

## Syllabus - General Physics A PHY 2048C, Spring 2015, Sections 1-5, and 9

This syllabus applies only to students registered for Sections 1-5, and 9; Sections 6 and 7 (the “studio” courses) have completely separate (and different) course structures.

**Important notices:** (1) Attendance at your first Wednesday morning class is mandatory; failure to attend will likely result in being dropped from the course: (2) There will be no afternoon laboratory classes (2048L) during the first THREE weeks of the semester (see schedule) – first day attendance for PHY 2048L will be satisfied by attending the first Wednesday PHY 2048C class.

**Catalog Description:** *General Physics A (5 credit hours). Pre-requisite: MAC 2311. MAC 2312 is recommended as a co-requisite.* An introduction to mechanics, waves, and thermodynamics for physical science majors, designed to be taken as a sequence with General Physics B (PHY 2049C) and Intermediate Modern Physics (PHY 3101). (Completing the latter entitles you to a Minor in Physics!) PHY 2048C consists of lectures, recitations, online homework, and a laboratory (PHY 2048L). **Calculus and trigonometry are used. You must pass the lab (PHY 2048L) in order to pass PHY 2048C.** The Liberal Studies Program at Florida State University has been designed to provide a perspective on the qualities, accomplishments, and aspirations of human beings, the past and present civilizations we have created, and the natural and technological world we inhabit. This course has been approved as meeting the requirements for Liberal Studies Area V, Natural Science, and in combination with your other Liberal Studies courses, provides an important foundation for your lifelong quest for knowledge.

**Text Book and iclicker:** We will use [\*Essential University Physics, Volume 1, 2<sup>nd</sup> Edition\*](#), by Richard Wolfson, published by Addison Wesley [NOTE: Volume 2 will be required for PHY 2049C]. The 1<sup>st</sup> Edition of this book is also fine. **Do not purchase any bundled homework software!** The Lab manuals will be available via the PHY 2048L LONCAPA site, which can be accessed via Blackboard. Unless you already have one, **you will need to purchase an iclicker** (older models are fine). Iclickers should be available at the bookstore (either separately or bundled with the textbook). **You will need to register your iclicker via Blackboard, where a link has been added to the course menu that takes you to a page where all you need to enter is your remote serial number (instructions are given there).**

### Professors associated with the course:

| Faculty                                | Room               | Phone                | Office Hours | Email Address  |
|--|--------------------|----------------------|--------------|--|
| Dr. S. Hill, Lecturer<br>Course Leader | 310 Keen<br>MagLab | 645-8793<br>644-1647 | T 11:00-1:00 | <a href="mailto:shill@magnet.fsu.edu">shill@magnet.fsu.edu</a>                 |
| Dr. Y. Hori                            | 507 Keen           | 644-2968             | M 1:30-3:30  | <a href="mailto:yhori@fsu.edu">yhori@fsu.edu</a>                               |
| Dr. H.-K. Ng                           | 416 Keen           | 644-4558             | M/W 10-11    | <a href="mailto:hkng@fsu.edu">hkng@fsu.edu</a>                                 |
| Dr. S. Tabor                           | 213 Keen           | 644-5528             | M 2:30-4:30  | <a href="mailto:tabor@nucmar.physics.fsu.edu">tabor@nucmar.physics.fsu.edu</a> |

### Lectures: Tuesdays and Thursdays

Lecture classes meet in 101 Richards (UPL 101) from 9:30 to 10:45 am. These classes will involve demonstrations, worked examples, and discussion of the major concepts and techniques used in this course. There will be regular, unannounced “pop quizzes” using the iclickers, which will also serve as a means of recording attendance. Written mini-exams lasting 25 minutes will be administered roughly every other week, along with a mid-term exam lasting a full class period in early March (see schedule). Solutions to these in-class exams will be posted on Blackboard/LONCAPA, as will your individual exam scores. Discuss any problem which would cause you to miss an exam with Dr. Hill **prior to the exam**, unless of course the problem could not be anticipated.

