Physics 108 Course Syllabus, Fall 2015

INTRODUCTORY APPLIED PHYSICS LABORATORY:
ELECTRICITY, MAGNETISM, OPTICS, AND MODERN PHYSICS

Course Website: https://max.byu.edu
Lab location: C425 ESC
Text: Physics 108 Lab Manual (packet in bookstore)

Supervising Faculty Member: Prof. Branton J. Campbell
Office: N261 ESC, Tel: 422-5758, branton_campbell@byu.edu
Administrative TA: TBA

Objectives and Learning Outcomes: Physics 108 is a lab designed to support the Physics 106 lecture. The experiments conducted will develop a greater conceptual understanding of electricity and magnetism, optics, and modern physics. You probably don't have previous experience with electrons, field lines, focal points, or particle emission, which makes Physics 106 challenging. Our intent is to provide experiments that will further illustrate these concepts, and do so in an interactive small-group environment. The course learning outcomes are to:

- Develop a greater conceptual understanding of electricity and magnetism, optics, and modern physics through hands-on experience with physical systems that illustrate lecture course material.
- Develop skills in measuring and analyzing physical data.

Preparing for the lab: Read the lab description in your packet before coming to class. Review the physics involved and get a general idea of what you will do. In the manual you will find an answer sheet for each lab. On that sheet there is a space to write an overview paragraph about the lab. Be sure to complete this before you come to class. This exercise ensures that you are prepared to make optimal use of your time in the laboratory. In the overview, we are looking for a good conceptual understanding of what physical principles that the lab is supposed to illustrate, even if you don't yet understand how all the equipment works. Note that we are not looking for a restatement of the procedures provided in the lab description.

At the beginning of each lab: You should be organized into groups of lab partners. If your section isn’t full, we’ll endeavor to keep the groups as small as possible. Your group will work together to perform and discuss each experiment, though you will perform your own analysis and write your own lab report as individuals. At the beginning of the lab period, the TA will initial your overview paragraph. Don't let them forget -- your grade depends on it. Your TA will also explain how your lab equipment works and how to use it correctly, but will not spend much time covering the physical principles involved, since you will already have reviewed them before arriving.

During the lab: We don’t want you to feel hurried. It’s hard to think creatively or carefully, or to enjoy learning if you’re feeling pressured. Attention will be paid to the quality of the work that you perform, and how earnest your effort is. If you do not complete your lab, but have been making an honest effort (your TA will know!) it will not affect your grade. If you do not complete the lab and you have been goofing off, it will affect your grade. There is always plenty to do, and we expect you to use the entire lab period wisely. If you arrive late, leave early, or simply waste time, it will hurt your grade. During the lab period, your TA will score and record your participation points on your lab sheet and on his/her attendance roll.

Updated 02 Sep 2015
Lab reports: The report is informal and hand written. If you concentrate on the quality of what you write, you shouldn’t have to write too much. Keep your reports concise and focused. Avoid redundancy -- focus on your results and their interpretation rather than regurgitating the procedures. Present data clearly -- ALWAYS properly label graphs and tables, and include units with any measured or calculated quantity. Describe your measurements, observations, results and interpretations in your own words -- don't assume that the meaning is obvious. You should generally have time to complete your lab report during the lab period, including the associated answer sheet, if you write it as you go. Always be sure to write your name, date, lab title/#, section number, and TA's name in the header of each lab report. Your grade on the lab will consist of the following four parts:

(A) Preparation (3 points): Student read the lab description and is familiar with its content before arrival, and double-checked the instructions before asking questions about procedure. Overview section is well written and demonstrates an understanding of each of the primary physical concepts relevant to the lab.

(B) Participation (3 points): Student is punctual, follows instructions, participates actively in group discussion, contributes well to the actual experiment, and cleans up his/her work area before leaving.

(C) Measurements/Analysis (3 points): Student collects and records careful data and analyzes it correctly, displaying units on all numerical quantities, and properly labeling all graphs and tables.

(D) Results/Discussion/Conclusions (3 points): Student presents results clearly, explains in his/her own words what the data (e.g. graphs and tables) reveal, provides insightful observations and commentary on their interpretation in terms of physical principles, expounds the relationship between the lab experiment and related physical systems encountered outside the lab, and offers a reasonable explanation for any obvious errors.

For each section of the report, a score of 3 is full credit, and indicates that you have done everything expected with only minor problems. A score of 2 means that your work was substantially deficient. A score of 1 means that your work is seriously incomplete or misguided. A score of 0 indicates the lack of a serious attempt. When the graders do not award full credit, they will provide an explanation.

The role of the TA: Your TA will help you to understand and use the equipment provided, and will help you to solve problems encountered along the way. Experiments seldom go as planned, and technical difficulties are the norm. But when you don’t understand your results or the associated physics (and that may be most of the time), we insist that you discuss and analyze the matter together as a group before calling on your TA for guidance. Take your time to talk it over. Consult your text. Even go to other teams for ideas and clarification. Your TAs have been trained not to answer physics questions too readily, though they are available as a last resort.

