Physics 266 – University Physics II Electricity and Magnetism Laboratory

Summer 2016 Semester			
Course ID	Time	Day	Instructor
PHYS 266-B04	1:00 pm - 3:00 pm	MWF	Romney Meek (Dr. Ivan Novikov)

Instructor Information

Name	Office	Electronic Mail
Dr. Ivan Novikov	TCCW 218	Ivan.Novikov@wku.edu
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Catalog Description.

Required for students enrolled in Physics 266 (University Physics II). Students perform physics experiments on electrostatics, dielectrics, circuits, electricity and magnetism. Students will gain experience in computerized data acquisition and data analysis using modern techniques and equipment.

Co-requisites.

Students enrolled in Physics 266 must be enrolled in or have already satisfactorily completed Physics 265. In addition students enrolled in Physics 266 must be also enrolled in or have satisfactorily completed Math 227 (Calculus II) or its equivalent. There will be no exceptions to these requirements.

Experiment Schedule

In Physics 266 you will complete an experiment almost every week of the semester. The experiment schedule as well as weights for each lab report are shown in Table 1. A formal laboratory report describing your experimental results will be due at the beginning of the next week's laboratory meeting.

Table 1		
Date	Lab experiment	
June 28	Syllabus/Introduction/ Introduction to the Oscilloscope	
June 30	Speed of Sound	

July 5	Diff Light	
July 10	Elementary Optics	
July 12	Electric Fields	
July 17	Ohm's Law	
July 19	Power Transfer	
July 24	Resistance in Series and Parallel	
July 26	Wheatstone Bridge	
July 31	Induced EMF	
August 2	RLC Circuits	
August 7	Final Lab	

Every effort will be made to adhere to the schedule of experiments posted on this web. Any changes will be announced one week in advance in the laboratory and will be posted on this web site. It is your responsibility to make sure that you come to the laboratory prepared to complete the proper experiment.

Grading Policy

Your grade for Physics 266 will be based on your performance on the laboratory reports, pre-lab exercises, and Final Exam results according to the usual distribution as shown in Table 2.

Table 2		
Score	Grade	
90 - 100	А	
80 - 89	В	
70 - 19	С	
60 - 69	D	
< 59	F	

Grades: Labs 75 %, Quizzes 10 %, Final Lab 15 %

Prior to Coming to the Laboratory

Before coming to lab it is essential that you make adequate preparations to complete the experiment in the allotted time. Each laboratory period will be no longer than two hours and fifteen minutes. It is very unlikely that you will be able to walk into the laboratory

without any preparation and complete the experiment in this amount of time. However, a well-prepared student should have no trouble finishing on time.

Before coming to lab you should carefully read the instructions for the experiment, *Physics 266 Lab Manual* (required), which you will be performing. If necessary, also read the appropriate sections in your textbook for the lecture course (University Physics by Knight or any other appropriate book).

A Typical Laboratory Session

During the laboratory period, while you are collecting data, you may work with a lab partner. Obviously, you and your partner will have the same data. However, each student must submit a laboratory report that is his/her own work. Data collected during the lab period and a clear overview of all calculations performed should be neatly written and attached to the back of the formal lab report. All data taken in the experiment should be recorded in this section in tabular form. Each table should have a title, and should have headings for the rows and columns. Correct units should be indicated for the data by writing the units with the headings in the table. Single data items need not be represented in a table but they should be labeled and have the correct units listed. **You must turn in the signed sheet from the lab manual to receive credit for lab work.** An example of any calculations used in the experiment should be included in the lab report. You should show the equations that you used, with at least one example where these equations have the correct numbers (with units) substituted in, along with the result.

Laboratory Reports

For each experiment you will submit a laboratory report. Laboratory reports are to be turned in at the beginning of the lab period. **There is a 25% per day penalty for late lab reports**. **Do not email reports for submission.** Laboratory reports must be neat, concise and complete. The formal report should be prepared using a computer word.

