# Physics 142 - Principles of Physics Syllabus and Schedule

## Spring 2012

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| **Course description** | The second of a two-semester series in general physics. This survey course will use algebra, trigonometry, and calculus and is recommended for chemistry and zoology majors. It also satisfies the requirements of medical and dental schools. The course isa continuation of PHYS 141, and covers waves, electricity and magnetism, optics and modern physics. |
| **Pre-requisite** | PHYS141 or equivalent. Students are expected to be comfortable and proficient in algebra, trigonometry, and calculus. |
| **Co-requisite** | MATH141 or MATH221 |
| **Instructor** | Prof. Arpita Upadhyaya [Department of Physics](http://www.physics.umd.edu/) [Institute of Physical Science and Technology](http://www.ipst.umd.edu/) 1115A IPST (building #085) (301) 405 9939 (on campus x59939) [arpitau@umd.edu](mailto:arpitau@umd.edu)  I prefer to be contacted by email rather than by phone.  **Office hours: Monday: 1:00 – 2:00 pm** |
| **Website** | [**http://elms.umd.edu**](http://elms.umd.edu/)  **and go to the class page for 142. HW assignments will be posted here.**  **The syllabus and schedule can also be found here:**  [**http://www.physics.umd.edu/courses/Phys142/index.html**](http://www.physics.umd.edu/courses/Phys142/index.html) |
| **Books:** | * Physics for Scientists and Engineers with Modern Physics, Volume 2, Giancoli * PHYS142 Laboratory Manual (UMCP), first edition |
| **Credits:** | * 4 credit hours * Credit will be granted for only one of the following: PHYS 142, PHYS 260 and PHYS 261, or PHYS 272. |
| **Lectures** | **Physics 1201, MWF 11:00-11:50 am**  Students are required to attend lectures, where homework assignments will be given and collected, exams will be announced and administered and the course material will be presented. Lectures will consist of prepared video presentation, calculations done on the chalkboard, live demonstrations and student participation. Important parts of the lecture notes will be posted on ELMS. |
| **Sections** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Section** | **Teaching Assistant** | **Meeting Time and Place** | | | | 0101 | Neville Fernandes  [nevillef@umd.edu](mailto:nevillef@umd.edu) | Dis | Monday,  12:00 – 12:50 pm | MTH 0104 | | Lab | Monday,  1:00 – 2:50 pm | PHY 3314 | | Office Hours | Thursday,  4 - 5 pm | CHEM-NUC 1134 | | 0102 | Meghan Marshall  [meganmarshall20@gmail.com](mailto:meganmarshall20@gmail.com) | Dis | Monday,  2:00 - 2:50 pm | MTH 0405 | | Lab | Monday,  3:00 - 4:50 pm | PHY 3314 | | Office Hours | Tuesday,  1:00-2:00 pm | PHY 3101 | | 0103 | Tung-Chang Liu  [tcliu@umd.edu](mailto:tcliu@umd.edu) | Dis | Tuesday,  12:00 – 12:50 pm | COL 0102 | | Lab | Tuesday,  1:00 – 2:50 pm | PHY 3314 | | Office Hours | Tuesday,  10:30-11:30 am | CSS 2369 | |
| **Lab** | You will do a total of 11 laboratory assignments. Lab sections will be conducted by a Teaching Assistant. You are *required* to do the designated lab section each week and complete the assigned experiment. You should read the lab description beforehand. For each lab, you must give your TA a completed “check sheet” and written answers to the questions at the end of the laboratory write-up.  Your lab grade will be based on these questions.  The TA will deduct points if your handwriting is illegible, or if your answer is hard to understand because of poor grammar.  Each lab must be turned in before the end of the laboratory period.  You will do all your work in class. If you cannot attend a session for an excusable reason you may attend another section given the same week **with the permission of the Instructor.** Or you may attend a scheduled makeup session. In general, it will only be possible to perform a single experiment during the makeup session.  It is very important you attend and complete all labs. Students failing to complete all labs will lose a third of a letter grade on their final course grade for each missed lab. |
| **Discussion sections** | Discussion sections will be conducted by Teaching Assistants, and are a forum where students can ask questions about the course material and where problems will be worked with student participation |
