

PHYS272“R”: General Physics II: Electricity & Magnetism—Recitation

Spring 2020: January 13–May 15—online Mar 23 and after

R 3:30 PM–4:45 PM, STB226

Version 6: April 19, 2020 (subject to change)

Recitation Instr.: Dr. Kathy Cooksey, STB220 kcooksey@hawaii.edu; 808-932-7195
Office Hours: M 2–4 PM, R 9–11 AM, and by appointment
Course Website: Laulima PHYS-272-001 (HIL.12443.SP20)
Textbook: *University Physics Volumes 2 & 3* from OpenStax
Available for free online, in web view or PDF format:
<https://openstax.org/details/books/university-physics-volume-2>.
<https://openstax.org/details/books/university-physics-volume-3>.
Students are *strongly* encouraged to donate to OpenStax for their efforts to provide free, quality textbooks: <https://openstax.org/give>.

Recitation Schedule (subject to change)

Date	Topic	Quiz Due
Rec#1: R Jan 16	Electric charges and fields; Gauss's law I	
Rec#2: R Jan 24	Electric charges and fields; Gauss's law II	
Rec#3: R Jan 30	Electric potential; capacitance I	Rec#1–2
Rec#4: R Feb 6	Electric potential; capacitance II	
Rec#5: R Feb 13	Current; resistance; direct current circuits I	Rec#3–4
Rec#6: R Feb 20	Current; resistance; direct current circuits II	
<i>M Feb 24</i>	<i>Test #1</i>	
Rec#7: R Feb 27	Magnetic forces, fields and sources I	Rec#5–6 (soln. posted)
Rec#8: R Mar 5	Magnetic forces, fields and sources II	
Rec#9: R Mar 12	Electromagnetic induction; inductance	Rec#7–8
Mar 16–20	<i>Spring Break (no class)</i>	
R Mar 26	<i>Prince Kuhio Day (no class)</i>	
Rec#10: R Apr 2	<i>Alternating current circuits; electromagnetic waves I online</i>	
Rec#11: R Apr 9	<i>Alternating current circuits; electromagnetic waves II online</i>	Rec#9–10 (via DropBox)
<i>M Apr 13</i>	<i>Test #2</i>	
Rec#12: R Apr 16	<i>The nature of light; geometric optics I online</i>	
Rec#13: R Apr 23	<i>The nature of light; geometric optics II online</i>	Rec#11–12 (via DropBox)
Rec#14: R Apr 30	<i>Interference; diffraction online</i>	
Rec#15: R May 7	<i>Review online</i>	Rec#13–14 (via DropBox)
May 11–15	Final Exams (<i>M May 11, 7:30–9:30 AM</i>)	

Online Recitation Format:

- A voice-over-slides movie will be posted, that talks students through the recitation problem, showing waypoints; they will be posted by recitation time at the latest.
- Finish problems to submit *via Dropbox*, at 3:30 PM, every other week on Thursday (as scheduled above, starting with Rec#7–8 on March 12). One problem will be graded in detail. The lowest recitation grade will be dropped. The rest are 10% of the course grade; the average will be converted to Dr. Binder's grading scheme.
- Solutions will be posted after each due date.

Problem-Solving Strategy (AKA “The Format”): This is quantitative problems. It is not required for conceptual problems (though may be useful).

Student’s Name
Collaborator(s):

PHYS272“R” Rec#X

1. Problem title or very brief description

Physics Category

- Identify the broad category under which the problem falls because this reduces the set of concepts and equations that will be useful.
- The broadest categories reflect the course modules (e.g., “Electric Field” or “Magnetic Force”) but being more specific can be useful (e.g., “Electric Field (Gauss’s Law)”, “Magnetic Force (equilibrium)”).

Definitions

- Define the variables to represent the known/given quantities (with units) and the unknown/target quantities.
- Use informative symbols for the variables; subscripts are useful.
- Often a diagram is a useful way to define the known and unknown variables.

Algebraic Derivation

- Write the basic equations on which the solution is based, in terms of the defined variables. There should be as many equations as unknowns.
- Algebraically manipulate the equations to reduce and simplify.

Numeric Substitution

- If the problem requires a numeric answer, substitute into the reduced equation (while tracking units explicitly) and compute the result.

Assessment

- Check the units come out correctly (even if it’s a non-numeric answer).
- If it’s a numeric answer, check the order-of-magnitude, else justify the derived equation scales reasonably with each variable.
- Clearly justify that the final answer is reasonable.
Units and order-of-magnitude/scaling are two “sanity checks” but also demonstrate understanding of expectation based on physics.
 - If result is not expected, discuss whether this is the point (e.g., learning, new intuition) or if it seems incorrect.
 - If the latter, then attempt to explain what is wrong (and earn back points).

2. Problem title or very brief description

Physics Category

Definitions

Algebraic Derivation

Numeric Substitution

Assessment

3. ...wash, rinse, repeat

Recitation Rules:

- Students are responsible for their own learning, which includes preparing for recitation, asking questions, and seeking additional help.
 - The majority of college students use instructors’ office hours and/or tutoring services (e.g., Kilohana; info below).
 - Office hours are good times to get individualized help from the expert (i.e., the instructor), and office hours are part of the instructor’s job.
- Students must respect and support their peers’ learning, which means helping each other with difficult concepts but not just giving the answer.
- Students should convey (either in person, by email, through an intermediary, or somehow) to the instructors questions, comments, and concerns about the course. The recitation instructor (Dr. Cooksey) can be in intermediary to the overall course instructor (Dr. Binder).
- The instructors should be receptive to and respectful of the students’ needs and interests and must generally follow the class rules as detailed for the students (also see next section).
- Group work is encouraged in recitation and for completing the problems between recitations.
- Students need to sign the attendance sheet each recitation even though attendance is not part of the grade.
- A non-smart-phone calculator is required for every class. Students should practice with the calculator they will use for quizzes, tests, and the final exam.
- Solutions to problems must show sufficient supporting work to receive full points. A complete solution includes: proper problem setup (e.g., state assumptions, define knowns and unknowns as variables, draw and label a figure); sufficient work to follow substitutions and reductions (typically symbolically first, then numeric substitution); and assessment of solution (units but also order of magnitude).