At the end of each lab: Lab reports must be submitted to the TA at the end of each lab period. As you leave, check to see that your participation points have been recorded on the TAs attendance roll, and respect the TA’s judgment if you have lost participation points for coming late, leaving early, wasting time, etc. A separate team of graders will grade the remainder of your report between lab periods. Your graded report should be available at the beginning of the next class period. If you complete a lab (as evidenced by the TAs attendance roll), but forget to submit your report before leaving, you will lose a participation point when the lab is graded the following week.

Written papers. You are required to write two short application papers. See the course schedule for due dates. Each paper should describe an application of the principles of physics demonstrated in one of the labs completed on or prior to the due date. Please limit the scope of your paper to the principles covered by a single lab. The detailed format specifications are outlined in the document “Instructions for
Preparing Papers” on the course website. Each paper will be graded on a pass/fail basis. The papers should be well written, grammatically correct, logically organized and conceptually coherent. If your first (but not second) paper is judged to be unacceptable (due either to unacceptable formatting, poor writing or bad physics), you can revise it and resubmit it to your TA one time without penalty by the date indicated on the course schedule. Include the original version (complete with grader comments and grade) with the revision. Revisions will be reviewed carefully for indications of substantial improvement. Superficial changes will not be viewed favorably.

Final grades: Each of the 11 labs is worth 12 points. Each application paper is worth 2 points (2 for pass, 0 for fail). This permits a total of 136 points to be earned. Final grades will be determined by a rather demanding percentage scale.

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<th>Score</th>
<th>133</th>
<th>130</th>
<th>127</th>
<th>124</th>
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<tr>
<td>Grade</td>
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<td>B-</td>
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<td>D+</td>
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While it is relatively easy to get full credit on individual labs (recall that full credit merely indicates the absence of serious deficiencies), it is not easy to earn an overall A grade in the course, which requires that you accumulate no less than 133 points. We feel that an A grade should indicate that a student is rarely, if ever, "seriously deficient". Also observe that missing even one lab will substantially lower your final grade.

Online score tracking: Your scores can be accessed from the course website. When you notice problems with your posted scores, don't hesitate to contact the Administrative TA. But note that it usually takes a full week after you submit a lab to get it graded and an additional three days to get your scores posted online. Please don't email us about a missing score until at least this much time has passed.

Regrading: When you lose points for deficient work, you will not generally be permitted to repair the problems with your lab report for a higher grade. We do, however, permit regrading requests on the first lab of the semester. To request regrading for Lab 1, ask your TA to write “Permission to Resubmit” on the first page of your graded lab and to sign and date it. Then submit the revised lab (with “Revised” in large print on the front) by the start of your third lab period with the old lab attached.

Attending other sections: If you must miss a lab due to a special (i.e. infrequent) emergency such as an out-of-town performance, interview, family emergency or serious illness, you may request permission from your TA in advance via email to attend another lab section that is performing exactly the same experiment. This option cannot be used regularly or under ordinary circumstances, and also requires the verbal consent of the TA in the other section, who may turn you away if there is no room. When attending another section, submit your lab report to the TA in the section that you actually attend (not the normal section). If your normal section number and normal TA’s name are correctly recorded, your lab sheet will be returned to your normal section after it has been graded. If we find that you did not obtain the required permission prior to completing the lab, or that you incorrectly recorded your normal section/TA (creating extra research work for the graders), your lab grade will be reduced by 1 point.

Making up missed labs: We will permit make-up labs as indicated in the course schedule. Note that you will only be allowed to make up two labs during the scheduled make-up lab period without special permission. Making up additional labs based on truly unusual circumstances requires explicit permission via email from the instructor. It is not possible to make up a lab that you have completed previously.

Course evaluation: We encourage you to submit course and instructor evaluations during the evaluation period at the end of the semester. Since this is a laboratory class that is actually taught by a TA rather than a faculty member, the target of the instructor evaluation is generally assumed to be the TA who taught your section.
Comments and concerns: If you have feedback or concerns regarding any of our course policies or content, you may contact the supervising faculty member.

University Policies

Academic Honesty Policy
The first injunction of the BYU Honor Code is the call to be honest. Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character. President David O. McKay taught that "character is the highest aim of education" (The Aims of a BYU Education, p. 6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.

BYU Honor Code
In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Preventing Sexual Discrimination and Harassment
Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education and pertains to admissions, academic and athletic programs, and university-sponsored activities. Title IX also prohibits sexual harassment of students by university employees, other students, and visitors to campus. If you encounter sexual harassment or gender-based discrimination, please talk to your professor; contact the Equal Employment Office at 801-422-5895 or 1-888-238-1062 (24-hours), or http://www.ethicspoint.com; or contact the Honor Code Office at 801-422-2847.

Students with Disabilities
Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the Services for Students with Disabilities Office (422-2767). Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. Services are coordinated with the student and instructor by the SSD Office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures by contacting the Equal Employment Office at 422-5895, D-285 ASB.