## Tutorials: Mondays and Wednesdays

Tutorial (recitation) classes meet as scheduled below. You will hone your problem solving skills in these classes by working through some (or all) of the assigned homework problems under the supervision of your recitation instructor. You should come prepared so that you are able to discuss the assigned problems in front of the class. Your recitation instructor will award up to 5% of your course grade based upon your participation in the recitations; he/she will explain the basis for this grade in your first class meeting on January 7th. Aside from helping you with the homework assignments, which are completed by inputting answers via the internet using the [LONCAPA](#) system, these classes will serve as excellent preparation for exams. **All LONCAPA homework is due by 11:59pm on the assigned due date (see schedule and/or login to LONCAPA); the LONCAPA system allows no exceptions!**

| Section | Time: Mondays and Wednesdays | Instructors  | Room    |
|---------|------------------------------|--------------|---------|
| 1       | 08:00-08:50                  | Dr. H.-K. Ng | 105 UPL |
| 2       | 09:05-09:55                  | Dr. H.-K. Ng | 105 UPL |
| 3       | 10:10-11:00                  | Dr. S. Tabor | 105 UPL |
| 4       | 11:15-12:05                  | Dr. S. Tabor | 105 UPL |
| 5       | 09:05-09:55                  | Dr. Y. Hori  | 110 UPL |
| 9       | 10:10-11:00                  | Dr. Y. Hori  | 110 UPL |

## Laboratory Classes: Either Monday or Wednesday

The purpose of the laboratory sessions is to gain hands-on experience with laboratory apparatus, to develop skills in performing experiments, and to learn methods for analyzing scientific data. In order to help you complete the lab assignments, we have prepared pre-lab exercises within the LONCAPA homework system (PHY 2048L). Lab manuals are also available for download ahead of time within LONCAPA. With the exception of the pre-lab homework assignment due in week 2 (see schedule), the remaining pre-labs will be due at **noon** on the day your lab is scheduled. Completion of these exercises contributes 20% to your lab grade, i.e., 4% of your final grade. Each student must complete a lab report following the format prescribed by the lab instructor, before leaving the lab session. Attendance at each lab is a requirement of the course; **any student who is not registered for PHY 2048L needs to discuss this with Dr. Hill during the first week of classes.** If you do not complete a lab, you do not receive credit for that lab in your laboratory score (see below). **If you miss more than two labs you will automatically receive an “F” grade for the course.** Please make sure you do all of the labs!

| Section | Day       | Time (all pm) | Room    | Instructor (TA, Faculty)    |
|---------|-----------|---------------|---------|-----------------------------|
| 1       | Monday    | 12:30 - 3:30  | 107 UPL | Yijun Du, Dr. Tabor         |
| 2       | Monday    | 3:45 - 6:45   | 107 UPL | Diogenes Figueroa, Dr. Hori |
| 3       | Monday    | 7:00 – 10:00  | 107 UPL | Alyssa Henderson, Dr. Hill  |
| 4       | Monday    | 1:30 - 4:30   | 109 UPL | Matthew Freeman, Dr. Tabor  |
| 5       | Monday    | 4:45 – 7:45   | 109 UPL | Nathan Gerken, Dr. Hori     |
| 6       | Wednesday | 12:30 - 3:30  | 107 UPL | Yijun Du, Dr. Ng            |
| 7       | Wednesday | 3:45 - 6:45   | 107 UPL | Diogenes Figueroa, Dr. Hill |
| 8       | Wednesday | 7:00 – 10:00  | 107 UPL | Alyssa Henderson, Dr. Hill  |
| 9       | Wednesday | 1:30 - 4:30   | 109 UPL | Matthew Freeman, Dr. Ng     |
| 10      | Wednesday | 4:45 – 7:45   | 109 UPL | Nathan Gerken, Dr. Hill     |

## Examinations:

There will be **five mini-exams, one mid-term exam, and one final exam**. The subject of each exam may include **any** previously assigned material. Only your best four mini-exam scores will be counted (see below), representing a very significant fraction (24%) of your final grade and a very important component of the course. Below are a few rules and answers to common questions about these exams.

- Five mini-exams will be given during the semester (see schedule below).
- All mini-exams will be given at the beginning of the lecture.
- The material covered will be related to recent or previous LONCAPA assignment topics. Do not expect to see exact copies of LONCAPA questions though.
- Each mini-exam will last 25 minutes and must be handed in by the required deadline.
- Students arriving late will be required to turn in their mini-exam at the same time as the rest of the class, i.e., no extensions will be granted.
- Your final mini-exam score will be based on your four best exam scores.
- Each student is responsible for bringing a working calculator. You are not allowed to utilize equations or physics text programmed into your calculator. **Use of cell phones is prohibited.**
- **All students must bring their FSU ID card with them to all exams.**
- Cheating will result in an "F" grade for the course. Consult the FSU Honor Code (see below).
- Exams will be hand graded. Any grading questions you have must be resolved with Professor Hill within 2 weeks of the exam.

