KENNESAW STATE UNIVERSITY

SYLLABUS

COLLEGE OF SCIENCE AND MATHEMATICS

DEPARTMENT OF PHYSICS

PHY2212L: PRINCIPLES OF PHYSICS II LABORATORY

SPRING 2024

Course Information PHYS2212L CRN 15071 Sec 54

CRN 15071 Sec 54 Lab meeting: Mon, 12:20pm-2:10pm
Instructor: Dr. Marco Guzzi, Associate Professor of Physics
Modality and Location: Academic Bldg., Room 270, Marietta Campus
Syllabus: Posted in D2L and on Instructor's website.

1st day of Lab: Mon Jan. 22, 2024, at 12:20pm.

Laboratory Schedule 2212L – Spring 2024

Lab meetings are held every Monday for CRN 15071 Sec 54 Spring 2024.

Date	Lab No.	Experiment Title
Week of 22-Jan	Lab1	Introduction to Oscilloscope I
Week of 29-Jan	Lab2	Introduction to Oscilloscope II
Week of 5-Feb	Lab3	The Electric Field Mapping
Week of 12-Feb	Lab4	Ohm's Law
Week of 19-Feb	Lab5	Magnetic Field & EMF Induction
Week of 26-Feb	Lab6	AC Circuits I
Week of 4-Mar	Lab7	AC Circuits II
Week of 11-Mar	No Labs	Spring Break
Week of 18-Mar	Lab8	Reflection and Refraction
Week of 25-Mar	Lab9	Physical Optics
Week of 1-Apr	Lab10	Photoelectric Effect (Last Lab)

Instructor Information

Name: Dr. Marco Guzzi, Associate Professor of Physics
KSU Faculty Website: http://facultyweb.kennesaw.edu/mguzzi/
Office: SC 436 - Kennesaw Campus (4th floor Science Bldg)
Phone: (470) 578-4583
email: mguzzi@kennesaw.edu (When e-mailing, please put "PHYS2212L" in the subject line along with the subject of your message. Please Do Not use D2L to send emails, you will not get a reply.)
Preferred method of communication: e-mail
Office Hours: By appointment

Course Description

Prerequisites: Grades of "C" or better in PHYS 2211/2211L. **0 Class Hours, 2 Laboratory Hours, 1 Credit Hours.**

This is an introductory laboratory for the calculus-based course on electromagnetism, optics, and modern physics. The student will be able to apply the concepts of electric field and electric currents to problems in the laboratory, and perform measurements on magnetic fields and induction, optics, and elementary quantum physics phenomena. The analysis of sources of error and formal propagation of uncertainties will also be developed, along with graphical techniques and least-squares fits.

Learning Outcomes

1. Use digital devices and apparatuses to perform measurements of electric and magnetic fields, voltage and current.
2. Collect data and respective uncertainties and compare them to the theory.
3. Employ tools and methods for data/theory visualization and extract relevant information from data vs theory plots/graphs.
4. Describe, construct, and analyze simple DC, and AC circuits.
5. Describe the wave-particle properties of light using geometrical and physical optical systems.

Course Material

Notes, PowerPoint presentations and videos will be shown during pre-lab lectures of 10 mins. Students are expected to attend all lab meetings.
Required: Physics 2212L experiment material for each lab, Pen/Pencil, eraser, lab manual/Textbook, calculator, graph paper A4 ruled in millimeters.

IMPORTANT: Students are expected to read the theory and procedure section of each experiment on the lab manual BEFORE coming to the laboratory.

Textbook

Physics II Laboratory Manual: Electricity, Magnetism, and Optics.
Russell S. Patrick – Kennesaw State University. Tavenner Publishing company, ISBN 978-1-64220-042-3

Attendance Policy and Make-up Labs

You must attend all the labs. There will not be any make up labs. If you are unable to attend a lab you will get a zero grade for that lab. Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal.
Attendance for each session of this course is required. The information covered in each Lab is pertinent to understanding of the entire course.
Students are solely responsible for managing their enrollment status in a class; nonattendance does not constitute a withdrawal. Official KSU policies regarding withdrawals from classes (as well as additional information on additional registration-related policies) can be found at the following link: http://catalog.kennesaw.edu/index.php

Group Policy

Students may work in groups of no more than 3 students. For experimental reports, every member of a group will turn in their individual report with the names of the group member clearly printed on the cover page.

About Lab reports (Please read!)

