



Nanchang University PHYS 21: Electricity and Magnetism

Credit: 4

Contact Hours

This course is composed of 24 lecture sessions, 3 tutorial sessions and 9 office contact hours. Each lecture session takes 2 contact hours in length; each tutorial session takes 3 contact hours in length; There will be a Q-A review session (3 contact hours) and Final Exam (3 contact hours) at the end of this term. This course has 72 contact hours in total.

Course Description

This course is intended as a calculus-based introduction to electromagnetism and related topics. Initially, the concepts of vector calculus, electrostatics, electrostatics and conductors, Laplace's equation, electrostatics and dielectrics, electrostatics and dielectrics, electromagnetism relativity and optics, etc. To complete the foundations of electromagnetism, the last of Maxwells equations will also be introduced. This permits a description of light as electromagnetic radiation. Various topics, for instance, quantum, atomic, nuclear and particles in the physics will be covered. And this course includes refraction, interference, diffraction and some current circuits as well. Finally, a treatment of special relativity will be given. There will be an emphasis on in-class problem solving using similar ideas and techniques as required on homework and exams.

Required Textbook

ElectroElectromagnetism (October 12, 2001), Gerald Pollack, Daniel Stump

Publisher: Addison-Wesley

College Physics (8th Edition), Raymond A. Serway, Chris Vuille, Jerry S. Faughn

Publisher: Cengage Learning

Grading

- Participation 10%
- Homework Assignments 20%
- Lab Reports 20%
- Midterm Exam 20%
- Final Exam 30%

A+ 96-100	A 90-95	A- 85-89
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B+ 82-84	B 78-81	B- 75-77
C+ 71-74	C 66-70	C- 62-65
D 60-61	F < 60	

Course Schedule

The course has 24 class sessions in total. All sessions are 2 contact hours in length. At the end of this term, there will be a Q-A review session(3 contact hours) and Final Exam (3 contact hours).

Note: the course outline and required readings are subject to change.

Class 1:

Introduction of the course

Basic Principles of Electrostatics

Class 2:

Electrostatics and Conductors

General Methods for Laplace's Equation

Class 3:

Electrostatics and Dielectrics

Electric Current

Class 4:

Magnetostatics

Magnet Fields in Matter

Class 5:

Electromagnetic Induction

Class 6:

The Maxwell Equations

Class 7:

Optics and Electromagnetic Waves

Class 8:

Eave Guides and Transmission Lines

Class 9:

Radiation by Currents and Charges

Class 10:

Electric Forces and Electric Fields



Electrical Energy and Capacitance

Class 11:
Midterm

Class 12:
Direct-Current Circuits

Class 13:
Magnetism

Class 14:
Alternating-Current Circuits

Class 15:
Electromagnetic Waves

Class 16:
Reflection and Refraction of Light

Class 17:
Relativity and Electrodynamics

Class 18:
Quantum Physics

Class 19:
Atomic Physics

Class 20:
Nuclear Physics

Class 21:
Nuclear Energy

Class 22:
Elementary Particles

Class 23:
Elementary Particles(Cont)

Class 24:
Review and preparation for the final exam



Laboratory and Practical Exercises Schedule

Room: To be determined

Hour: 18:00 – 20:00

In order to do a good job in the experiments, it is essential that you come well prepared. Reading the experiment requirements for the first time in lab will put you and your partner at a disadvantage and make it very difficult to complete the experiment on time.

If you have any technical questions on the pre-lab, data section or post-lab assignments, you are encouraged to ask the professor. Students need to wear suits when entering to the lab room. No touch of the equipment without permission.

Lab: Electric Current Testing & Magnetism Testing & Reflection and Refraction of Light & Electromagnetic Waves

Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.

Policy on “Late Withdrawals”

In accordance with university policy, appeals for late withdrawal will be approved ONLY in case of medical emergency and similar crises.

Academic Honesty

Nanchang University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

General Expectations:

Students are expected to:

- Attend all classes and be responsible for all materials covered in class and otherwise assigned;
- Complete the day's required reading and assignments before class;
- Review the previous day's notes before class and make notes about questions you have about the previous class or the day's reading;
- Participate in class discussions and complete required written work on time;



- Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;
- While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Special Needs or Assistance

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.