:	3: Shock Absorber " Ch. 7
8: Feb. 21-24:	4: Voltmeter Measuring values Ch. 8
9: Feb. 28 – Mar 3 :	4: Voltmeter
10: Mar 7-10:	5: Make-up
11: Mar 18:	FINAL