After each lab-experiment section students are required to show their collection of data and get the signature of the instructor before leaving the lab. Students might have the option to submit their final work in the next lab, depending on the length of the lab experiment.
If the lab experiment does not involve extensive calculation, answers in words to questions, or graphing, students are expected to remain in the lab room until submission of the complete lab report.
If the lab experiment does involve a graph, or written answers to questions, students may be allowed to complete their lab report at home. There are two important things about this:
1) all lab reports taken home are due at the beginning of the next lab period and will be counted as late any time after that.
2) all lab reports taken home must be initialed by the lab instructor prior to the beginning of the experiment.
No lab reports taken home from the lab room and subsequently submitted without the lab instructor's initials will be accepted for credit. There will be no exceptions to this policy. [However, it is not necessary to obtain the lab instructor's initials on lab reports submitted in the lab on the same day the lab experiment is performed.] Late reports will be accepted with a 50% (per week) penalty.
Lab reports are to be submitted on the data sheets that are contained in the Lab Manual. The top portion of those sheets include a line for a list of lab partners. Failure to fill out the lab partner list will result in a 1-point deduction from the lab score. For any lab experiments that require multiple pages to be submitted, those pages must be properly joined together with either a paperclip or a staple.
There are staplers located in the lab room. A 1-point deduction will also be applied for failure to properly join pages together.

Important:
1. All tables should be labeled and titled properly with appropriate units.
2. All graphs should be labeled and titled properly with appropriate axis labels

Course Policies (Important!)

1. Regular lab attendance is essential for success in this class.
2. Be on time for the lab.
3. For safety reasons students are recommended to wear closed-toed shoes.
Do not come to the lab room wearing flip-flops or sandals.
4. Cellular telephones, pagers, and similar devices **must be turned off** or placed in silent mode during lab**.** Use of cell phones should be restricted to emergencies.

5. During lab experiments, avoid loud conversation and other disruptions that distract other students**.**
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 D2L (see below) and in class: students are expected to check D2L for announcements at least once a day.

Grading Policy

Your lab will be graded on a 20-point scale per experiment meaning each student can accumulate 180 points at the end of the 10 experiments. The lowest grade will be dropped and there won't be any final exam for this lab.
Grades: **A >90%; B 80% - 90%; C 70% - 80%; D 60% - 70%; F <60%**

D2L (Internet-based utility)
Course information and announcements will be available "D2L".
This on-line 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.

First day of Lab, Withdrawal, Last day of Lab

- CRN **15071** 1st day of Lab: Mon, Jan 22, 2024.
- Last day to withdraw without academic penalty: Tue, Mar 5, 2024, at 11:45pm.
- Last Lab meetings are held during the week of Apr. 1, 2024.

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.

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.

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 for accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.

Laboratory Safety Guidelines

The Biology and Physics Departments are committed to providing a safe environment for all. However, laboratory safety is a mutual responsibility and requires full participation and cooperation of all involved persons - students, faculty and staff. The following Lab Safety Guidelines have been established for your protection as Faculty, staff or student in the Biology and Physics Department. These guidelines are a part of the Chemical Hygiene Plan and will be rigidly and impartially enforced. Noncompliance may result in a grading penalty and/or dismissal from lab, or termination of employment.