| **Tutoring** | The Physics Department has a free tutoring service, the Slawsky Clinic, run by a group of retired senior physicists. It is located in Room 1214 in the Physics building. You can usually get help at any time they are open, from10 AM until 3 PM Monday through Friday. See <http://www.physics.umd.edu/academics/ugrad/slawsky.html> |
| **Preparation** | Not all material will be directly covered in lectures. Students are responsible for reading and understanding all material in assigned chapters, whether or not this material is explicitly treated in the lectures. You are expected to read the relevant textbook chapters that were discussed in the previous lecture as well as the sections to be discussed in the next lecture. |
| **Homework** | Homework assignments will be posted on ELMS each Friday, and will have to be done in writing and turned in at the start of class each Friday unless otherwise specified.  I believe that the best way to learn physics is to sit down and work out problems on a piece of paper. Homework solutions should be written out neatly on paper.  Guidelines for homework assignments:   * Write down your name, section number and TA at the top of each page   and staple all pages together.   * To get full credit, you must show all your work. * When answering the “questions”, please use complete sentences. If the   question is a true/false, a multiple choice, yes/no, or other similar question,  explain why the answer you chose is the correct one.   * Your TA will deduct points if your answer is hard to understand because of   poor grammar or if it is illegible.   * Late homework is accepted only in exceptional circumstances. If you turn   in your homework late, 2 points per day will be deducted from your score. Once the solutions are posted, no late homework will be accepted.  The grading of the homework assignments will be done by a TA.  The TA will score all problems with a 1 or 0, depending on whether the right final answer was obtained and work was shown.  One or two problems will also be randomly chosen to be graded in detail. The total homework score will then be calculated out of these. To get full credit, you must show all your work. When answering the "questions", please use complete sentences. If the question is a true/false, a multiple choice, yes/no, or other similar question, explain why the answer you chose is the correct one. Your TA will deduct points if your answer is hard to understand because of poor grammar. Late homework is accepted only in exceptional circumstances. If you turn in your homework late, 2 points per day will be deducted from your score. The two lowest homework grades will be dropped from your final score (if you submit all the HWs). If you miss any HW this will count towards the ones being dropped. |
| **Exams** | There will be three 50-minute exams and one final exam.  You may bring one 4x6 index card, with whatever you want written on it, to the first exam.  You may bring the cards from the previous exams plus one additional card to each subsequent exam.   The exam will include problems and conceptual questions.  You are responsible for showing up on time with a working calculator.  The exam sheets will contain any numerical constants you will need.  Make up exams will be given only under extraordinary circumstances, and if arrangements are made with me ahead of time. |
| **Quizzes** | There will be a 10 minute quiz every week on Wednesday, unless otherwise announced. The quizzes will start at 11:40 be collected at 11:50 AM. The quiz may be a traditional problem or a conceptual one. The two lowest quiz grades will be dropped. Makeup quizzes are not allowed. If you miss a quiz due to illness, that will be one of the quizzes that is dropped. There will be no quizzes during exam weeks. |
| **Final Grade** | The final grade will be based on the components below, with the following tentative distribution:   |  |  | | --- | --- | | Homework | 15% | | Quizzes | 10% | | First Exam | 15% | | Second Exam | 15% | | Third Exam | 15% | | Lab Reports | 5% | | Final Exam | 25% |   The final grade will be set at the end of the semester after all work is completed. In assigning the final grade, I will be guided by the University of Maryland grading policy, quoted below:   * A denotes excellent mastery of the subject and outstanding scholarship. * B denotes good mastery of the subject and good scholarship. * C denotes acceptable mastery of the subject and the usual achievement expected. * D denotes borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree. * F denotes failure to understand the subject and unsatisfactory performance.   I will decide where to put the dividing line for various grades after looking at the distribution of points in the class. |
