

PHYS 2102 Laboratory Syllabus

Spring 2025

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COURSE MATERIAL REQUIRED:

- Textbook: Electricity, Magnetism, and Optics – Eighth Edition (Physics 1102/2102 Lab Manual). Publisher: Stipes Publishing LLC (ISBN: 978-1-64617-559-8). [**This book is available at UNCC bookstore only**].
- Scientific Calculator (any kind)
- Pencil to complete lab report, eraser
- A thin binder to keep your lab reports, homework, and quizzes. Retain it until your grade has been posted. You will need to look at these to prepare for your final exam.

COURSE INFORMATION:

Physics 2102 laboratory is a course in experimental physics which must be taken concurrently with the lecture course, PHYS 2102. The laboratories are chosen to coincide with topical coverage in the lecture as much as possible. All lab sessions are in-person.

This course uses **Canvas** as a learning management system. Canvas can be accessed at canvas.uncc.edu. You would need to use your UNCC credentials to log in.

COURSE OBJECTIVES:

By the end of the semester, student should

- able to conduct an organized-scientific investigation in order to experimentally verify the theoretical concept introduced in the lecture,
- be familiar to the experimental apparatus and scientific method of data collection and analysis,
- capable of deriving conclusions from the results based on their understanding of the relevant physics, and
- competent with introductory physics concepts via computer simulation experiments and exercises.

INTRODUCTORY ELECTRICITY & MAGNETISM SURVEY:

To evaluate your grasp of physics concepts and experimentation skills throughout the semester, we will conduct an anonymous online survey at the beginning and end of the term. The survey, which takes approximately thirty minutes to complete, will be counted 5-point submission grades.

LABORATORY ACTIVITIES:

- 10 in-class laboratory sessions
- All labs are compulsory, one least score lab will be dropped.

- One in-class laboratory exam (Mandatory). **If you do not attempt the exam, even if you have a passing grade, you will fail this course.**

COURSE GRADING:

In-Class Experiment Lab Reports:

LAB 1- LAB 10:

- Pre-Lab Quiz: -----10 points
- Lab Report and Exit Ticket: ----- 85 +5 = 90 points
 - ✓ 50% points for active participation in the lab exercise
 - Deduction will be made for:
 - Tardiness
 - Not having your own calculator
 - Not having lab manual
 - Answering or making a phone call; and/or texting
 - Performing tasks unrelated to the lab (e.g. surfing the web, coursework, etc.)
 - ✓ 50% points for the content of your lab report
 - Lab report completed with pencil
 - Showing calculations
 - Properly drawn graphs and properly filled data tables
 - Analysis
 - Writing proper unit of measurement
 - Problems and Questions

Lab Exam:

- ✓ Review of concepts and numerical problems covered during the semester, Exam duration: two hours.

Calculation of Overall Lab Grade:

- Lab 1 to Lab 10: 80%
- Final Exam: 20%

Total: 100%

(Grade assignment: $\geq 90\%$: A, 80-89.9: B, 70-79.9: C, 60-69.9: D, $< 60\%$: F)

LAB ATTENDANCE and MAKE-UP LAB POLICY

You are supposed to be in the lab room at least 5 minutes before the actual lab time. If you are more than 10 minutes late for the lab session, we will deduct 10% of the lab score. If you are late by more than 20 minutes, you will be considered absent and you will receive a zero grade for that particular lab. The attendance sheet will be circulated during the lab session. Don't forget to sign in for every lab session.

You will perform a lab experiment in a group of 2 (working in a group of more than 2 is not allowed unless we have insufficient lab equipment), collect data, and analyze results, but independently complete the lab worksheet/report. Many universities' lab courses utilized *Predict, Observe, and Explain* (POE) components. In addition, our lab course has "*Discussion*", making it *POE-D*. What it means is, after you complete the lab report, you will discuss what you have learned with your lab partner, address any remaining misconceptions, get help from the TA if both of you cannot come up with a consensus, and revise your lab report answers as needed. Then, each of you will turn in your lab report in separate stacks. **The TA will randomly select one report to grade. Both of you will share the same lab grade for the worksheet/lab report.** This approach emphasizes the importance of collaboration and critical thinking skills, essential in real-world work environments.

After each lab session, you must disassemble the lab apparatus and clean up the workstation. If you miss doing it, we will deduct 5% of the lab grade.

There are NO Make-up labs.

- If you miss a lab due to a reason which classifies as a genuine reason for absence as per university policy (<http://provost.uncc.edu/policies/classroom-attendance>), you must let your TA and lab instructor know about it before missing the lab. *Furthermore, it is your responsibility to talk with your TA and find a suitable time to do the make-up lab. All make-up labs should be completed before the Final exam week.*
- If you miss a lab due to reasons beyond your control, it will be upon the discretion of the lab instructor whether or not to grant you a make-up lab.

PRE-LAB and LAB REPORTS

Please read the lab manual and **complete the pre-lab question sets on Canvas** before attending the lab. The pre-lab is due one day before your lab session. Submission made after the lab session will not be graded.

