

Physics 2B: Electricity and Magnetism

Course Information

Class schedule	<u>8:00am-9:20am</u> on Monday, Tuesday, Wednesday, Thursday. <u>5:00pm-6:50pm</u> on Thursday.
Location	Center Hall Room 109.
Instructor	Saurabh Mogre, Urey Hall 7249. Email: smogre@ucsd.edu
Office Hours	<u>9:30am-11:00am</u> on Wednesday. Location: Urey Hall 7th Floor.
Teaching Assistant	Stephen Hancock Email: shancock@physics.ucsd.edu
TA Office Hours	<u>3:00pm-4:30pm</u> in Mayer Hall Rm. 5205
Discussion Sessions	<u>5:00pm-6:50pm</u> on Tuesday. Location: Center Hall Room 109. These sessions will be led by the TA and will include a review of course material in addition to discussions of selected topics and problems from the textbook relevant to the homework and quizzes.
In-class Quizzes	<u>8:00am-9:20am</u> on Mondays, starting week 2.
Final exam	<u>8:00am-11:00am</u> on Saturday, 2 nd August, 2019. Location: TBA
Course Description	This course is a continuation of Physics 2A – covering charge and matter, the electric field, Gauss’s law, electric potential, capacitors and dielectrics, current and resistance, electromotive force and circuits, the magnetic field, Ampere’s law, Faraday’s law, inductance, electromagnetic oscillations, alternating currents and Maxwell’s equations.
Prerequisites	Physics 2A or 4A and Math 20A-B.
Corequisites	Math 20C or 31BH (prior completion is sufficient).

Course Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Quantitatively describe the relationship between electric charges, electric and magnetic fields, potentials, forces and energy.
2. Use calculus based methods to derive basic laws and principles of electromagnetism, and apply them to analyze physical situations.
3. Understand the role and behavior of various circuit components, and using circuit diagrams to calculate quantities of interest.

Course Materials

Website	Physics 2B on https://canvas.ucsd.edu . All assignments and course-related announcements will be posted on Canvas.
Textbooks	<p>Textbooks are optional and will be used to assign reading sections. However, you will be required to have access to WileyPlus in order to do the homework problems. WileyPlus is integrated with Canvas via Inclusive Access and costs \$49.00. Do not opt-out of paying via the Inclusive Access charge or you will lose access to the downloadable eBook, your homework, and support materials.</p> <p>Following textbooks will be used as reference material for this course:</p> <p>1) University Physics Volume 2 by Samuel Ling, William Moebs, Jeff Sanny. The textbook in pdf format is available online for free at openstax.org. Hard copies of the book are available in the bookstore or can be ordered from amazon.com</p> <p>2) Fundamentals of Physics for UCSD Physics 2B by Wiley Custom Learning Solutions.</p> <p>OR</p> <p>2) Fundamentals of Physics by Halliday, Resnick and Walker (Wiley). Hard copies are available in the bookstore.</p>
Screencast	Screencasts for the classes will be available at podcast.ucsd.edu
Clickers	We will use iClickers in class to facilitate discussion. Please register your iClicker on Canvas in order to record your responses.

Grading Information

Graded activities	In-class quizzes	45%
	Final	30%
	Canvas Assignments	25%
	Clicker questions	bonus up to 5%
Grading scale	A+	> 95
	A	90 – 95
	A–	85 – 90
	B+	80 – 85
	B	75 – 80
	B–	70 – 75
	C+	65 – 70
	C	60 – 65
	C–	55 – 60
	D	40 – 55
F	< 40	

In-class quizzes	We'll have 4 in-class quizzes at 8am on Mondays, starting in week 2. Each quiz will have 8 multiple-choice questions and 1 free response question. The questions will mostly be conceptual and may involve simple numerical calculations as well. You are allowed to bring a letter-sized sheet of paper (8.5" × 11") with hand-written notes on one side . You will also need to bring a red F-289-PAR-L scantron and a scientific calculator. The lowest scoring quiz will count for half. E.g. 4/10 becomes 2/5.
Final	The final will be a closed book exam. It will have around 18 multiple choice questions and 3 free response questions. You can bring a letter sized sheet of paper (8.5" × 11") with hand-written notes on both sides . You will also need to bring a red F-289-PAR-L scantron and a scientific calculator.
Canvas Assignments	Problems based on material covered in lectures will be uploaded weekly on Canvas. These assignments will become available as and when the course material they are based on is covered. Assignments will be due 1 day before the weekly quiz.
Clicker questions	During lectures, I will put up questions for discussion which you will answer using iClickers. Some of your responses will be scored and can provide you with a small amount of extra credit. However, it is important to note that the in-class questions are meant to check-in with your understanding of the topic and most questions will earn you credit just for participating.
Discussion and participation	There will be a discussion board on Canvas monitored by myself and the TA. You are highly encouraged to participate and post any questions you may have or respond constructively to your classmates' questions. Do not avoid posting just because you think your question is trivial, it's very common that many students will have the same question but are simply hesitant to ask. Engaging in productive discussion is one of the best ways to learn the course material. Canvas will be the go-to resource for all academic questions. Send an email to me or the TA if you have queries regarding grades or other personal matters.
Grading procedure and feedback	In-class quizzes will be graded via scantron. The solutions and common pitfalls will be discussed in the discussion sessions. If you have questions about discrepancy in grades, or about the questions in the quiz – please contact the TA. You can email me regarding administrative concerns or if you need to miss a quiz – note that the quizzes are mandatory and exceptions will only be granted in extenuating circumstances.
Academic Integrity	UCSD and I value academic integrity, and expect students to adhere to the policies set forth in http://academicintegrity.ucsd.edu Any violations of integrity including but not limited to cheating in assignments, quizzes, clicker questions or any other graded activity will result in a score of 0 for that activity. The violation will also be reported to the UCSD academic integrity office. You can still collaborate and discuss coursework with your peers when explicitly specified, but make sure that any submission you make is your own.

