



PHY 122/124: Physics for Life Sciences II Course Syllabus Spring 2016

Instructors:	Prof. John Hobbs Prof. Michael Wilking	John.Hobbs (at) stonybrook.edu Michael.Wilking (at) stonybrook.edu
Class Hours:	Mon., Wed., 8:00-9:20am; Fri., 8:00-9:50am (lab)	
Classroom:	Physics P-118, including lab on Fri.	
Office Hours:	Mon, 2-4; Tues, 3-4 in the Help Room	
Graduate TAs:	Christopher Zangler-Scaduto Kevin Link	Christopher.Zangler-Scaduto (at) stonybrook.edu Kevin.Link (at) stonybrook.edu

The professors will be splitting the semester teaching with Prof. Hobbs teaching the first half and Prof. Wilking teaching the second half.

I. Course Description

PHY 122/124: Physics for Life Sciences (3/1 credits). Second part of an introduction to physics with applications to biology, primarily for students majoring in biological sciences or pre-clinical programs. Topics include electricity and magnetism, circuits, optics and modern physics. Strong algebra skills and knowledge of the ideas of calculus are required. There are three lecture/recitation hours per week. The laboratory, PHY 124, must be taken concurrently; the same grade will be assigned for both courses. Laboratory is approximately 2 hours/week and the topics are those of the lecture/recitation. Not for credit in addition to PHY 126, 132, or 142.

Prerequisites: PHY 121/123, MAT 125 or MAT 131 or MAT 141 or AMS 151

II. Course Learning Objectives

1. Students will demonstrate mastery of physics concepts related to electricity and magnetism including forces, fields, and potentials; optical diffraction and interference and wave optics; special relativity, and topics in modern physics including quantization, atomic and nuclear structure and energy and mass equivalence.
2. Students will be able to think critically and apply appropriate physics concepts in analyzing qualitative problems in classical physics.
3. Students will demonstrate the ability to apply algebraic and calculus-based mathematical reasoning in solving quantitative physics problems.
4. Students will demonstrate proficiency in science process skills by designing and performing experiments to measure physical phenomena and estimate experimental error.
5. Students will demonstrate scientific communication skills through thoughtful discussion, collaborative problem solving, and dissemination of experimental results.

III. Blackboard

Stony Brook's Blackboard (BB) website is the location where course files are shared and stored. The course is listed under PHY 122.90 Physics for Life Sciences II - Spring 2016. Files for laboratory procedures, lecture notes, clicker questions, etc will be posted on BB. The only exception is homework which will use the Mastering Physics system (discussed below).



IV. Required Materials

1. Textbook: Knight, R.D., Jones, B., & Field, S. (2015). *College Physics: A Strategic Approach* (3rd Edition). Pearson Publishers. ISBN-10: 0321879724, ISBN-13: 9780321879721. The text is available in the campus bookstore for \$180. If you purchase the text, you automatically get the online homework license, which is also required (see below). The eText with access to Mastering Physics costs \$133 in the bookstore and \$111 when purchased online from Pearson and is valid for 24 months: <http://www.pearsonmylabandmastering.com/northamerica/masteringphysics/students/>. The license to access Mastering Physics without the eText costs \$66 and **must be purchased online from Mastering Physics**. We will cover chapters 17-30 in this course.¹ If you purchased a license for PHY121 last semester, this license should continue to work.
2. The Mastering Physics course ID associated with this course is **MPHOBBS40828**. All homework will be assigned and graded electronically.
3. Scientific calculator with trig functions (e.g., TI-83)
4. Turning Point Technologies clicker, which must be registered on Turning Point's cloud-based system.
5. Laboratory notebook

V. Homework

Homework problems will be due Monday evenings at 10:00 pm, covering work discussed the previous week. In addition, a 20% bonus will be given for any work done by the preceding Friday at 10:00 pm.² The MP problems for are accessed and carried out on the Mastering Physics website. You should sign up for the course **MPHOBBS40828**. Please register using your student ID number so your grade may be linked to Blackboard. A Mastering Physics access code is required to view problems and submit solutions electronically. Students will not be penalized for multiple attempts at regular problems, but for multiple choice problems, a penalty will be applied for each wrong answer. Solutions will be discussed when time allows in lecture and laboratory. There is no limit to the number of tries for each problem. Late work is not accepted.

VI. Laboratory: PHY 124

Laboratory experiments are an essential component of learning physics. The laboratory grade will be based upon participation and successful completion of experiments. For each experiment, students will record 1) the purpose of the experiment, 2) *brief* procedural outline, 3) materials, 4) data and calculations, 5) graphs (where appropriate), 6) error analysis, and 7) conclusions. The first three sections must be completed before you come to the laboratory; the final four sections will be completed in class. Teaching assistants will check laboratory notebooks at the end of each period for completeness and assign points. Students are also required to complete three formal laboratory reports during the semester. Each formal lab report will include the 7 sections listed above, typed with 1" margins, 12-point font, and single-spaced. Include the names of your two lab partners. Please be accurate and concise with your written work. You may complete one formal report from labs 1-3 (due **Wednesday Feb. 24**), one from labs 4-6 (due **Wed, March 30**), and one from labs 7-10 (due **Wednesday, May 4**). Each formal report will be graded on a 20-point scale. The laboratory grade for PHY 134 will be based upon the completion of *all* experiments and the three formal laboratory reports. Late work will be penalized.

Lab Make-Ups: Students *must* complete all ten labs to receive a passing lab grade. Make-up labs will be scheduled at the convenience of the TAs or instructors *only with a valid medical excuse*

¹ The order will be Ch. 20 – 26, then Ch. 17 – 20, then Ch. 27-30.

² The bonus score will not appear in Mastering Physics, but will be applied at the end of the semester and appear in BB then.



VII. Exams

There will be two midterm exams - **Friday, Feb. 26**, and **Friday, Apr. 1**. They will be given during the regularly scheduled class time in Physics P-118. The final exam (cumulative but heavily weighted toward material following that covered in the second midterm) is **Thursday, May 12, 2:15-5:00pm**; the location will be announced.

VIII. Grading Structure

Final grades in PHY 121 will be determined as follows:

1. Midterm exams: 15% each
2. Final exam: 25%
3. Homework: 15%
4. Laboratory: 25%
5. Clickers: 5% (correct answers)

IX. Extra Help

Prof. Hobbs or Wilking will be available for office hours at a time and place TBD. They will also be available by appointment (please e-mail). Teaching Assistants (TAs, both graduate and undergraduate) will also be available - check the departmental schedule for the Help Room in Physics A-131.

X. Schedule of Topics and Experiments

The course calendar is available in BB under “Tools” then “Calendar” on the left side bar.

XI. Disability Instructions

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, 128 ECC Building (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following web site: <http://www.ehs.sunysb.edu> and search Fire Safety and Evacuation and Disabilities.

XII. University and Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Any suspected instance of academic dishonesty will be reported to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>. One person using the clicker of another to simulate participation in class meetings is academic dishonesty, and will be treated as such.

XIII. Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty are required to follow school-specific procedures: http://www.stonybrook.edu/commcms/emergency/critical_incident.shtml.