| **Students with disabilities** | Students with disabilities should meet with the Prof. Upadhyaya at the beginning of the semester so that appropriate arrangements can be made to accommodate the student's needs. |
| **University Closure** | In the event of a University Closure the department will do its best to accommodate students by scheduling make-up sessions or revision of the lab schedule. |
| **Academic Integrity** | Along with certain rights, students also have the responsibility to behave honorably in an academic environment. Academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism will not be tolerated. Any abridgement of academic integrity standards will be referred directly to the Assistant Dean and forwarded to the University’s Office of Judicial Affairs. Confirmation of such incidents can result in expulsion from the University. Students who are uncertain as to what constitutes academic dishonesty should consult the University publication entitled Academic Dishonesty.  Of course, you must work by yourself on exams and quizzes. You are allowed to work with other students, the physics clinic, your TA and your instructor on your homework and on the labs. However, you should not just directly copy from them. Doing so is not only dishonest, it will hurt your ability to do the problems on the quizzes and the exams.    You should also be aware of the University of Maryland Honor Pledge. Information can be found at http://www.inform.umd.edu/honorpledge/  The Honor Pledge is a statement undergraduate and graduate students should be asked to write by hand and sign on examinations, papers, or other academic assignments not specifically exempted by the instructor. The Pledge reads:  "I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."  The pledge was adopted by the University Senate on April 9, 2001, and approved by the President on May 10, 2001. Full implementation is effective throughout the University on the first day of the Spring 2002 semester. |

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| **Lecture Schedule** | Tentative Lecture Schedule. This schedule is approximate, and mainly serves to convey an idea about the topics covered, the order they will be taught and the approximate time frame it will take to cover these. The Exam dates are also subject to change, except for Exam 1 (which will take place on Friday, March 2).   |  |  |  | | --- | --- | --- | | **Week starting** | **Topic** | **Chapter in Giancoli** | | January 25 | Coulomb’s law | Chapter 21 | | January 30 | Electric field | Chapter 21 | | February 6 | Gauss’s Law, Electric Potential | Chapter 22, 23 | | February 13 | Electric Potential | Chapter 23 | | February 20 | Capacitance | Chapter 24 | | Feb 27 | Current and Resistance | Chapter 25, Exam 1 (Friday) | | March 5 | DC circuits | Chapter 26 | | March 12 | Magnetism | Chapter 27 | | March 19 |  | Spring Break | | March 26 | Magnetic Field | Chapter 28 | | April 2 | Faraday’s Law | Chapter 29 | | April 9 | Inductance | Chapter 30, Exam 2 (Mon) | | April 16 | Inductance, Electromagnetism | Chapter 30, 31 | | April 23 | Optics | Chapter 32, 33 | | April 30 | Optics, Relativity | Chapter 34, 36, Exam 3 (Wed) | | May 7 | Relativity, Quantum | Chapter 36, 37 | |

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| **Lab Schedule** | The schedule of labs is as follows:   |  |  |  | | --- | --- | --- | | **Date** | **Experiment #** | **Title** | | January 30, 31 | 1 | Electrostatics | | February 6, 7 | 2 | Equipotentials and Fields | | February 13, 14 | 3 | Light bulbs | | February 20, 21 | 4 | Resistance | | February 27, 28 | 5 | Ohm’s Law | | March 5, 6 | 6 | Magnetic Fields | | March 12, 13 | Make up | Make-up for Lab 1-6 | | March 19, 20 | No Lab | Spring Break | | March 26, 27 | 7 | The Oscilloscope | | April 2, 3 | 8 | Faraday’s Law | | April 9, 10 | 9 | RC and RL circuits | | April 16, 17 | 10 | Diffraction | | April 23, 24 | 11 | Photoelectric Effect | | April 30, May1 | Make up | Make-up for Lab 6-11 | | May 10 |  | Last day of classes | |