Resources

How to do well in this course

Ask questions. Individual assistance is available during the TA and Instructor Office Hours. Try to attend them if you have any difficulties (or even if you don't – listening to other peoples' questions also helps improve understanding!). Engage in discussions on Canvas and look through the questions addressed by the instructor and the TA.

The physics tutorial center (<https://sites.google.com/physics.ucsd.edu/physics-tutorial-center/>) is also available if you need help from tutors.

Engage with the material. The homework and readings are meant to improve your understanding of the topics. It'll be helpful to do the assigned readings before class and try the practice problems on your own. You are also strongly encouraged to attend the discussion sessions to get more practice with techniques of Physics problem solving.

Don't fall behind. Some of the topics covered here may be new for you, and given the pace of the session, it can be easy to get overwhelmed with things to study. Since a lot of the material builds up on previously taught topics, it is important to build up a strong foundation and stay up to date with the course. If any topic is unclear or if you have any lingering questions, ask me or put them up on Canvas to get an explanation or feedback.

Students with disabilities

Students requesting accommodations and services for this course due to a disability need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. OSD Academic Liaisons also need to receive current AFA letters if there are any changes to accommodations.

Physics OSD liaison: Dawn Love. email: d1love@physics.ucsd.edu

OSD Website: <http://disabilities.ucsd.edu>.

For additional information, contact the Office for Students with Disabilities: 858-534-4382 (V); 959.534.9709 (TTY) – reserved for people who are deaf or hard of hearing; or email: osd@ucsd.edu.

Course enrollment and related questions

All enrollment matters (pre-reqs, co-reqs, waitlists, etc) are handled by the Physics Department, and not by me.

If you are a continuing UCSD student, you will need to contact the Physics Department through the Virtual Advising Center (<https://stark.ucsd.edu/students/vac/>).

If you are a visiting student or an incoming FA19 admit, you will need to contact the Physics Department at advising@physics.ucsd.edu

Deadline to add course: 07/05/2019

Deadline to drop course without "W": 07/12/2019

Deadline to drop course with "W": 07/19/2019

Tentative course calendar

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
July 1 8-9:20am: L1a Course Intro & review	2 8-9:20am: L1b Electric charges & Coulomb's law 5-6:50pm Discussion Session	3 8-9:20am: L1c Electric Fields 9:30-11am Instr. OH	4 Independence Day No class	5 HW 1 due 07/07
8 8-9:20am: Quiz1 Covers: L1a-L1c	9 8-9:20am: L2a Electric Fields contd. Gauss' Law 5-6:50pm Discussion Session	10 8-9:20am: L2b Gauss' Law contd. Electric Potential 9:30-11am Instr. OH	11 8-9:20am: L2c Electric Potential contd. Capacitance 3:00-4:30pm TA OH 5-6:50pm: L2d Capacitance contd. Problem solving	12 HW 2 due 07/14
15 8-9:20am: Quiz2 Covers: L2a-L2d	16 8-9:20am: L3a Current and Resistance 5-6:50pm Discussion Session	17 8-9:20am: L3b Current and Resistance contd. 9:30-11am Instr. OH	18 8-9:20am: L3c Circuits 3:00-4:30pm TA OH 5-6:50pm: L3d Circuits contd. Problem solving	19 HW 3 due 07/21
22 8-9:20am: Quiz3 Covers: L3a-L3d	23 8-9:20am: L4a Magnetic Fields 5-6:50pm Discussion Session	24 8-9:20am: L4b Magnetic Fields contd. 9:30-11am Instr. OH	25 8-9:20am: L4c Magnetic Fields & Currents 3:00-4:30pm TA OH 5-6:50pm: L4d Magnetic Fields & Currents contd. Problem solving	26 HW 4 due 07/28
29 8-9:20am: Quiz4 Covers: L4a-L4d	30 8-9:20am: L5a Induction & Inductance 5-6:50pm Discussion Session	31 8-9:20am: L5b Alternating Currents 9:30-11am Instr. OH	August 1 8-9:20am: L5c Topics TBD 3:00-4:30pm TA OH 5-6:50pm Course Review HW 5 due	2 8-11am: Final Location TBA Covers all course material

**ParScore®
TEST FORM**

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SUBJECT _____

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DIRECTIONS

← USE NO. 2 PENCIL ONLY →

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- ERASE COMPLETELY TO CHANGE
- EX. A B C D E

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↑ FEED THIS DIRECTION ↓

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SIDE 1

Image of scantron to be used for quizzes.