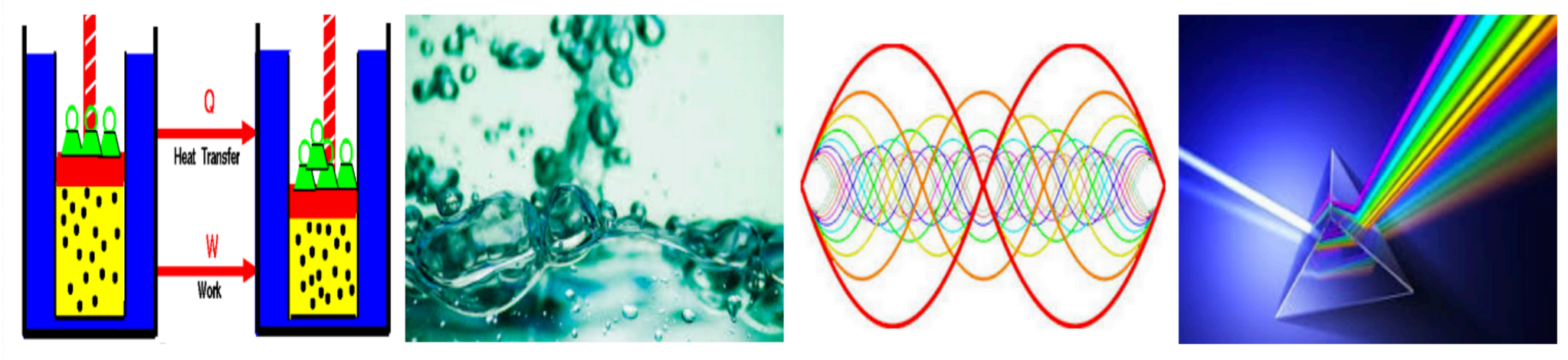
Physics 2C: Introduction



Fluids/Waves/Thermo/Optics

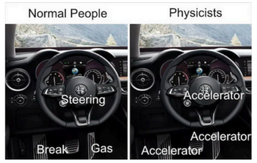
(for Engineering and Physical Science Majors)

Brian Shotwell, UC San Diego, Spring 2025

Two important things to familiarize yourself with:

Course page is on Canvas (canvas.ucsd.edu/). Everything you need should be on Canvas or accessible through Canvas. (Homepage updated weekly)

Week 1: Measurement/Units/Dimensions; 1D Motion



Syllabus ; Instructor and TA OH & SI and OASIS info

Week 1 --- Course Logistics / One-Time things:

- **Read the Syllabus (link above, in the "Course Banner" that will appear on every weekly homepage); Make sure you understand due dates, dates of exams, etc.**
- **Make sure you can access Piazza. This is the class discussion board.**
- **Week 1 Survey due Monday, Jan 15th (M week 2).**

Week 1 --- Measurement/Units/Dimensions; 1D Motion

- **Monday, January 8**
  - (No homework due today, but normally a link to the HW, a link to Gradescope to turn it in, and the solutions will appear here (Monday) on the weekly page).
- **Tuesday, January 9**
  - (No prelecture-reading quiz today)
  - Week 1 Lecture Slides ↓ Lecture Notes will be posted here after the lecture

The syllabus can be accessed from the homepage “banner” (the top).

University of California, San Diego
Department of Physics
Physics 2B, Spring 2023
Physics—Electricity and Magnetism (4 units)

Instructors:
Brian Shotwell, bshotwell@physics.ucsd.edu, OH M 12pm-1pm in MBA 4513
Additional Wednesday OH at a time TBD

Teaching Assistants (see course schedule, next page, for discussions):
Head TA (A00): Peter Kim (half time), pkim@ucsd.edu, OH TBA
TA (A00): Will Brunner, wbrunner@ucsd.edu, OH TBA
TA (A00): Kshiti Gupta, kdgupta@ucsd.edu, OH TBA
TA (A00): Xiaoche Wang, xiw067@ucsd.edu, OH TBA
Head TA (B00): Casey Carlile (full time), cmcarlile@ucsd.edu, OH TBA
TA (B00): Fangyu Cai, facai@ucsd.edu, OH OH TBA
TA (B00): Sophia Haight, sohaight@ucsd.edu, OH OH TBA
TA (B00): Wanda Hou, hwanda@ucsd.edu, OH OH TBA
TA (B00): Adam Kagel, akagel@ucsd.edu, OH OH TBA

SI Leaders (you'll see them in lectures, helping answer questions during clickers):
Tiffany Liou, tiliou@ucsd.edu
Portia Restuccia, prestucc@ucsd.edu

Course Webpage:
Login through http://canvas.ucsd.edu.
All assignments will be due through Canvas or Gradescope (accessed through Canvas).
The Canvas home page will be updated weekly with the material for the week.

Course Information: Physics 2B is the second of a four-quarter introductory physics sequence intended for engineering and physical-science majors. This quarter consists of a standard sequence of electricity & magnetism: Electric Charge, Electric Forces, Electric Fields, Gauss's Law, Electric Potential, Potential Energy, Capacitance, Current, Resistance, Direct Current (DC) Circuits, Magnetic Forces and Magnetic Fields, Faraday's Law, Inductors/Inductance, and AC Circuits.

