PHYSICS 355  Modern Physics Laboratory  SPRING 2015

-Section 1-

INSTRUCTOR:  Russell Ceballos

OFFICE:  Neckers 430N/404

E-MAIL:  rceballos@siu.edu

OFFICE HOURS:  T: 2:30-3:30 PM  
                 R: 2:30-3:30 PM

REQUIREMENTS:  1. Scientific calculator recommended.
                2. Attendance is mandatory.

ATTENDANCE:

Attendance for this course is mandatory. Since there are no make-up labs, you must
attend every lab session. Allowed absences are given for the following documented
reasons only: (i) Religious observance; (ii) Military service; (iii) Bereavement (i.e., death
in your immediate family); (iv) Official university business (properly documented using
appropriate forms from an athletic or academic advisor; (v) Jury Duty; or (vi) a properly
documented medical reason. Note: A slip stating that the student visited the Student
Health Center does not fulfill this requirement. Documentation that you were
hospitalized or an official doctor’s note is required.

LAB REPORTS:

1. Late reports will not be accepted.

2. There will be no make-up labs allowed.

3. The report has to include:

   a) Title section
b) Introduction (Purpose and theory of the experiment)

c) Experimental (apparatus and method)

d) Results: include data sheets, calculations, data tables, and graphs

e) Error analysis: includes error calculations and a discussion of the specific source of error

f) Discussion and conclusion

g) Answers to questions

h) References *(THEY HAVE TO BE CITED THROUGHOUT YOUR REPORT)*

**PRE-LAB QUIZZES:**

You should prepare for each lab **ahead of time** by reading and studying the lab manual. As a result, each week at the beginning of the lab period, you will be given a pre-lab quiz. The purpose of this pre-quiz is to determine that you have read the lab manual ahead of time and have an idea what is going to be covered in that week’s lab.

There will be **no make-up quizzes.**

**REGULAR QUIZZES:**

Regular quizzes will be given **every other week,** which will cover material from the previous two labs.

**LAB SCHEDULE:**

**LAB SCHEDULE: *(This is tentative and subject to change)***

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<th>Week</th>
<th>Date</th>
<th>Activities</th>
<th>Topic</th>
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<td>01/20</td>
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<td>Orientation</td>
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<td>01/27</td>
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<td>Michelson interferometer</td>
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<td>3</td>
<td>02/03</td>
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<td>The Faraday Effect</td>
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<td>4</td>
<td>02/10</td>
<td>Quiz 1</td>
<td>Photoelectric effect and Planck’s constant</td>
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<td>02/17</td>
<td>Quiz 2</td>
<td>Charge-to-Mass ratio of the electron (e/m)</td>
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<td>02/24</td>
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<td><em>Franck-Hertz experiment</em></td>
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<td>03/03</td>
<td>Quiz 3</td>
<td>Electron diffraction</td>
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<td>03/17</td>
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<td>Temperature Dependence of the Ohmic Resistance of Two Different Materials</td>
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<td>High Temperature Superconductors</td>
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<td>Determination of Gamma Ray Spectra with a Scintillation Detector</td>
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<td>Quiz 5</td>
<td>Gamma Ray Absorption in Lead and Aluminum</td>
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<td>05/05</td>
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<td><em>FINAL EXAM</em></td>
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**FINAL EXAM:**

You will have a comprehensive final exam. The final exam will be comprised of elements from the pre-labs, quizzes, and lab questions, as well as the theories the experiments are meant to demonstrate. Anything that has been covered in the course will be considered fair game.
METHOD OF EVALUATION:

Reports 65 %
Pre-Lab Quizzes 10 %
Regular quizzes 15 %
Final Exam 10 %

GRADING SCALE:

90% - 100% A
80% - 89.9% B
70% - 79.9% C
51% - 69.9% D
Below 50.0% F

NOTES:

1. If you should drop PHYS 305 at some point during the semester, you must also drop this lab course.
2. You will be notified of any new information concerning this course.
3. If you have any questions or comments feel free to see me during my office hours to discuss them.