INSTRUCTOR: Neal Wilsey, Ph. D.

OFFICE: Room 208, Bldg. B, Leonardtown Campus
       Room 192, ST Building, La Plata Campus

TELEPHONE Office, Voice Mail: (301) 934-7836 (Direct Dial)
                           (240) 725-5463 (Direct Dial)
                           (443) 550-6199 Ext. 7836 Calvert County
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EMAIL: nealw@csmd.edu

OFFICE HOURS: Leonardtown: Monday through Thursday 2:15 p.m. – 3:30 p.m.
               La Plata – Monday - Thursday (Mornings) by appointment

COURSE DESCRIPTION: This lab is designed to accompany the course: PHY 2210 – General
Engineering Physics III. Specifically, the course covers the topics of
magnetic fields and forces, inductance, AC circuits, electromagnetic
waves, light, geometric optics, diffraction, polarization, optical
interference, relativity, and quantum mechanics.

OBJECTIVES: This laboratory course gives students hands-on familiarity with scientific equipment.
The principles studied in the lecture section are reinforced in the laboratory. In this course students will:
   1. Measure physical quantities using instruments of varying precision.
   2. Record data in an orderly manner.
   3. Display results in graphical and tabular form.
   4. Apply physical principles to analyze data and form conclusions based on observation.
   5. Estimate error bounds based on the precision of measurements.
   6. Perform an error analysis.
   7. Write laboratory reports that can be read and understood by a general audience.

PREREQUISITES: PHY 2210 taken in the same semester or in a previous semester.

CREDIT HOURS: 1

CLASS SESSIONS: Section 74931 – Thursday 7:15 – 9:05, Room B-204

TEXT: None required. The instructor will post lab handouts.

MATERIALS: Graphing Calculator (required). TI-83 and TI-84 series supported.
PERFORMANCE EVALUATION: Student performance will be based entirely on graded lab reports. There are eleven graded laboratory assignments and each report will be graded on a scale from 0 to 10. The lowest lab grade will be dropped. The first lab session is an introduction and safety orientation that will not be graded.

Final grades will be assigned as follows:
- 90 – 100% A
- 80 – 89% B
- 70 – 79% C
- 60 – 69% D
- Below 60% F

LAB REPORTS: Handouts for each lab experiment will be distributed during the previous lab session or posted to the course WebCT site. The lab experiments should be read and understood before coming to class. Each lab report consists of the following six parts:

1. Objective
2. Procedure
3. Data
4. Calculations
5. Conclusions
6. Answers to Questions (when assigned)

All data should be taken and recorded on the handout. The lab report should include the handout and a typewritten conclusion section. Computer-generated graphs (where applicable) are appreciated but not mandatory. Sketches, however, are not graphs and are unacceptable. A good conclusion should start with a brief review of the intent and procedure of the lab exercise. This should be followed by an analysis of the lab results. This analysis must include a summary (listing) of the specified principal quantitative results (experimentally determined final values) and should include a quantitative error analysis if applicable. The quantitative error analysis must contain a comparison between the expected error and the experimentally determined error. The reports should be well written and free from grammatical errors. Lab reports are due at the beginning of the subsequent lab period. Reports may be turned in up to two weeks late but late reports will be given a 10% per week penalty.

ATTENDANCE POLICY: Attendance will be taken at each lab session. Each student is responsible for all lab assignments and must participate in the data collection phase of each laboratory experiment.

AUDIT AND WITHDRAWAL POLICY: Students are reminded to consult the College Catalog for dates, procedures, responsibilities and impacts of changing registration status. November 13 (Friday) is the last day to withdraw from a course or change from AUDIT status to CREDIT status or from CREDIT to AUDIT. Students changing from credit status to audit status must enter into a contract with the instructor prior to November 13. Failure of an auditing student to meet the terms of the contract will result in a grade of WD for the course.

LAB MAKEUP POLICY: Missed labs may be made up at the instructor’s discretion. This will usually be done during another lab session or during the final two weeks of class.

STUDENT INTEGRITY POLICY: Students are expected to work together in lab groups during the initial data collection phase of the labs. Final calculations and conclusions, however, are to be completed
and recorded independently by each student. Any violations of the Student Code of Conduct as outlined in the Student Handbook result in a score of zero for the exam or quiz. The violation will be reported to the Director of Student Affairs and to the College Judicial Committee for review and possible disciplinary action.

DISABILITIES AND SPECIAL NEEDS: Students with disabilities and special needs should have an Accommodation Plan on file so that necessary accommodations can be made. Any student who does not have an accommodation plan but who needs to be accommodated should inform the instructor immediately so that the proper referral can be made.

UNAUTHORIZED PERSONS: Unauthorized persons (children, friends, family members, and any other persons not registered for the course) are not allowed in the classroom. Details of this college policy can be found in the Student Handbook.

LAB SCHEDULE

<table>
<thead>
<tr>
<th>LAB NUMBER</th>
<th>LAB ASSIGNMENT*</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction and Safety (no report required)</td>
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<tr>
<td>2</td>
<td>Inductance</td>
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<tr>
<td>3</td>
<td>Inductance and Capacitance in RLC Circuits</td>
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<tr>
<td>4</td>
<td>Resonance in AC Circuits</td>
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<tr>
<td>5</td>
<td>Optical Reflection and Refraction</td>
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<tr>
<td>6</td>
<td>Geometric Optics: (Properties of Lenses)</td>
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<tr>
<td>7</td>
<td>Wave Nature of Light: Young’s Double Slit Experiment</td>
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<td>8</td>
<td>Michelson’s Interferometer</td>
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<tr>
<td>9</td>
<td>Photoelectric Effect</td>
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<td>10</td>
<td>Franck-Hertz Experiment</td>
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<td>11</td>
<td>Photovoltaic Sources and Detectors</td>
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<tr>
<td>12</td>
<td>Diodes and Transistors</td>
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* Laboratory assignments may vary from this schedule, depending on availability of equipment.