

Syllabus

PHY 2061 – Enriched Physics 2 – Fall 2020

Instructor : Dominique Laroche, Department of Physics

Office: NPB 2261, tel 352-392-8591 **Lab**: NPB B-4

Class details: Synchronous zoom lectures, Tu & Th Period 2&3 (8:30-10:25 AM)

Email : dlaroc10@ufl.edu I will attempt to respond to emails within 24 hours

Office hours (tentative): Tu, 12:50 to 1:40 PM (6th period) and Wed 10:40 to 11:30 AM (4th period) on zoom. Should you need to talk to me outside office hours, feel free to email me so that we can schedule an appointment.

Class website: Class syllabus and calendar, assignments, extra material, zoom links and recording as well as exams and relevant announcements will all take place on the class Canvas website (www.ufl.instructure.com/courses for login).

Prerequisites: This course requires that you have studied Newtonian mechanics in a previous calculus-based physics course such as PHY 2060.

Co-requisites : This course also requires that you have at least co-registered in a vector calculus course (Calc 3) such as MAC 2313.

Textbook : Physics Vol. 2, 5th ed. by Resnick, Halliday, and Krane (Wiley)

Supplementary textbook : Students looking for more advanced material can look at Introduction to Electrodynamics, 4th Edition, (Cambridge University Press) by D. J. Griffiths. This textbook is the standard textbook for PHY 3323, an upper level class in Electrodynamics.

Course description :

This is the second semester of the Enriched Physics With Calculus (Honors Physics) sequence PHY 2060-2061. This enriched course is aimed at students with

prior preparation in physics who wish to acquire a deeper understanding of the subject. The material will be covered at a faster pace than the one presented in the Physics with calculus sequence (PHY 2048-2049). Emphasis is placed on developing a solid conceptual understanding and on applying these concepts to the explanation of real world phenomena and technology. Topics covered include a variety of electromagnetic phenomenon such as electrostatics (Coulomb's law, Gauss's Law, potentials and fields in matter), magnetostatics (Biot-Savard law's, Ampere's law, fields in matter), DC and AC circuits (resistors, capacitors, inductors), electric and magnetic induction, Maxwell equations as well as mirrors and lens.

Course expectations:

Students enrolling in this class should be comfortable with calculus I and II: vector calculus, differentiation, integration and trigonometry. Students are also expected to be able to solve ordinary differential equations and be learning about multi-variable calculus in Cartesian, spherical and cylindrical geometries, as well as line and surface integrals.

There is no secret to success in this class. If you attend class, read the textbook ahead of times, review the class notes, and work the problems and examples diligently, then you will learn the material. I cannot stress how important learning to solve the problems on your own is. Simply reading out (or copying) the solutions is generally insufficient to learn the material! On average, you are expected to devote 8 to 12 hours a week (outside of classes) to keep up with the material. If at any time you have a question, either during classes or outside of classroom hours, please do not hesitate to talk to the instructor.

All exams and quizzes will be "closed-book" and no notes will be allowed. Essential mathematical formulas/expressions will be provided, and they will be shared with the class ahead of time. The graded assignment for this class will require the students to answer a variety of questions. These questions can be divided in 3 categories :

- a) showing a qualitative conceptual understanding of the material
- b) performing order of magnitude estimates
- c) symbolically solving problems

Online teaching considerations:

Lectures: The format of the class will be synchronous lectures. The lectures will attempt, as best as possible, to recreate a standard classroom learning environment. The lectures will consist in a mixture of white board lecturing, demonstrations, either in person or through a video, and small group discussions.

Communication: The preferred mode of communication is through email. Within the instructor's best ability, inquiries will be answered within 24 hours. Messages sent through Canvas will also be answered within the same timeframe.

Privacy: The class sessions will be recorded and shared on Canvas. If you have privacy concerns, feel free to turn off your camera and mute yourself. I will be answering questions received both orally and through the chat. The small conversations in small discussion groups will not be recorded.

Expected demeanor: Studying remotely can be challenging both on the students and the instructors. To make everyone's life easier, please mute yourself or use the "push-to-talk" functions if you are in a loud/busy environment. To minimize disruptions from people that show up late, new participants will automatically be muted upon entry. If you wish to verbally ask a question/interject, please remember to unmute yourself. If you have a question during lecturing, feel free to type it in the chat or politely interject.

Examinations: All quizzes and exams will take place through honorlock, UF official online proctoring partner. I encourage you to read the following handout to familiarize yourself with the process: <https://dce.ufl.edu/media/dceufledu/pdfs/Honorlock-Student-Exam-Preparation-Information.pdf>

A practice quiz will be available prior to the first proctored graded assignment. If any student has concerns/difficulties, please contact the Instructor in a timely fashion.

