Instructor: Howard Haber
Office: ISB, Room 326
Phone Number: 459-4228
Office Hours: Mondays and Thursdays, 2–3 pm
E-mail: haber@scipp.ucsc.edu

COURSE WEB PAGE:

`http://scipp.ucsc.edu/~haber/ph5B/index.html`

CLASS HOURS:

Lectures: Mondays, Wednesdays and Fridays 9:30–10:40 am, Thimann Lecture Hall 3
Discussion Sections:

5B-01A	Mondays 6–7:30 pm,	ISB 231
5B-01B	Tuesdays 2–3:30 pm,	ISB 235
5B-01C	Tuesdays 6–7:30 pm,	Natural Sciences II Annex 101

REQUIRED TEXTBOOK:

Physics for Scientists & Engineers with Modern Physics, 4th edition, by Douglas C. Giancoli

REQUIRED LABORATORY MANUAL (for Physics 5M):

Fluids, Waves and Optics, the Physics 5M Laboratory Manual, by George Brown

PREREQUISITES:

Prerequisite math courses: Mathematics 19A or 20A
Co-requisite math courses: Mathematics 19B or 20B
Prerequisite physics courses: 5A/L

It is assumed that you are familiar with the material in Chapters 1–12 of Giancoli's textbook.

DISCUSSION SECTION TEACHING ASSISTANT:

TA:	Jeffrey Jones
Office:	ISB, Room 314
Phone Number:	459-4138
Office Hours:	Mondays, 3:30–5:30 pm
E-mail:	jeff@physics.ucsc.edu

LABORATORY SECTION TEACHING ASSISTANTS:

TA:	Daniel Damiani
Office:	Nat Sci II, Room 308
Phone Number:	459-4588
Office Hours:	Tuesdays, 12–2 pm
E-mail:	ddamiani@ucsc.edu

TA:	Sean Echols
Office:	ISB, Room 314
Phone Number:	459-4138
Office Hours:	Fridays, 3:10–5:10 pm
E-mail:	sechols@physics.ucsc.edu

TA:	John Kehayias
Office:	ISB, Room 262
Phone Number:	459-5010
Office Hours:	Thursdays, 1–2 pm
E-mail:	kehayias@physics.ucsc.edu

TA:	Jonathan Kozaczuk
Office:	Nat Sci II, Room 308
Phone Number:	459-4588
Office Hours:	Wednesdays, 3:30–5:30 pm
E-mail:	jkozaczu@ucsc.edu

TA:	Alex Morisse
Office:	ISB, Room 329
Phone Number:	459-1962
Office Hours:	Wednesdays, 2–3 pm
E-mail:	amorisse@physics.ucsc.edu

The Monday office hours of the Instructor and the Discussion TA normally scheduled for Monday January 21 and February 18 will be rescheduled for the same time slots on Tuesday January 22 and February 19, respectively (due to the Mondays holidays).

Brief Course Outline for Physics 5B

Topic	Reading
1. Fluids	Giancoli, Chapter 13
2. Oscillations	Giancoli, Chapter 14
3. Wave Motion	Giancoli, Chapter 15
4. Sound	Giancoli, Chapter 16
5. Light: Reflection and Refraction	Giancoli, Chapter 32
6. Lenses and Optical Instruments	Giancoli, Chapter 33
7. The Wave Nature of Light; Interference	Giancoli, Chapter 34
8. Diffraction and Polarization	Giancoli, Chapter 35

Important Class Information

Course Grading and Requirements

5% Class participation (clickers)
20% Weekly Homework (10 problem sets)
20% First Midterm Exam (Friday, February 1, 2008)
20% Second Midterm Exam (Friday, February 29, 2008)
35% Final Exam (Tuesday, March 18, 2008, 7:30–10:30 pm)

Lectures

A detailed lecture schedule is included in this packet. Lectures will focus on developing core ideas and intuition for the topics studied and will include in-class demonstrations and interactive components. These are designed to be a supplement for the reading, not a substitute. I strongly urge you to do the assigned readings in the textbook before each lecture. Even if you miss an assigned reading, attendance at the lecture is strongly recommended (although don't forget to do the reading afterwards!).

Exams

The two midterm exams and final exams will be held in the same classroom as the lectures. Each midterm will be a one hour and ten minute exam. The final exam will be three hours long and cover the complete course material. You must take the midterm and final exams to pass the course.