Personal Protection

1. Safety glasses must be worn in the lab when safety precautions for the activity require it. In general, if anyone using glassware, heat, sharps, projectiles and/or hazardous materials, or any other activity that may cause injury to the eye, everyone in the room is required to where safety glasses. This is the policy of Kennesaw State University, a state requirement and an OSHA requirement. The glasses must be of the impact protection type with splash guards and must meet ANSI Z87.1 specifications. Other eye/face protection may be required with specific procedures.
2. Contact lenses are discouraged. The safety of wearing contact lenses in laboratories has been hotly debated over the last several years. Both the ACS and OSHA have issued statements indicating that contact lenses can be worn if and only if proper protective eyewear is also worn. The Biology and Physics Department recognizes that some eye conditions require contacts for certain vision correction therapies. However, students who choose to wear contacts must recognize the inherent increased risks - they are difficult to remove if chemicals get in the eye, they have a tendency to prevent natural eye fluids from removing contaminants, and sudden displacement can cause visual problems that create additional hazards. Soft contact lenses are especially problematic because they can discolor and also absorb chemical vapors causing damage before the wearer is alerted to the problem. If you choose to wear contacts, please tell your lab instructor.
3. Appropriate gloves will be provided when needed. Use of gloves is required for handling chemicals, microorganisms and chemically preserved specimens.
4. Remove your gloves and wash your hands before exiting a lab room. Do not wear your gloves in the hallway
5. Particle filter masks are to be worn when prevention of inhalation is recommended or required.
6. Appropriate clothing is required. Your clothing is a barrier between your skin and chemicals. No bare midriffs or shoulders. It is strongly recommended that you wear pants to protect your legs. Knee length shorts and dresses are acceptable but not recommended. However, anything above the knee - shorts, skirts, or dresses are not allowed. Lab coats are recommended and can be purchased from the bookstore or other sources.
7. Shoes must be worn. No sandals, open toed or open heeled shoes.
8. Secure loose clothing and long hair when working with equipment, open flame, any chemicals or biological substances.
9. Do not eat, drink (including coffee cups, sport bottles and water bottles), or store food in the labs.
10. Do not apply cosmetics in the lab. You should avoid touching your eyes and mouth in the lab.
11. Smoking or use of other tobacco products is prohibited.
12. Wash hands after working with chemicals and biological agents.
13. It is the recommendation of this department that all students of reproductive age, especially women who have recently conceived or are anticipating conception during the semester, discuss the course content and reagents with their physician if they are concerned about reproductive toxins.

General Lab Rules

1. Conduct yourself in a responsible manner at all times in the laboratory.
2. Avoid working in the lab alone. Some procedures are forbidden while working alone. It is best to employ the ―buddy system‖ to have someone with you while working in the lab. If necessary, a friend may accompany you with the approval of the lab safety officer.
3. Learn where the safety and first-aid equipment is located. This includes fire extinguishers, fire blankets, and eyewash stations.
4. Read all instructions carefully and plan your work. Understand the experiment and if in doubt, ask.
5. When first entering a lab room, do not touch any equipment, chemicals, or other materials in the laboratory area until you are instructed to do so.
6. Follow the Standard Operating Procedure or lab instructions – Any deviation from this must be in writing and approved beforehand.

7. Treat any equipment with care and respect. Be aware of any related hazard. Do not operate any equipment without proper permission and instruction. Follow the SOP for that equipment.
8. Lab tables should be as uncluttered as possible to allow work space and avoid accidents. Also, keep the aisles clear to prevent tripping over your gear, and so that other people can pass unhampered. Place book bags, pocketbooks, etc. under the lab tables. In some labs, seats or stools are not to be used during labs – individuals need to be mobile to avoid possible spills and are not to place themselves under the edge of the lab bench where chemicals may spill.
9. Leave the lab area clean. Put equipment and chemicals away and wipe off the bench top.
10. Treat chemicals with respect and understand the chemicals you are using. Read the label carefully when removing a chemical from the shelf. Read the Material Safety Data Sheets (MSDSs) before you begin to work with the chemical. MSDS are available in the red binders in each room. Do not remove the MSDSs from the binders. Bring the binder to the Biology office (Room SC308) to request a copy.
11. Always label a culture or chemical with the proper information. Name of item, date made, concentration, your name/initials and class or procedure. Each room has poster detailing how to create a secondary container label.
12. Use the chemical fume hood to Carry out procedures in which noxious fumes are produce or there is a danger of explosion or when using a concentrated form of a chemical. Do not use a biological safety cabinet/ laminar flow hood for this purpose.
13. When preparing a dilute acid solution, never pour water into concentrated acid; always pour acid into water while stirring constantly. Cool the solution if necessary while mixing.
14. Handle all living organisms used in a laboratory activity in a humane manner. Preserved biological materials are to be treated with respect and disposed of properly
15. Treat all microorganisms as potential pathogens. Always us sterile (aseptic) technique when handling cultures. Use a biological safety cabinet with potential airborne pathogens.
16. Students are never permitted in the Biology and Physics storage rooms or preparation areas unless given specific permission by their instructor. Research students, faculty and staff are only allowed in areas where authorized.
17. Lab activities require your undivided attention. No loud music or other entertainment allowed in labs. Radios, IPods and other entertainment devices should be played at a low volume so that you can hear what is happening in your surroundings. The use of headphones is prohibited.
18. Biology and Physics lab computers are for laboratory business only
19. No cellular phone use while you are performing any laboratory activity. It is recommended you keep your cell phone on your person to summon help if needed.
20. Notify the lab safety officer or lab coordinator immediately in case of an accident, no matter how small it seems. Contact information is located in every lab room.