

DEPARTMENT OF PHYSICS

Spring 2012

April 2 – June 8

PHYSICS 2BL:
Physics Laboratory – Mechanics and Electrostatics

WEB PAGE <http://www-physics.ucsd.edu/students/courses/spring2012/physics2bl>

FACEBOOK <http://www.facebook.com/UcsdPhys2bl>

INSTRUCTOR Mark Paddock, mpaddock@ucsd.edu
1623 Mayer Hall Addition, x4-2504
Office Hrs: Tue, Th 2-3 pm.

COURSE SCHEDULE

Lectures: Monday, 6:00-6:50 pm, York 2722

Laboratory Sections (Mayer Hall Addition/Annex # 2722)

| Section | Days | Time |
|----------------|-------------|-----------------|
| 744461 A01 | Tu | 12:30p-3:20p |
| 744462 A02 | Tu | 3:30p - 6:20p |
| 744463 A03 | Tu | 09:30a - 12:20p |
| 744464 A04 | W | 10:00a - 12:50p |
| 744465 A05 | W | 1:00p - 3:50p |
| 744466 A06 | W | 4:00p - 6:50p |
| 744467 A07 | Th | 09:30a - 12:20p |
| 744468 A08 | Th | 3:30p - 6:20p |
| 744469 A09 | Th | 6:30p - 9:20p |
| 744470 A10 | F | 10:00a - 12:50p |

TAs:

Leandra Boucheron (lsbouche@ucsd.edu)
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TA Coordinator: Tera Austrum (tbell@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 Tuesday lab meeting.

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:

Physics 2B or 4C.

Lectures:

Lectures will be on Monday evening. Class time will be spent discussing the experiments, 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. 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 60%

Homework/Quizzes 20%

Final 20%

GRADING GUIDE

The following is a guide that will could be altered as the quarter proceeds

> 85 % A

> 70 % B

> 55 % C

Nevertheless if you are getting above 85 % then you will get a good grade.

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 SCHEDULE

Section Experiment Theme of Scientific Inquiry Reading (Taylor)

| | |
|--------------------|--|
| 1: April 2-6 : | No lab, prepare for Exp. 1, read Ch. 1 & 2 (Taylor) |
| 2: April 9-13: | 1: Deduce the mean density of the Earth, Ch. 3 |
| 3: April 16-20: | 1: Deduce the mean density of the Earth, Ch. 4 |
| 4: April 23-27: | 2: Racketball Earth Creating a NEW testable model, Ch. 5 |
| 5: Apr 30 – May 4: | 2: Racketball, Ch. 8 |
| 6: May 7-11: | 3: Shock Absorber Determine a relationship, Ch. 6 |
| 7: May 14-18: | 3: Shock Absorber, Ch. 7 |
| 8: May 21-25: | 4: Voltmeter Measuring values, Ch. 8 |
| 9: May 28-June 1: | 4: Voltmeter, Ch. 12 |
| 10: June 4-8: | Final |