![Kennesaw State University logo]

SYLLABUS
COLLEGE OF SCIENCE AND MATHEMATICS
DEPARTMENT OF PHYSICS
PHYS2212: PRINCIPLES OF PHYSICS II (CALCULUS BASED)
FALL 2023

Course Information

Class meeting time and Location:
Mon, Wed at 17:00 -18:15, Marietta Campus, Engineering Technology Center, Room 104.
CRN 86871, Mon at 18:30 -19:20, Marietta Campus, Atrium Bldg, Room 130.
CRN 86872, Wed at 18:30 -19:20, Marietta Campus, Atrium Bldg, Room 130.
Modality: Face to Face course;
Syllabus: posted in D2L

Instructor Information

Name: Dr. Marco Guzzi, Associate Professor of Physics.
E-mail: mguzzi@kennesaw.edu
Website: http://facultyweb.kennesaw.edu/mguzzi/
Office Location: Kennesaw Campus, Science Bldg, 4th floor, Room SC436
Office phone: 470-578-4783
Office Hours: By appointment
Preferred method of communication: e-mail
(When e-mailing, please put "PHYS2212" in the subject line along with the subject of your message.
Do Not use D2L or other email providers to send emails, you will not get a reply. We all must adhere to the
KSU safety protocols.)

Course Description

4 Class Hours, 0 Laboratory Hours, 3 Credit Hours
Prerequisite: Grades of "C" or better in MATH 2202 and PHYS 2211

This course is an introductory calculus-based course on electromagnetism, physical optics, and quantum
physics. The student will be able to apply the concepts of electric field and electric potential to problems in
electrostatics and with electric currents, describe the motion of charged particles in magnetic fields and
induction, explain the origin of electromagnetic waves and properties of light, determine the behavior of
light waves passing through single or multiple slits, and understand elementary principles of quantum
physics.

Course Materials

The material is presented in multiple ways: Projector, Whiteboard, Power Point presentations. Videos will
also be shown. Students are expected to take notes in class. Students are responsible to catch up with
the material if they miss lectures.

Required Textbook

Physics for Scientists and Engineers with Modern Physics, Serway and Jewett, 10th ed.
Homework platform: Cengage ``WebAssign'' (Now accessible from the D2L platform:
Go to the D2L page of the PHYS2212 Fall 2023 course, then Contents, then WebAssign – HW Assignments)

<u>**Important:**</u> PHYS2212 is part of a textbook program called *Day One Access*. Prior to classes starting, you should have received an e-mail from the KSU bookstore (dayone@kennesaw.edu) with pricing and your personalized link to opt out (please check your junk folder if not in your inbox). You will also receive one on the first day of class and then a reminder e-mail the day prior to the opt-out deadline. You will access the e-book or courseware through D2L on the content tab as explained above.
 The purpose of *Day One Access* is to make sure that you have access to the digital course materials on the first day of class at a highly competitive rate. Everyone enrolled in the course will automatically have access to the digital course materials through drop/add. Your Owl Express account has already been charged for these materials, and you will have through the drop/add to opt-out and receive a refund. Should you opt out, the refund will be processed but will lose access to the materials. Please check your email for the link to opt-out if you choose to do so. The opt-out deadline is the Drop/Add date at 11:59 pm

Please note, should you opt out, you will need to purchase your required materials directly from the publisher or other sources. If you need any help, please contact: DayOne@kennesaw.edu

Course Content

PHYS 2212 is a calculus-based course on electromagnetism and related topics. Special relativity and its applications to electromagnetism will be discussed as well as introductory concepts of modern physics. Symbolic calculus, vector calculus, derivatives and integrals will be heavily used during the course. Problem solving is emphasized. Homework is an integral part of the course.

Important: Students are expected to have good knowledge of integrals and series

Learning Outcomes

1. Solve problems of electrostatics, that include discrete and continuous charge distributions, using pictorial, graphical, physical, or mathematical representations (including calculus and vectors), and other representations as appropriate.
2. Solve problems of magnetostatic and induction using pictorial, graphical, physical, or mathematical representations (including calculus and vectors), and other representations as appropriate.
3. Analyze and solve DC and AC circuit problems using pictorial, graphical, physical, or mathematical representations (including calculus and phasors), and other representations as appropriate.
4. Describe the nature of electromagnetic waves and predict the behavior of light waves passing through single or multiple slits.
5. Identify and describe the basic ideas of special relativity and quantum theory and apply these principles to simple systems.

Course Requirements and Assignments

Students are expected to attend all lectures, take all tests and exams, and complete all homework assignments.

Evaluation and Grading Policies

Three tests will be given during the semester. Grades will be determined according to student's performance on the three tests.

Homework: **10%**
Tests: **60% (3 tests, 20% each)**
Final Exam: **30%**
Grading Scale: **A: 90% - 100%; B: 80% - 89%; C: 70% - 79%; D: 60% - 69%; F: 0 - 60%.**

Grading method used for Tests and Final Exam (Important)
Tests and exams are graded by assigning points for:
- Correctly identifying the physics of the problem.
- Setting up correctly all the equations and diagrams for the specific physics situation described in the problem and commenting when necessary or relevant.
- Correctly identifying all unknown variables to be determined.
- Correctly work out all the necessary symbolic and differential calculus-based operations.
- Correctly work out all the algebraic calculations to determine the solution.