## Completion of Course and Grading:

The course grade will be calculated using scores from the LONCAPA homework sets, your instructor-assigned recitation participation, the mini-exams and iclicker quizzes, the mid-term exam, the pre-labs/lab reports, and the final exam. These components will be weighted in the following way. Your final grade will be based on your total score in all of these areas. The total course score will then be converted into a letter grade. We will use the table shown below as our guide for determining final grades:

|                             |             |
|-----------------------------|-------------|
| Best 4 of 5 Mini-Exams      | 24%         |
| Iclicker answers/attendance | 6%          |
| Mid Term Exam               | 10%         |
| Final Examination           | 20%         |
| Laboratory (+ pre-lab)      | 20%         |
| LONCAPA homework            | 15%         |
| Recitation Participation    | 5%          |
| <b>Total</b>                | <b>100%</b> |

| Grade | Score     | Grade | Score     |
|-------|-----------|-------|-----------|
| A     | 100 – 90  | C+    | 74.9 – 71 |
| A-    | 89.9 – 87 | C     | 69.9 – 67 |
| B+    | 86.9 – 83 | C-    | 66.9 – 62 |
| B     | 82.9 - 79 | D     | 61.9 - 55 |
| B-    | 78.9 – 75 | F     | 54.9 - 0  |

Students who do not attempt the final exam will automatically receive a grade of “F” for the course. If you miss more than two labs you will automatically receive a grade “F” for the course. You should keep a record of your point totals for LONCAPA, the laboratories and exams.

**FSU Academic Honor Policy:** The Florida State University Academic Honor Policy outlines the University’s expectations for the integrity of students’ academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to “... be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at [fda.fsu.edu/Academics/Academic-Honor-Policy](http://fda.fsu.edu/Academics/Academic-Honor-Policy).)

**University Attendance Policy:** Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

### Resources for Students:

We want you all to do well in this course. There are resources available to help you towards this goal. Please take advantage of them.

- **Classes:** Attend lectures and recitations. You may not realize it at the time, but what you learn and retain from these classes may surprise you and serve you well during exams.
- **Professors' office hours:** Each of the faculty members associated with this course have scheduled office hours to help students with homework problems and other matters that arise during the course. These times are given at the beginning of this document. Other times may be arranged. Please don't hesitate to call or email us.
- **Physics Department consultation sessions:** After the 2<sup>nd</sup> or 3<sup>rd</sup> week of classes, a graduate student will be available to assist you with your LONCAPA homework and in keeping up your average score on the mini-exams! These times are given below.

| TA              | Day        | Time           | Room                  |
|-----------------|------------|----------------|-----------------------|
| Patrick Fortier | M, T, W, R | 3:00 to 5:30pm | Dirac Science Library |

**Free Tutoring from FSU:** On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of on-campus tutoring options – see [ace.fsu.edu/Tutoring](http://ace.fsu.edu/Tutoring) or contact [tutor@fsu.edu](mailto:tutor@fsu.edu). High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

**Individual Tutors:** If you would like to hire a tutor, check with Mr. Brian Wilcoxon in the Physics Graduate/Undergraduate Office on the 3<sup>rd</sup> floor of the Keen Building (KEN 304). He can also be reached either by e-mail ([ugrad@physics.fsu.edu](mailto:ugrad@physics.fsu.edu)) or by calling 644-3245. Mr. Wilcoxon has a hardcopy list of physics graduate students who are happy to work (for pay) as tutors.