PRS feedback system (the "clickers")

The lectures will employ the *Interwrite Point Response System* that allows you to respond to the questions posed in class. A small component (5%) of your grade will be contingent on you taking part in this. Moreover, it is fun, so please participate! If you do not already have one, you can purchase a clicker at the bookstore, then register your clicker `https://media4.ucsc.edu/prs/registration/prsRegister.pl` as soon as possible, so that we can begin using them immediately during the lectures. Note: the transmitter ID is the 6-digit code on the back of the clicker.

Homework assignments

Solving problems is an integral and essential part of learning physics. Weekly homework assignments will be handed out each Wednesday and are due at the beginning of class on the Wednesday of the following week. (Exception: the last homework set will be due on the last day of class, which is a Monday.) The homework problem sets are NOT optional. You are encouraged to discuss the class material and homework problems with your classmates and to work in groups, but all submitted problems should represent your own work and understanding. In order that homework can be graded efficiently and returned quickly, late homework WILL NOT be accepted (except for special circumstances, if you have made arrangements with me prior to the due date). However, note that the lowest homework set grade will be dropped in evaluating your course grade. Your homework sets will be graded based on the clarity of your method of solution as well as on your final answers.

Homework solutions will be posted on the class website, usually the same evening after the homework sets are due. Graded homework will be returned on shelves in the hallway next to Thimann 111D.

Discussion sections and review sessions

You have a choice of three discussion sections. Choose the one that best suits your schedule. You may choose to attend a different section (or more than one section) in a given week week if needed. Attendance is voluntary, but very strongly encouraged. The discussion sections will clarify some of the lecture material, but its main focus is on problem solving strategies and techniques, for which there will be limited coverage in class.

Review sessions for the two midterm exams will be organized by the Discussion TA, and will take place one or two days prior to the midterm exams. The Final Exam Review session will be held on Monday March 17 starting at 6 pm in lieu of the last scheduled discussion section.

Fluids, Waves and Optics

Laboratory Instructor:	George Brown
Office:	Thimann, Room 111D
Phone Number:	459-2327
E-mail:	gsbrown@ucsc.edu

Laboratory sections

Physics 5M is a separately listed course but an essential part of Physics 5B. The laboratory sections take place in Thimann 115. You must be enrolled in one of the seven scheduled sections:

5M-01	Tuesdays 8:30–11:30 am,
5M-02	Tuesdays 3:30–6:30 pm
5M-03	Tuesdays 7–10 pm
5M-04	Wednesdays 3:30–6:30 pm
5M-05	Wednesdays 7–10 pm
5M-06	Thursdays 8:30–11:30 am
5M-07	Thursdays 7–10 pm

The Laboratory sections begin operations on Tuesday January 15.

Laboratory manual

The Physics 5M laboratory manual can be purchased from the campus bookstore.

Policy for missed labs

If you cannot attend your assigned lab section, you must contact the TA of an alternate lab section to seek permission to attend that lab. If approved, you can substitute that lab section for you assigned one. If the TA may tell you that the lab section is full (fire laws are quite strict here), try to find another lab section with TA approval. In case of some emergency that prevents you from attending any lab section of a given week, inform your regular lab TA before the end of that week. If you receive the TA's approval (documentary evidence supporting your reason for missing the lab will be necessary), then the missed lab will be dropped from your final lab grade. However, this can happen at most once per quarter; a second missed lab will not be excused. If you miss one lab altogether without any valid excuse, you will receive a zero for that lab. *If you miss more than one lab in this manner, you will not pass Physics 5M.*

Physics 5M Laboratory schedule

Lab weeks	Laboratory topics
Jan 8–10	no labs scheduled this week
Jan 15–17	Fluids (Archimedes principle, Bernoulli's Principle)
Jan 22–24	Harmonic Oscillator (Transient and forced oscillator response)
Jan 29–31	Mechanical Waves (Pulses, traveling waves, standing waves, boundary conditions)
Feb 5–7	The Sonometer (Physics of a guitar string; harmonics)
Feb 12–14	The Resonance Tube (Physics of the open and closed organ pipe)
Feb 19–21	Geometric Optics (Index of refraction; single lens instruments)
Feb 26–28	Compound Optics (Newtonian telescope; microscope)
March 4–6	Interference and Diffraction (Single slit, double slit, grating)
March 11–13	Polarization of Light