Technical issue during proctored exam :

If for any reason you have technical issues or you need clarification during the proctored exam, you will be authorized to send me an email. The

standard response to a honorlock failure will be

a) during the examination : joining a zoom room with the instructor

b) after the examination but before submission : sending the current work to the instructor by email.

Attendance and preparation: Attendance in class is definitely expected. Part of the grade will be based on class participation, and material outside the textbook will be presented. You are responsible for all material covered in the text AND in class. Recordings of the zoom lectures will be available on the Canvas website.

Students will be expected to have read the relevant material before coming to class. The material covered in the textbook will be quickly covered in class, and a large section of the lectures will consist of illustrating concepts with experiments and demonstrations, discussing additional material omitted in the text, pointing out subtle points and common mistakes, and asking questions to find out and clarify misconceptions.

Grading:

The graded material will consist of the following, and will be counted out of a total of 100 points.

Homework (10)	→ 10% of total grade
Quizzes (4)	→ 15% of total grade
In-class mid-term exam	→ 25% / 0% of total grade
Final exam	→ 35% / 60% of total grade
In-class group assignments	→ 15% of total grade

Homework will be assigned almost every week. I strongly encourage everybody to come up with the solutions on their own, and not to look up the answers online. Doing so will be great beneficial to your understanding of the material and to your performance during the other examinations.

The **quizzes** will be held in class, will last 60 minutes and will consist of 2-4 slightly modified homework problems / In-class group assignment / textbook example.

One question might include additional recommended problems. Each quiz will only cover the material that has been covered since the last quiz/exam. Only the best 3 quizzes (out of 4) will count towards the final grade.

Both the **mid-term and the final exam** will be comprehensive. If the grade on the final exam is better than one on the mid-term exam, the final exam will be worth 55% of the final grade and the mid-term will not count towards the final grade. Otherwise, the mid-term will be worth 25% and the final exam 35%.

In class participation: Starting during the 2nd week of class, the classes will be randomly divided in groups of 4-5 students. All groups will have 10-15 minutes to answer a small number of questions, after which the answers will be shared to the whole class.

The questions are likely to be challenging and the most important thing will not necessarily be to get the answer right, but to explain your reasoning. Every group answer will be ranked and of 3 with the following criterias :

0 – No answer, or answer severely lacking

1 – Reasonable effort, but numerous flaws or correct answer with minimal reasoning.

2 – Correct answer, or answer with small flaws, but with valuable insight.

3 – Especially insightful answer or correct answer to a truly challenging problem.

At the end of the class, an average of 1.5 on the cumulative class participation score will provide full marks in this section of the coursework.

The grading scheme is outlined below. The passing grade for Physics major is C and above. More information is available in the University official grading policies: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

A	→	85% -- 100%	→ 4.0 Grade point
A-	→	80% -- 84.999%	→ 3.67 Grade point
B+	→	75% -- 79.999%	→ 3.33 Grade point
B	→	70% -- 74.999%	→ 3.0 Grade point
B-	→	65% -- 69.999%	→ 2.67 Grade point
C+	→	60% -- 64.999%	→ 2.33 Grade point
C	→	55% -- 59.999%	→ 2.0 Grade point
C-	→	50% -- 54.999%	→ 1.67 Grade point

D+	→	45% -- 49.999%	→ 1.33 Grade point
D	→	40% -- 44.999%	→ 1.0 Grade point
E	→	0% -- 39.999%	→ 0.0 Grade point

Final exam date (tentative): 12/09/2020 from 17:00 – 19:00

Make-Up of Graded Material: Consistent with university policies

(<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#absencestext>), students will be allowed to make-up in-class graded material (exams and quizzes). In most circumstances, the reason for the make-up will need to be documented by a note typically from a medical doctor, an attorney, or a UF official. Other valid reasons include religious holidays and death from family members). Notes from family members are not acceptable. When possible, the student should inform the instructor in advance of absences from graded assignments. Barring exceptional circumstances, make-up for the homework and in-class participation will not be allowed, as the solutions will be posted after the deadline. To make up for missed homework/class participation events, additional participation points might be made available upon request to the instructor.

Tentative calendar (tentative):

Please note that an updated calendar will be kept up to date on the Canvas website.