**Americans With Disabilities Act:** Students with disabilities needing academic accommodations should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. **This should be done during the first week of classes.**

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

|                                    |  |
|------------------------------------|--|
| Student Disability Resource Center | (850) 644-9566 (voice)   |
| 874 Traditions Way 108             | (850) 644-8504 (TDD)   |
| 108 Student Services Building      | <a href="mailto:sdrc@admin.fsu.edu">sdrc@admin.fsu.edu</a>                       |
| Florida State University           | <a href="http://www.disabilitycenter.fsu.edu/">www.disabilitycenter.fsu.edu/</a> |
| Tallahassee, FL 32306-4167         |  |

**Course and LONCAPA Information on the web:** This syllabus, the laboratory assignments and other information (exam solutions, etc.) related to this course will be posted on the web via Blackboard. In order to attempt the LONCAPA assignments you must have access to the internet. There are numerous

computer labs on campus and in the libraries. The Physics Department also has a number of computers that may be used for LONCAPA, both in your recitation classroom and in the Undergraduate Study Room in 701 Keen. If you have any difficulties locating a computer please contact your recitation instructor. The LONCAPA web page is at [loncapa.fsu.edu/](http://loncapa.fsu.edu/) and instructions are available [online](#).

### Some Sensible Advice:

We want everyone to pass this course. Unfortunately many people find physics rather difficult. Below are a few tips to help make your adventures in physics more successful and fun.

- This course is no pushover. Physics is *based on understanding*, not memorization. We will do all we can to help you, but only you can know whether you really understand something or not! Test yourself on additional problems. If, after reading additional problems, you have no idea how to solve them, then you have not understood the concepts. *Do not simply regurgitate the answers.*
- Physics and math are intimately related. Refresh and apply your math skills.
- If you attend all classes and seek help from your instructors during office hours, you should be able to score close to 100% on the LONCAPA assignments. This will, in-turn, help you on the exams. You will not succeed in this course if you do not take these assignments seriously.
- In order to prepare for exams, make sure you understand and can do ***all*** the homework problems on your own. Do not rely on memorization of the LONCAPA solutions. It doesn't work!
- In answering a question, always ask yourself "Is this answer sensible?" Always check through your solution and don't forget to include the units!
- Attend all lecture, laboratories and tutorial classes.
- Use the textbook. Try to find time to look over a chapter before and after it is covered in class.
- Use the professors' office hours.
- Find a study partner. *We encourage students to study and learn together.*
- Finally, don't give up or sit for hours trying to do the homework. Discuss your solution with us. Often you will be much closer than you think to being able to solve a problem.
- If you are seriously thinking of dropping the course at any point, please come and talk to Dr. Hill or one of the other Professors first.

### Daily Schedule and Assignments:

| Date  | Schedule and Assignments  | Laboratory   |
|---|---|--|
| W 7-Jan<br>Th 8-Jan                           | <b>Mandatory Attendance!</b> Go over syllabus & course outline<br>Intro. to Chs. 1 & 2 – Units, Measures and 1D Motion                          | <b>No laboratory or pre-lab this week.</b>                               |
| M 12-Jan<br>T 13-Jan<br>W 14-Jan<br>Th 15-Jan | Discuss LONCAPA set #1<br>Discuss Ch. 2 – 1D Motion<br>LONCAPA Pre-lab (PHY2048L) and homework set #1 DUE<br>Discuss Ch. 2/3 – 1D and 2D Motion | Pre-lab "Uncertainty/error analysis". Covered in Wednesday recitation.   |
| M 19-Jan<br>T 20-Jan<br>W 21-Jan<br>Th 22-Jan | <b>MLK Day</b> , No Classes<br>Discuss Ch. 3 – 2D Motion<br>LONCAPA set #2 DUE<br><b>Mini Exam #1</b> ; Discuss Ch. 3 – 2D Motion               | <b>No laboratory or pre-lab this week.</b>                               |
| M 26-Jan<br>T 27-Jan<br>W 28-Jan<br>Th 29-Jan | LONCAPA set #3 DUE<br>Discuss Ch. 4 – Forces<br>LONCAPA set #4 DUE<br>Discuss Ch. 4/5 – Forces and Newton's Laws                                | Lab 1 "Vectors".<br>Pre-lab exercise due at noon on the day of your lab. |
| M 2-Feb<br>T 3-Feb                            | LONCAPA set #5 DUE<br>Discuss Ch. 5 – Newton's Laws   | Lab 2 "Determination of Density". Pre-lab exercise                       |