For example:
- If you stick in only numbers to solve a problem, with no explanation, you will get 0 points.
- If you do not work out all the symbolic and vector calculations correctly (e.g., if you equate a vector to a scalar quantity) your equations will be considered incorrect/incomplete and you will not get credit.

D2L (Internet-based utility)
Course information, homework solutions and announcements will be available "D2L".
PHYS2212 course information system is accessible from http://d2l.kennesaw.edu/
To sign on, use your KSU Local Area Network (LAN) username and password.
Students are expected to check D2L for announcements at least once a day.

Course Policies (Important!)

1. Regular lecture and programming exercise attendance is essential for success in this class. If students must miss class, it is their responsibility to get notes/material from another student.
2. Be on time for the lecture.
3. Cellular telephones, pagers, and similar devices must be turned off or placed in silent mode during class. Use of cell phones should be restricted to emergencies.
4. The usage of any other external devices (other than the assigned computer) which can connect to the internet is strictly forbidden. That is considered cheating.
5. During lectures, students must avoid conversations and other disruptions that may distract other students from listening and learning. If students have a question or comment, they should direct it to the instructor.
6. Occasionally, it may be necessary for the instructor to make corrections or changes to the syllabus. Corrections or changes to the syllabus will be announced on the KSU D2L website and in class: students are expected to check D2L for announcements at least once or twice a day.

Homework Assignments

Homework will be assigned during the lectures. Problem solutions will be discussed in class and/or at breakout sessions and will be posted on D2L. Students must hand in their homework through WebAssign.

Withdrawal, Last day of class, and Final Exam

- First day of classes: Mon, Aug 14, 2023.
- Last day to withdraw without academic penalty: Tue, Oct 10, 2023, at 11:45pm.

- The last day of Classes: Mon, Dec 4, 2023.
- Final exam: Wed, December 6, 2023 at 6pm-8pm.

(These must be double checked again on the KSU office of registrar website.)

Department or College Policies

The Academic Standing Appeal policy as well as the university's withdrawal policy are explained at:

https://www.kennesaw.edu/registrar/student-resources/academic-records/academic-standing-appeals.php

https://www.kennesaw.edu/registrar/student-resources/student-forms-requests.php

Students are solely responsible for managing their enrollment status in a class. Nonattendance does not constitute a withdrawal.

Make-up Exam policy

Make-up exams will not be given. If students know ahead of time that they have a conflict, they must let the instructor know. If students miss an exam because of an illness (student or a family member) or some other unforeseeable event, students must contact the instructor as soon as possible. They can e-mail the instructor or call the Physics Dep. Office at 470-570-4205. Students must provide documentation showing the reason for missing the exam. Final make-up exam is **ONLY** for documented and excused emergencies or for scheduling conflicts with other final exams.

Institutional Policies

Federal, BOR, & KSU Course Syllabus Policies:
https://cia.kennesaw.edu/bor-information/bor-curriculum-information.php

Student Resources:
https://cia.kennesaw.edu/instructional-resources/syllabus-resources.php

Academic Integrity Statement:
http://scai.kennesaw.edu/codes.php

Other Relevant Information can be found here:
https://cia.kennesaw.edu/instructional-resources/syllabus-policy.php

Students with Disabilities

Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor immediately. Written verification from the KSU Student Disability Services (http://sds.kennesaw.edu/) is required. No requirements exist those accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.

Course Delivery

KSU may shift the method of course delivery at any time during the semester in compliance with University System of Georgia health and safety guidelines. In this case, alternate teaching modalities that may be adopted include hyflex, hybrid, synchronous online, or asynchronous online instruction.

Course (Tentative) Schedule

Week1
Electric Fields - Chapter 22: Sec. 22.1-22.6

Week2
Continuous charge distributions and Gauss's Law - Chapter 23: Sec. 23.1-23.4

Week 3
Electric Potential - Chapter 24: Sec. 24.1-24.6

TEST 1 Wed Aug 30, 2023

Week 4
Capacitance and Dielectrics - Chapter 25: Sec. 25.1-25.7

Week5
Current and Resistance - Chapter 26: Sec. 26.1-26.6
Direct-Current Circuits - Chapter 27: Sec. 27.1-27.4

Week 6
Magnetic Fields - Chapter 28: Sec. 28.1-28.6

Week 7
Sources of Magnetic Field - Chapter 29: Sec. 29.1-29.6

TEST 2: Mon Oct 2, 2023

Week 8
Faraday's Law - Chapter 30: Sec. 30.1-30.6

Week 9
Inductance - Chapter 31: Sec. 31.1-31.6

Week 10
Alternating Current Circuits - Chapter 32: Sec. 32.1-32.7

Week 11
Electromagnetic waves - Chapter 33: Sec. 33.1-33.7

Week 12
Wave Optics - Chapter 36: Sec. 36.1-36.6
Diffraction Patterns and Polarization - Chapter 37: Sec. 37.1-37.6

Week 13
Relativity - Chapter 38: Sec. 38.1-38.8

TEST 3: Wed Nov 15, 2023

Week 14
Introduction to Quantum Physics - Chapter 39: Sec. 39.1-39.8

Week 15
Quantum Mechanics - Chapter 40: Sec. 40.1-40.7
Fundamental Interactions of Nature - Chapter 44: Sec. 44.1-44.11