You will use your lab manual pages to complete the lab reports. Follow the procedure and fill the appropriate tables, draw graphs, and do calculations. Once you have completed your lab report, print your name, your partner's name, and the date. Tear off the associated pages from your manual and hand them to your instructor. *The report will be graded by your instructor and returned back to you at the beginning of the following lab session. Please make sure you pick up your graded lab work every lab session.*

Please retain your graded lab reports at least until the final grade is posted. Make sure you ask for your graded lab report with your TA every lab session and keep it in a binder. In case of any grade disputes at the end of the semester, it will be the student's responsibility to furnish the lab report to the TA or lab instructor.

LABORATORY EXAM

You will be given a lab exam during the last week of your lab session. **The exam will be closed book, closed lab reports, and will be conducted with no lab partners.** An equation sheet will be provided.

Exam Format:

- 20 Multiple choice questions: 20 X 3 = 60 points
- 4 Numerical Problems: 4 X 10 = 40 points

Total = 100 points

FOOD/ DRINKS and CELLPHONE POLICY:

No food and drinks are allowed in the lab. You must keep your cell phone in silent mode or need to turn it off during the lab session. The cell phone is not allowed to be used as a calculator.

MISSING LAB GRADE POLICY:

If your lab grades are missing in the canvas grade book, you must let your instructor know about it before the lab exam. If you do not inform it earlier in the semester, your lab instructor will not be able to change it.

If you have any questions regarding the lab, you should contact your TA first. If you can't get a clear answer, then forward it to the lab instructor.

ACADEMIC INTEGRITY:

Students have the responsibility to know and observe the requirements of *The UNCC Code of Student Academic Integrity* (See the *UNCC Catalog*.). This code forbids cheating, fabrication, or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Any special requirements or permission regarding academic integrity will be stated by the instructor and are binding on the students. Academic evaluations in this course include a judgment that the student's work is free from academic dishonesty of any type, and grades in this course therefore should be and will be adversely affected by academic dishonesty. Students who violate the code can be expelled from UNCC. The normal penalty for a first offense is zero credit on the work involving dishonesty and a further substantial reduction of the course grade. In almost all cases the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the course instructor.

Although the data collected during the lab is a group effort, data analysis and answering the questions related to the obtained data MUST be an individual effort. Failure to do so will be treated as a case of academic dishonesty and will be dealt with according to the University Policy.

A student can leave early only if he has completed all lab activities. Students leaving the lab room early without completing lab activities will receive a grade of zero for that lab.

USE of AI GUIDELINES:

Please refer to this university guidelines for use of AI tools:

<https://teaching.charlotte.edu/teaching-support/teaching-guides/syllabus-guidelines-ai-coursework>.

PHYS 2102 LABORATORY SCHEDULE - SPRING 2025

Lab Location: Klein Hall, Room 128

All pre-lab quizzes are due one day before each lab session.

Dates	Lab Activity
Week of Jan 13 th	No Lab
Week of Jan 20 th	No Lab Syllabus Quiz due, check your canvas account.
Week of Jan 27 th	<i>Complete pre-lab on Canvas for Lab 1. It is due the day before your scheduled lab session.</i> Lab 1: Electrostatics Introductory Electricity and Magnetism survey due
Week of Feb 3 rd	Lab 2: Electric Fields and Potentials
Week of Feb 10 th	Lab 3: Capacitors
Week of Feb 17 th	Lab 4: Charging, Discharging, and Combination of Capacitors
Week of Feb 24 th	Lab 5: Current and Voltage in a DC Circuit: Ohm's Law
Week of Mar 3 rd	No Lab (Student Recess)
Week of Mar 10 th	Lab 6: Current and Magnetism
Week of Mar 17 th	Lab 7: Magnetic Force and Electrical Current
Week of Mar 24 th	Lab 8: Faraday's Law of Electromagnetic Induction
Week of Mar 31 st	No Lab (Refresh Weekend)
Week of Apr 7 th	Lab 9: Reflection, Refraction, and Nature of Image Formed by Convex Lens
Week of Apr 14 th	Lab 10: Thin Lenses
Week of Apr 21st	Final Exam
Week of Apr 28 th	<i>(Apr 29, Make-up lab for University Excused absences only)</i> Introductory Electricity and Magnetism survey due
Week of May 5 th	No Lab

TITLE IX Reporting Obligations

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. UNC Charlotte has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with civil protective orders, and more. Please be aware that all UNC Charlotte employees, including faculty members, are expected to relay any information or reports of sexual misconduct they receive to the Title IX Coordinator. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I am expected to report the information to the Title IX Coordinator. Although I am expected to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need. If you wish to speak to someone confidentially, you can contact the following on-campus resources who are not required to report the incident to the Title IX Coordinator: (1) University Counseling Center (counselingcenter.uncc.edu, 7-0311); or (2) Student Health Center (studenthealth.uncc.edu, 7-7400). Additional information about your options is also available at titleix.uncc.edu under the “Students” tab.