|           |   |   |
|-----------|---|---|
| W 4-Feb   | LONCAPA set #6 DUE  | due at noon on the day of your lab.   |
| Th 5-Feb  | <b>Mini Exam #2</b> ; Discuss Ch. 5 – Newton’s Laws         |   |
| M 9-Feb   | LONCAPA set #7 DUE  | Lab 3 “Acceleration due to Gravity”. Pre-lab exercise due at noon on the day of your lab.         |
| T 10-Feb  | Discuss Ch. 6 – Work and Energy                             |   |
| W 11-Feb  | LONCAPA set #8 DUE  |   |
| Th 12-Feb | Discuss Ch. 7 – Energy Conservation                         |   |
| M 16-Feb  | LONCAPA set #9 DUE  | Lab 4 “Acceleration due to Gravity (Excel analysis)”. <b>No pre-lab associated with this lab.</b> |
| T 17-Feb  | Discuss Ch. 7 – Energy Conservation                         |   |
| W 18-Feb  | LONCAPA set #10 DUE   |   |
| Th 19-Feb | <b>Mini Exam #3</b> ; Discuss Ch. 9 – Momentum Conservation |   |
| M 23-Feb  | LONCAPA set #11 DUE   | Lab 5 “Collisions and Momentum”. Pre-lab exercise due at noon on the day of your lab.             |
| T 24-Feb  | Discuss Ch. 9 – Momentum Conservation                       |   |
| W 25-Feb  | LONCAPA set #12 DUE   |   |
| Th 26-Feb | Discuss Ch. 10 – Rotation (not on mid-term)                 |   |
| M 2-Mar   | <b>Mid-term Review</b>                                      | <b>No laboratory or pre-lab this week.</b>  |
| T 3-Mar   | <b>Mid Term Exam (Chs. 1–7, &amp; 9, up to LONCAPA #12)</b> |   |
| W 4-Mar   | LONCAPA set #13 DUE   |   |
| Th 5-Mar  | Discuss Ch. 10/11 – Rotation and Angular Momentum           |   |
| Mar 7-15  | <b>Spring Break</b>   |   |
| M 16-Mar  | LONCAPA set #14 DUE   | Lab 6 “Centripetal Force”. Pre-lab exercise due at noon on the day of your lab.                   |
| T 17-Mar  | Discuss Ch. 11/12 – Angular Momentum & Static Equilibrium   |   |
| W 18-Mar  | LONCAPA set #15 DUE   |   |
| Th 19-Mar | Discuss Ch. 12 – Static Equilibrium                         |   |
| M 23-Mar  | LONCAPA set #16 DUE   | Lab 7 “Static Equilib. and Torques”. Pre-lab exercise due at noon on the day of your lab.         |
| T 24-Mar  | Discuss Ch. 8 – Kepler’s Laws and Gravity                   |   |
| W 25-Mar  | LONCAPA set #17 DUE   |   |
| Th 26-Mar | <b>Mini Exam #4</b> ; Discuss Ch. 13 – Oscillations         |   |
| M 30-Mar  | LONCAPA set #18 DUE   | Lab 8 “Simple Pendulum”. Pre-lab exercise due at noon on the day of your lab.                     |
| T 31-Mar  | Discuss Ch. 13 – Oscillations and Resonances                |   |
| W 1-Apr   | LONCAPA set #19 DUE   |   |
| Th 2-Apr  | Discuss Ch. 14 – Waves                                      |   |
| M 6-Apr   | LONCAPA set #20 DUE   | Lab 9 “Simple Harmonic Motion”. Pre-lab exercise due at noon on the day of your lab.              |
| T 7-Apr   | Discuss Ch. 14 – Waves and Resonance                        |   |
| W 8-Apr   | LONCAPA set #21 DUE   |   |
| Th 9-Apr  | <b>Mini Exam #5</b> ; Discuss Ch. 15 – Fluids               |   |
| M 13-Apr  | LONCAPA set #22 DUE   | Lab 10 “Waves and Resonances”. Pre-lab exercise due at noon on the day of your lab.               |
| T 14-Apr  | Discuss Ch. 17 – Ideal Gas Law                              |   |
| W 15-Apr  | LONCAPA set #23 DUE   |   |
| Th 16-Apr | Discuss Ch. 18 – Temperature and Heat                       |   |
| M 20-Apr  | LONCAPA set #24 DUE   |   |
| T 21-Apr  | Discuss Ch. 18 – 1 <sup>st</sup> Law of Thermodynamics      |   |
| W 22-Apr  | LONCAPA set #25 DUE   |   |
| Th 23-Apr | <b>Review for final and Something fun</b>                   |   |

**Syllabus Change Policy:** “Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.”

**Final Exam: Tuesday, April 28, 12:30 - 2:30 pm; Location, TBA**