Good-to-Know about Dr. Cooksey:

- She enjoys teaching and wants to be better at it, and she really cares about helping students be better. These aspects combined mean she is on the students’ side; trust in that and knowledge that she is receptive to feedback will smooth over rough patches.
- She chooses teaching techniques based on physics-education research to support student learning as best as possible. This means she has one or more reasons for nearly every component of and action in a course. She’ll gladly motivate these choices whenever necessary or asked.
- Her primary goal is to help students improve *how* they learn with the logic that if students learn how to learn, they can master any content. The related goal is to focus on transferrable skills so that time and effort spent for the class yield benefits beyond the course and semester.
- Generally, she does not answer questions directly. A student making connections and constructing a solution her- or himself will ingrain the answer more effectively, and the professor facilitates the process by asking leading questions. Since the motivation is to help the students, they should embrace and engage with this process. (It is also a transferrable skill to discuss ideas and answer questions on the fly.)
- She grades so that no one gets 100% and no one gets 0% because either score would not be useful in assessing what the students understand and how to help. The rule-of-thumb is to score above the median. She has no interest in failing students who make good-faith effort in the class (e.g., good attendance, ask questions in and out of class).
- She thinks no single resource is comprehensive, so the expectation is that the student will have to work with the instructors, their materials, the textbook, and the wealth of material available on the internet.

- She generally responds to email 24-to-48 hours after receipt. If the matter is urgent, the student should call (office voicemail is automatically emailed) or stop by her office (her general weekly schedule is on her homepage: <http://www2.hawaii.edu/~kcooksey>).
- *Changes to the schedule for the COVID-19 pandemic starting M Mar 23, for the remainder of the semester.*

Students should use Lulima's Discussion and Private Messages. Dr. Cooksey will review the Questions and Class Discussions postings daily.

Dr. Cooksey's office hours and appointments will be held via Zoom: <https://zoom.us/j/5031283554>.

Campus-wide Information

Disability Support: Any student with a documented disability who would like to request accommodation should contact the University Disability Services Office—Hale Kauanoë A Wing Lounge; 932-7623 (V), 932-7002 (TTY), uds@hawaii.edu—as early in the semester as possible.

Advising: Advising is a very important resource designed to help students complete the requirements of the University and their individual majors. Students should consult with their advisor at least once a semester to decide on courses, check progress towards graduation, and discuss career options and other educational opportunities provided by UH Hilo. Advising is a shared responsibility, but students have final responsibility for meeting degree requirements.

Kilohana Academic Success Center: The KASC provides academic support opportunities for all UH Hilo students that foster their development into independent, self-motivated learners. Students who visit Kilohana have access to subject-specific and academic skills tutoring from UHH students selected for their academic achievement and dedication to helping others succeed. Kilohana is located on the lower level of the Mookini Library and on the web at <http://hilo.hawaii.edu/kilohana/>.

Human Rights: The University of Hawai‘i at Hilo prohibits discrimination in its education programs based on race, national origin, color, creed, religion, sex, age, disability, veteran status, sexual orientation, gender identity or associational preference. If at any time during class you feel uncomfortable about what is being talked about, or feel that your human rights have been violated, please feel free to leave the room. However, the professor asks that you confer with her as soon as possible about what happened so that appropriate action can be taken if necessary to avoid future problems. If you are uncomfortable speaking with the professor about your concern, please contact Kalei Rapoza (kaleihii@hawaii.edu), Interim EEO/AA Director, at 932-7626.

UH Hilo Title IX Policy: The University of Hawaii is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:

If you wish to remain anonymous, speak with someone confidentially, or would like to receive information and support in a confidential setting, contact: • UH Hilo Counseling Services: SSC, room E-203, 932-7465; • UH Hilo Medical Services: Campus Center, room 212, 932-7369; and/or • Hawai‘i Island YWCA, 935-0677.

If you wish to report an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, or stalking as well as receive information and support,[†] contact: • Libby Bailey, Title IX Coordinator, 932-7818, libby.bailey@hawaii.edu; • Jennifer Stotter, Director of the Office of Equal Opportunity & Deputy Title IX Coordinator, 932-7641, jstotter@hawaii.edu; and/or • Kalei Rapoza, Interim Director of Human Resources, 932-7626, kaleihii@hawaii.edu.

[†]Please note that you do not have to file a report with the University to receive institutional support or assistance.

As a member of the University faculty, the professor is required to immediately report any incidence of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and professor cannot guarantee confidentiality, the student will still have options about how the case will be handled. The goal is to make sure the student is aware of the range of options available and has access to the necessary resources and support. For more information regarding sex discrimination and gender-based violence, the University’s Title IX resources and the University’s Policy, Interim EP 1.204, go to: <http://www.hawaii.edu/titleix>.

Student Conduct: Students are expected to follow the University of Hawai‘i at Hilo Student Code of Conduct available at the following URL: <http://www.uhh.hawaii.edu/catalog/student-conduct-code.html>.