Meeting #	Date	Topics	Key events
1	09/01	Introduction, important math review	
2	09/03	Physical dimensions, mechanics review	
3	09/08	Coulomb's Law (Ch. 25)	
4	09/10	Electric field (Ch. 26)	
5	09/15	Gauss' Law (Ch. 27)	HW # 1
6	09/17	Gauss' Law, conductors (Ch. 27)	
7	09/22	Electric potential, energy (Ch. 28)	HW # 2
8	09/24	Electric potential, energy (Ch. 28)	Quiz # 1
9	09/29	Electric materials (Ch. 29)	HW # 3
10	10/01	Capacitance (Ch. 30)	
11	10/06	Magnetism (Ch. 32)	HW # 4
12	10/08	B field (Ch. 33)	Quiz #2

13	10/13	Biot-Savart (Ch. 33)	HW # 5
14	10/15	Ampere's Law (Ch. 33)	
15	10/17	Faraday's Law (Ch. 34)	
16	10/22	Mid-term	Mid-term
17	10/27	Magnetic dipoles (Ch. 35)	HW # 6
18	10/29	Magnetic materials (Ch. 35)	
19	11/03	Inductance (Ch. 36)	HW # 7
20	11/05	Currents and circuits (Ch. 31)	
21	11/10	RLC circuits (Ch. 37)	HW # 8
22	11/12	Maxwell's Equations (Ch. 38)	Quiz # 3
23	11/17	Poynting vector, waves (Ch. 39)	HW # 9
24	11/19	Refraction, Snell's Law (Ch. 39)	
25	11/24	Mirrors and lenses (Ch. 40)	
26	11/26	No class, Thanksgiving	
27	12/01	Mirrors and lenses (Ch. 40)	HW # 10
28	12/03	Special topics / buffer slot	Quiz # 4
29	12/08	Review	
30	12/09	Final exam : 17:00-19:00	Final exam

Incomplete Policy:

A grade of incomplete is typically given to students who endure a situation in which they are incapable of completing the coursework. The I-grade is not to be given to students who are simply dissatisfied with their performance in the course. If you find you are in a situation that might qualify you for an I-grade in this course and you want to pursue this potential option, then you must contact me immediately and be sure to have the necessary documentation from a medical doctor or an attorney. Again, letters from family members are not acceptable. A letter of understanding indicating when and how the incomplete grade will be made up will eventually be drafted and signed by the student and the Instructor. A PDF of the policy is posted at:

<http://www.phys.ufl.edu/downloads/gradepolicy.pdf>.

Grading adjustments:

The graded material will be returned by email in a timely manner, typically within one-week of submission. If students notice an error or are dissatisfied with the grading, they should contact the instructor within 2 days of receiving it, and set-

up a time to review the grading. Failure to do so will result in the student relinquishing the opportunity to review the grading.

STUDENTS with DISABILITIES:

Students who require accommodation for disabilities/learning barriers must first contact the Dean of Students Office. That office will provide documentation, which the student must bring to his/her instructors AS SOON AS POSSIBLE.

Contact the Disability Resources Center (352-392-8565 or <https://disability.ufl.edu/students/get-started/>) for information about available resources for students with disabilities.

Academic Honesty: Each student is expected to hold himself/herself to a high standard of academic honesty. Under the UF academic honesty policy (<https://sccr.dso.ufl.edu/process/student-conduct-code/>), unauthorized assistance or the use of unauthorized resources is strictly forbidden on work-for-credit. Although discussions among the students are highly encouraged, you are to work alone on all homework assignments unless specified otherwise. Fabrication or falsification of excuses or related documentation is also a violation of the UF academic honesty policy. **Violations of this policy will be dealt with severely. There will be no warnings or exceptions.**

Online course evaluation : Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/ . Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/ .

COUNSELING, MENTAL HEALTH and ADDITIONAL RESOURCES:

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](https://umatter.ufl.edu/) (<https://umatter.ufl.edu/>) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: [Visit the Counseling and Wellness Center website](https://counseling.ufl.edu/) (<https://counseling.ufl.edu/>) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website (<https://shcc.ufl.edu/>).

University Police Department: Visit UF Police Department website (<https://police.ufl.edu/>) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website (<https://ufhealth.org/emergency-room-trauma-center>).

E-learning technical support: Contact the UF Computing Help Desk (<https://helpdesk.ufl.edu/>) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601 (<https://career.ufl.edu/>). Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources (<https://cms.uflib.ufl.edu/ask>).

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring (<https://teachingcenter.ufl.edu/>).

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information (<https://sccr.dso.ufl.edu/policies/student-honor-%20code-student-conduct-code/>).

On-Line Students Complaints: View the Distance Learning Student Complaint Process (<https://distance.ufl.edu/getting-help/student-complaint-process/>).