Physics Studio B: PHY2049C

Professor: Dr. Daniel Sega. Room 309. M/W 9:30 – 12:00 F 1-3:30
Office Hours: 2nd Floor, Faculty Wing, or Room 309. 12:15 – 12:45 pm. M to F.
Class webpage**(lab guides, extra credit readings and homework are there):** astrosega.github.io/teaching/

Course Description: An introduction to electricity and magnetism for physical science majors, designed to be taken as a sequence with Physics Studio A and Intermediate Modern Physics. Calculus is used: integration and differentiation heavily, and vector calculus and differential equations slightly. Calc. I and II are prerequisites; any novel math will be covered in class. "Studio" means the class integrates lectures and labs into the same space and time. Labs and quizzes will occur mostly on Fridays; homework will always be due on a Friday.

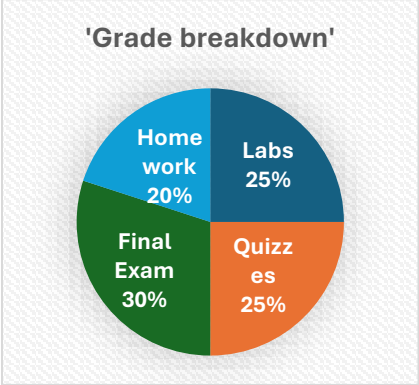
Required Text: OpenStax University Physics 2. **Additional Text:** Fundamentals of Physics II by R. Shankar.

Required Lab Equipment: Laboratories will usually occur in groups of four. At least 2 students from each group should have **the PASCO Capstone program installed and ready** (MAX OS / Windows 10-11). Additionally, the **free smartphone app** phyphox is also required. PASCO Capstone requires a license key. Copy & paste the next key (do not type it, as l's and 1's are not interchangeable):

1b03l-od1nl-mea80-r0cdh-l0r1c-ccd31

A composition notebook is required. Lab reports will be handwritten and turned in individually via each student's lab notebook, at the end of each lab. The lab guides can be found in the class webpage.

Course Learning Objectives (including liberal studies learning objectives assigned to the course): In this course, engineering and science majors will (1) learn about the electromagnetic phenomena and the motion under electromagnetic fields, (2) the basics of electronics (circuits) and of how day-to-day electromechanical technology works. They will also learn about the (3) nature of a classical field and the mathematics behind working with fields.



Grading Assignments:

- Laboratory reports (25 %)
- Homework (20 %)
- Final Exam (30 %)
- Quizzes (25%)
- Extra Credit Readings (up to 80% of the Final Exam Credit)

One (1) quiz and one (1) homework are dropped for the final grade. If a Laboratory is missed, the student must stay until the end of a class (the date to be scheduled with the instructor) to perform said lab. Quizzes will be 50 minutes long and recurrent (every two weeks on average). The Final exam is cumulative (it tests you on all the content of the course). The number to letter grade key is as follows:

	A (93 and up)	**A–** (90 to 93)	**B+** (87 to 90)	**B** (83 to 87)
B– (80 to 83)	**C+** (77 to 80)	**C** (73 to 77)	**C–** (70 to 73)	**D+** (67 to 70)
D (63 to 67)	**D–** (60 to 63)	**F** (below 60)		

Extra Credit Readings: These are philosophical readings designed to make you think deeper about the topics in class. After reading, each student must list **10 questions or uptakes** about the essay and submit them via

Canvas **at any point before the final week of lectures**, and after the reading has been assigned. An Oxford-style tutorial will take place: these consist in discussing the submitted student's questions and uptakes during office hours, for 30 mins. Each reading + tutorial is worth 20% of the *Final Exam* grade

LIBERAL STUDIES STATEMENT
This course has been approved to meet FSU's Liberal Studies Natural Sciences requirement and helps you become an effective interpreter of scientific results and a critical analyst of claims about the natural world. This course has a philosophy of science component that further reinforces critical thinking skills.

UNIVERSITY ATTENDANCE POLICY
Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

ACADEMIC HONOR POLICY
The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "…be honest and truthful and… [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/Academics/Academic-Honor-Policy)

AMERICANS WITH DISABILITIES ACT
Florida State University (FSU) values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all individuals with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

ACADEMIC SUCCESS
Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Dean of Students office to learn more.

EMOTIONAL AND WELLNESS RESOURCES
FSU Panama believes firmly in the importance of mental health and has taken significant steps to support students. Dr. Maria Claudia Uribe, alumna and former professor of FSU, brings over two decades of experience as a psychotherapist and is here to enhance the well-being of our campus community. She will be offering on-site and online counseling, referrals, and additional resources upon request.

Dr. Uribe will be on campus during the first week of classes, and she will introduce herself. Her office will be room 301, which has been converted into a Wellness Room. **A telehealth service** has also been added to our array of support tools, and more information about it will be provided by the Director of Student Affairs, Dr. Adam Tratner (**atratner@fsu.edu**), and Dr. Uribe (**m.uribe@fsu.edu**). Finally, several Wellness Workshops are organized every semester. The Workshops cover important topics on mental and physical health, academic success, study habits and tools, and many others.

Tentative Schedule (see also the detailed schedule on the webpage)

Week	Monday	Wednesday	Friday
1	Lecture: Electrostatics (Ch 5.)	Lecture (Ch 5)	PSS/Lecture (Ch 5)
2	Lecture: E-field (Ch 5)	Lecture (Ch 5)	Quiz/Lecture (Ch 5)
3	Lecture (Ch 5)	Lecture (Ch 6)	PSS/Lecture (Ch 6) Lab 1: Electrostatics
4	Lecture: Gauss (Ch 6)	Lecture (Ch 6)	PSS/Lecture (Ch 5,6)
5	Lecture: Potential (Ch 7) ECR assigned	Lecture (Ch 7)	PSS/Lecture (Ch 7)
6	Lecture (Ch 7)	Lecture (Ch 7)	Quiz/Lecture (Ch 7): Lab 2: Intro to the multimeter
7	Lecture: Capacitance (Ch 8)	Lecture (Ch 8)	Lecture (Ch 9) Lab 3: Intro to oscilloscopes
8	Lecture: Current and Resistance (Ch 9)	Lecture (Ch 9)	PPS/Lecture (Ch 9) – Quiz (Ch 8) ECR assigned
9	Spring Break		
10	Lecture (Ch 9)	Lecture: Circuits I (Ch 10)	Lecture (Ch 10) Lab 4: Circuits I
11	Lecture (Ch 10)	PSS/Lecture (Ch 10)	Quiz/Lecture (Ch 10)
12	Lecture: Magnetism I (Ch 11)	Lecture (Ch 11)	Lecture (Ch 11) Lab 5: Circuits II
13	Lecture: Magnetism II (Ch 12)	Lecture (Ch 12)	Quiz (Ch 11, 12)/Lecture (Ch 12) Lab 6: CRTs
14	Lecture: Faraday-Lenz (Ch 13, 14)	Lecture (Ch 13, 14) ECR assigned	Lecture (Ch 13, 14) Lab 7: Solenoids
15	PSS/ Lecture: Ampère-Faraday-Lenz (Ch 11, 13, 14)	Quiz (Ch 13) Lecture (Ch 11, 13, 14) ECR assigned	No Class
16	Lecture (Ch 15)	Lecture (Ch 15)	Final Review Lab 8: Circuits III

Legend: PSS = Problem-Solving Sessions, aka recitation. ECR = Extra credit reading is assigned.

I strive to provide a supportive learning environment for everyone, and it's always helpful for me to hear what works best for you. Have a great semester!

"The answers you seek can be found in the syllabus."