All special symbols and equations must be written in using Microsoft Equation Editor (this is part of the Microsoft Word) or any other equation editors.

	Laboratory Reports
Abstract	This should be a very brief overview of the goals and results of the experiment. Here you should state the main outcome of your experiment.
Introduction	Briefly describe the objectives of the experiment, and the physics principles, which were studied.
Description of Experiment	Briefly describe the objective of the experiment, the physics principles that were investigated (provide all necessary equations with explanations), and the procedures that were used to carry out the

The lab report should consist at a minimum of the following sections.

	experiment. Describe the experimental apparatus (make and insert a picture of the apparatus if necessary) and the sequence of action that were taken to measure the values.
Experimental Data and Data Analysis	Provide the obtained experimental data (tables, graphs), describe the data analysis routine (for example, when using best fit, provide fitting parameters and fitting errors), and explain the source of experimental errors.
Conclusions	Briefly repeat discussion on what was measured and how. Show the measured results with the experimental error. Briefly describe the source of errors. Discuss if your measurement was accurate or not. Compare your result(s) to the accepted or theoretical value(s) (if available) by computing a percent difference. Discuss a source of this difference. "Human error" is not an acceptable source of error in your conclusion and if used will lower your grade.

All graphs and tables that are a part of that report must be computer generated. Fitting functions to the data must be included where it is appropriate. All data collected during the lab period, a clear overview of all calculations performed, and results of preliminary analysis must be recorded and attached to the report. All data taken in the experiment should be recorded in tabular form. Each table and figure should have a title, and should have headings for the rows and columns. Correct units should be indicated for the data by writing the units with the headings in the table. Single data items need not be represented in a table but they should be labeled and have the correct units listed. **Your completed data sheet must be signed by the instructor before you leave the lab.** Any calculations used in the experiment should be included in the lab report. You should show the equations that you used, with at least one example where these equations have the correct numbers (with units) substituted in, along with the result.

Collaboration

During the laboratory period, while you are collecting data, you may work with lab partner(s). Obviously, you and your partner(s) will have the same data. However, each student must submit a laboratory report that is demonstrably his/her own work. Be sure that the discussion in the Conclusion section is clearly in your own words.

Final Examination

A final exam will be given the week before finals week. This will be an individual exam. You will be allowed to use any of your previous lab work during the final exam. This includes lab reports, your notes, and your lab notebook. Subjects on the final exam may come from any part of the course and may include but are not limited to: graphing, error analysis and error propagation, repeating parts of an experiment, problems associated with lab work, etc.

Attendance

Regular and punctual attendance is expected of everyone during every class meeting. Class time will be spent doing activities that will help you understand the material we are studying and if you miss class then you are jeopardizing yourself and the members of your group.

Drop/Audit Policies

If you choose to not complete the course for a grade then your only option is to drop the course and receive a grade of W by the University deadline for dropping a course. If you choose to drop the course you must also drop the lab since they are co-requisites.

Disability Accommodations

Students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services, DUC A201. The OFSDS telephone number is (270) 745-5004 V/TDD. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Title IX Misconduct/Assault Statement

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at https://wku.edu/eoo/documents/titleix/wkutitleixpolicyandgrievanceprocedure.pdf and Discrimination and Harassment Policy (#0.2040) at https://wku.edu/policies/hr policies/2040 discrimination harassment policy.pdf.

Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121.

Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.

Classroom Policies

- Food and drinks are NOT allowed in the classroom.
- Cell phones, pagers, and similar devices must be turned off and stored away during class time.

- The laptop computers in the classroom are for specific classroom activities only.
 - Do not install or modify any software on the laptop computers.
 - Do not use the computers to check email during class time.
 - Do not use the computers to instant message or chat with anyone ever.
 - Do not submit or view homework assignments during class time.
 - Do not browse the Internet during class time unless it is part of a class activity.