Textbook: There are two primary textbooks that you can use to guide you through the material:
- 1st Option: *Physics for Scientists and Engineers, A Strategic Approach, 4th Edition*, by Randall D. Knight (Chapters 22-30 and 32). This textbook is popular with the physics education research community, and is pretty similar to other textbooks with a few exceptions. There are some lower priced ebooks tied to this textbook through the bookstore (in store

Course Schedule, Page 1 of 2:

Week/Day	*Topics to be covered*	*Sections / Chapters in* Giancoli (G) *or* Knight (K) *to read before lecture*
WEEK 1:		
Jan. 9 (Tu)	2A Intro, Syllabus, Units/Dimensions, Significant figures, Estimation problems	(G) Ch.1, (K) Ch.1
Jan. 10 (W)	Discussion Week 1	—
Jan. 11 (Th)	Motion in 1D, part 1	(G) Ch.2, (K) Ch.2
Jan. 12 (F)	Motion in 1D, part 2	(G) Ch.2, (K) Ch.2
WEEK 2:		
Jan. 16 (Tu)	Motion in 2D, part 1: Vectors, intro to projectile motion	(G) Ch.3, (K) Chs.3-4
Jan. 17 (W)	Discussion Week 2	—
Jan. 18 (Th)	Motion in 2D, part 2:	(G) Ch.3, (K) Ch.4

We'll go over Chapters 14, 16-21, and 33-35 of Knight

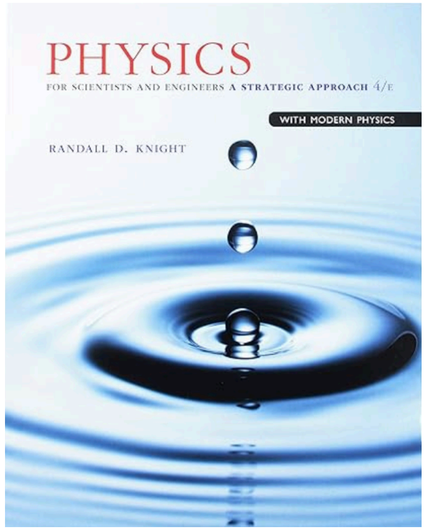
Ch. 14: Fluids

Ch. 16-17: Mechanical Waves

Ch. 18-21: Thermodynamics

Ch. 31 (partially): EM Waves

Ch. 33-35: Optics



Blue: Quiz/Exam 1

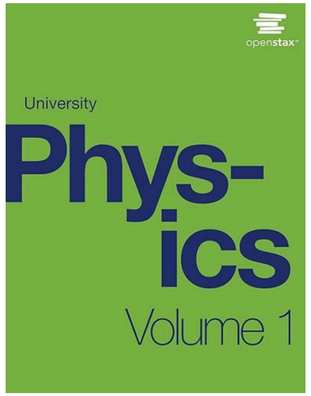
Green/Red: Quiz/Exam 2

Red: Exam 3

Black: Quiz/Exam 4 and Final (along with everything else)

Another recommended book is the free book "University Physics" from OpenStax.

Knight is better though.



Grade Breakdown:

Your final grade is determined according to the following:

- Class Participation: 10% (4% surveys, 6% discussions)
- Exams (4 quizzes + Final) : 90%
  - The final exam will count as three quizzes. Of the 7 total scores, the lowest one is dropped, and each of the remaining 6 is worth 15% each.

The discussion grade can be replaced with your overall quiz average.

If you cannot make a quiz due to an emergency, you do not need to email anyone, as the quiz will automatically be dropped.

*First quiz is Tu Week 2

Expectations for Students

Students:

- Students will treat one another and the Teaching Staff with kindness, courtesy, and respect.
- Students will be active partners with the teaching staff in maintaining an inclusive class in which all students can learn and equitably participate, and will alert the teaching staff immediately if they have any concerns.
- Students will be actively engaged in the course, including seriously attempting to do all homework, attending all class sessions (including quizzes and exams), and participating in all group activities.
- Students will adhere to the UCSD Policy on the Integrity of Scholarship – see the section entitled "Students' Responsibilities". In PHYS 2C, students are responsible for making sure all work turned in represents work they have done themselves, with appropriate sources cited, or in approved group collaboration.
- Group activities are only successful if all group members participate fully, and therefore:
  - students will come prepared to fully engage in group activities, having completed prerequisite reading,
  - students will give their full energy, attention, and commitment to their group,
  - students will focus on both sharing information with and gaining insight from others in their group.
- Students will not discriminate against the teaching staff or other students on the basis of race, color, national origin, religion, sex, gender identity, pregnancy, physical other mental disability, medical condition, ancestry, marital status, age, sexual orientation, citizenship, membership in the uniformed services or any other personal characteristic.

Expectations for Instructional Staff

Teaching Staff (Prof. Shotwell, the TAs, LA's, and the SIs):

- The teaching staff will treat all PHYS 2C students with kindness, courtesy, and respect.
- The teaching staff will work to create a classroom environment which includes all students, and in which all students can succeed in learning mathematical physics.
- The relevant member(s) of the teaching staff will be actively present at all class meetings and office hours, and will respond to student questions as soon as possible.
- The teaching staff will endeavor to clearly explain the performance goals for students, the teaching methods being employed, and will promptly grade and return homework, quizzes, and exams (within 1 week of the work being available to grade).
- The teaching staff will not discriminate against students on the basis of race, color, national origin, religion, sex, gender identity, pregnancy, physical or mental disability, medical condition, ancestry, marital status, age, sexual orientation, citizenship, membership in the uniformed services or any other personal characteristic.