

PHY 2020: Introduction to principles of physics, Fall 2019

Meetings: MWF 1:55 pm - 2:45 pm (period 7), at NPB 1002.

[Note: **This is NOT an online course.** If you are planning not to attend lectures, there is a PHY 2020 online course which will be better for you.]

Instructor: Khandker Muttalib; NPB 2140; Tel: 392-6699; Email: muttalib@phys.ufl.edu

Office house: (tentative) MWF 12:50 pm – 1:40 pm (periods 6), at NPB 2140.

Teaching Assistant: Alexandria Tucker; NPB 2161; Tel: 352-392-8756; Email: a.tucker@ufl.edu

Office hours: (tentative) Mon and Tues 4 pm – 5 pm, at NPB 2161.

Textbook: Recommended (not required): Conceptual Physics, 12th Ed. By Paul Hewitt (Pearson).

Lecture notes providing outlines of the lectures will be posted on canvas before each lecture. Quizzes and exams will be based on topics covered in the lecture notes.

Purpose of the course: The course is designed for students who do not necessarily have any background in physics. It provides a one-semester overview of some basic concepts, and meets the General Education Physical Science (“P”) requirement (with a grade of C or higher). It might also be useful as preparation for Physics I such as PHY 2053.

Prerequisite knowledge: Basic high school mathematics (algebra, geometry and trigonometry).

Instructional methods: You are expected to attend lectures regularly. There will be daily quizzes, using HITT Clickers, to help your understanding and clarify misconceptions. You are expected to learn the concepts in class, and build your understanding by solving homework and practice problems.

HITT quizzes: You will need to register your HITT clicker at the beginning of the semester. When you respond to a question during class, you will see your remote ID number appear on the screen. The computer will store the response under the remote ID number, but it is up to you to tell us that is your remote ID by registering it at: <http://www.phys.ufl.edu/~hitt/> When registering your remote, you **must** use your UF email address **YourGatorlinkID@ufl.edu** for e-mail. At the same web page, you will find instructions on which type of the remote control is acceptable and how it should be configured. It is your responsibility to ensure that your remote is functioning properly and that you are sending your response on the correct channel.

Setting your Remote to the correct frequency for NPB 1002

Perform the following operation **every time** you come to class to ensure that the H-ITT remote is set to the proper frequency:

1. Press & Hold "down arrow" until light turns red.
2. Press "0" until light flashes green
3. To link to the room receiver for NPB1002: Press "9" until light flashes green
4. Press "down arrow" until light blinks green.
5. Done!

(Alternatively, Softclick is a way of using your phone rather than the remote. It is allowed, but not recommended. If you use "Softclick" to enter your responses, the two-word random code you will need will be provided on the screen projecting the HITT responses.) Please contact John Mocko at mocko@phys.ufl.edu if you have questions or problems.

Clicker questions are multiple-choice, and 20% of the total grade will derive from these HITT quizzes. Each question is worth 2 points for a correct answer, 1 point for incorrect. Total number of points for the semester will be large, maybe 100 or more, then we scale that to 20% of the grade.

Grading policy: Total grade consists of 25% from HITT quizzes, 75% from three during-term exams. The three exams are closed-book and closed-note, but essential formulae will be given. The final letter grades will be assigned according to the following criteria:

A: $\geq 90\%$
A-: 85 – 89 %
B+: 80 – 84 %
B: 70 – 79 %
B-: 65 – 69 %
C+: 60 – 64 %
C: 50 – 59 %
C-: 45 – 49 %
D+: 40 – 44 %
D: 35 – 39 %
D -: 30 – 34%
E: $\leq 29\%$

For current UF grading policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Class attendance and make-ups: Regular class-attendance is expected. Please make sure from the beginning of the course that you are available for the 3 during-term exams. Make-ups for these exams are rare, but will be considered on a case-by-case basis; please contact the instructor. **There is NO make-up for HITT quizzes.** Instead, since clickers can sometimes fail to operate properly, 10% of the total number of quiz questions asked during the semester will be allowed as 'technical drops'. Thus, if 100 total questions are asked, 10 of your lowest scoring responses will be dropped in the final count.

Outline: (Detailed lecture schedule is posted separately)

Part I: Math review, Motion in one and two dimensions, Newton's laws, circular motion.

Part II: Work and energy, gravity, linear and angular momentum, static equilibrium, properties of matter.

Part III: Waves, electricity, magnetism, light.

Goals and objectives: This is a University of Florida General Education course, for which credit may be obtained in the "P" (Physical Sciences) category. The relevant "area objective" is: *The physical and biological sciences provide instruction in the basic concepts, theories and terms of the scientific method. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern biological*

and/or physical systems. You will formulate empirically-testable hypotheses derived from the study of physical processes and living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate the outcomes of experiments.

To achieve these goals, students will be expected to:

- a) analyze particular physical situations, and thus identify the fundamental principles pertinent to the situations
- b) apply principles to particular situations
- c) solve any equations arising from the application of identified principles of physics
- d) communicate results unambiguously

Student Learning Outcomes:

This course will also assess Student Learning Outcomes which can be defined as:

Student Learning Outcomes: Content and Skills

Content: Students demonstrate competence in the terminology, concepts, theories and methodologies used within the discipline.

Communication: Students communicate knowledge, ideas and reasoning clearly effectively in written and oral forms appropriate to the discipline.

Critical Thinking: Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems.

The Student Learning Outcomes will be assessed through many in-class quizzes, and 3 in-class closed-book exams. Quiz and exam questions will cover all subjects covered in lectures. Typical questions will require students to complete successfully all four steps outlined in the area objectives above. Obtaining the correct result to the question posed in the form requested in the question will be taken as evidence that all four of the steps have been correctly and successfully completed. In some questions students will be expected to choose between a series of possible explanations of physical outcomes; such explanations may be presented as graphs, numerically or in words. Although knowledge of the fundamental principles of physics is necessary for success in the course, the stress is on understanding how to apply the principles to a variety of situations; rote memorization is minimal.

Academic Honesty: All University of Florida students are required to abide by the University's Academic Honesty Guidelines and by the Honor Code, which reads as follows:

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

Cheating, plagiarism, or other violations of the Academic Honesty Guidelines will not be tolerated and will be pursued through the University's adjudication procedures.

Special Accommodations: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <http://www.dso.ufl.edu/drc/>) by providing appropriate documentation. Once registered, students will receive an accommodation

letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Counseling: Contact information for the Counseling and Wellness Center is <http://www.counseling.ufl.edu/cwc/Default.aspx/> .

Course evaluation: “Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.”

Updates: As the course progresses, the syllabus may need updating in order to enhance the learning opportunity. Any such changes will be announced in class.