

PHY 2020 INTRODUCTION TO PRINCIPLES OF PHYSICS FALL 2017

ONLINE COURSE FORMAT, 3 CREDIT HOURS

COURSE PROFESSOR: Prof. Sergei Obukhov
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Prof. Obukhov will oversee the course and will be happy to answer questions and meet with students as his schedule permits

COURSE TA: Mr. William Perry
Office: 2323 Physics Building
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Mr. Perry will handle the day-to-day running of the course

OFFICE HOURS: S. Obukhov by appointment
W. Perry, Monday&Thursday, 3:30-4:30 p.m.; or by appointment

COURSE WEBSITE: <http://elearning.ufl.edu> (select the big blue button "e-Learning")

COURSE COMMUNICATIONS: Please post general question to Canvas Discussions. Please send private questions to both Sergei Obukhov and William Perry using Canvas Conversations. You will normally receive a reply within one business day. Canvas Conversations are best used for relatively simple communications. If you have a complex or sensitive concern, it would probably be best to request an in-person or phone meeting.

REQUIRED TEXTS: None.

OPTIONAL TEXTS: (1) Douglas Giancoli, *The Ideas of Physics*, published by Brooks/Cole. (2) Paul Hewitt, *Conceptual Physics*, published by Addison-Wesley. Use of one or other of these textbooks may be helpful, but is not required. Each book has several editions that are basically the same, and many used copies are available. \$20 should buy a decent copy. In general, Hewitt's book is more conceptual with words and pictures, whereas Giancoli is more formal and quantitative. Depending on your learning preferences, you may prefer one book or the other.

PREREQUISITE KNOWLEDGE AND SKILLS: High school math (basic algebra, geometry and trigonometry) is expected.

PURPOSE OF COURSE: The purpose of this course is to expose you, the student, to the foundations and principles of physics—the most basic of the experimental sciences—to give you a greater appreciation of the world around you and how it works. The course is designed for people who do not necessarily have any background in physics. It provides a one-semester overview of the subject and meets the General Education Physical Science (“P”) requirement. It may be useful as preparation for Physics 1 courses such as PHY 2053 and PHY 2048.

INSTRUCTIONAL METHODS: This course runs in the Canvas e-Learning system, which can be accessed at <http://elearning.ufl.edu>. Students are expected to listen to and watch lecture videos (which are interspersed with demonstrations) to receive an introduction to physics principles and concepts. You are asked to build your understanding by solving practice problems and practice quizzes on your own before looking at the solutions. Online quizzes are given at the end of every module to help you stay on-track. Sample exams are available for a last stage of preparation for the three proctored exams. Assistance is available through public discussion forums and private electronic communications, as well as on-campus office hours.

COURSE GOALS AND OBJECTIVES: The short version is that by the end of this course, you will understand basic principles of physics and their applications. You will demonstrate this understanding by successfully solving physics problems. It is easy to remember “ $F = ma$ ”, but unless you learn when to use it and how to apply it, knowing it is of no use!

General Education credit: This course offers University of Florida General Education credit in the Physical Sciences program area, for which the area objective is as follows: “Physical science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment and the relevant processes that govern physical systems. Students will formulate empirically-testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate 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.

General Education credit will be earned only for a grade of C or higher in the course.

Student Learning Outcomes: This course will also assess Student Learning Outcomes covering both 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 16 graded quizzes and 3 graded and proctored examinations. Quiz and exam questions will cover all subjects listed in the syllabus. 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.

COURSE EVALUATION: Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations will be open toward the end of the semester and students will be informed at that time. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

COURSE POLICIES

ATTENDANCE POLICY: Since the course is online, you can work at your own pace provided that you complete all quizzes and exams by the deadlines set in the course schedule below. Generally, you can work ahead on all quizzes leading up to the next exam.

QUIZZES: Quizzes may be taken online at any time between the opening of the quiz and 9:00 p.m. on the day before the next exam is scheduled. However, quizzes submitted late (after 9:00 p.m. on the quiz due date) will receive only 50% of the credit that the same answers would have received for an on-time submission. It is in your best interest to submit all quizzes on time.

EXAMS: Exams are taken online under the supervision of ProctorU during a window specified in the course schedule below. You need both to *register* with ProctorU and to *schedule* each exam with ProctorU at least 72 hours (3 days) ahead of time. Details are in the introductory material.

MAKE-UPS: Please make sure from the beginning of the course that you are available to take each of the three exams on its scheduled date. Make-ups are rare but will be considered on a case-by-case basis, consistent with university policies that can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Please contact the instructor.

COURSE TECHNOLOGY: In order to take exams under the supervision of ProctorU, you need access to a computer with a video camera, a microphone, and a good internet connection, located in a quiet room where you can take the exams in privacy. Interruptions in the internet connection or entry of other persons into the room will be reported by ProctorU and investigated to ensure the academic integrity of the exam.

MATERIALS AND SUPPLIES FEES: None.

UF POLICIES

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

NETIQUETTE – COMMUNICATION COURTESY: All members of the class are expected to follow rules of common courtesy in all emails, conversations, discussions, and chats. See <http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>.

STUDENT COMPLAINTS PROCESS: UF has information on the complaints processes for residential students (see https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf) and for distance learning students (see <http://www.distance.ufl.edu/student-complaint-process>).

GETTING HELP

For technical difficulties for e-Learning in Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

Any requests for make-ups due to technical issues *must* be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You *must* e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

GRADING POLICIES:

Information on current UF grading policies for assigning grade points can be found in the Undergraduate Catalog; see

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Grades in the course are awarded based on an overall course score made up as follows:

| Assignment | Percentage of course total |
|-----------------|----------------------------|
| 16 quizzes | 10% combined |
| 3 exams | 90% (30% for each exam) |
| 1 course survey | 2% |

| | | |
|-----------------------|-----|----|
| GRADING SCALE: | 76% | A |
| | 71% | A- |
| | 66% | B+ |
| | 61% | B |
| | 56% | B- |
| | 51% | C+ |
| | 46% | C |
| | 41% | C- |
| | 36% | D+ |
| | 31% | D |
| | 26% | D- |

This grading scale, which may seem generous, takes account of the fact that scores on "fill-in-the-blank" tests are typically lower than scores on multiple-choice tests.

Scores on each test and quiz will appear automatically in the Canvas gradebook ("Grades" in the left margin of the Canvas page) so students can calculate their projected grade at any time:

- "Quizzes" = (points earned on quizzes) / (points available on quizzes attempted) x 100%
- "Exams" = (points earned on exams) / (points available on exams attempted) x 100%
- "Total" = 0.1 x (Quizzes %) + 0.9 x (Exams %) + 0.02 x (Extra Credit %)

Note that any late penalties on quizzes will be applied only after each quiz has closed.

The only extra credit planned is for a mid-course survey. Individual extra credit assignments will not be allowed out of fairness to other students.

COURSE SCHEDULE:

Monday August 21 **COURSE OPENS**

| | | | |
|-----------|--------|--|--|
| Monday | Aug 28 | Quiz 1 due | Introduction to Physics |
| Thursday | Aug 31 | Quiz 2 due | Vectors and Geometry |
| Thursday | Sep 7 | Quiz 3 due | Description of Motion and Falling Bodies |
| Thursday | Sep 14 | Quiz 4 due | Newton's Laws |
| Monday | Sep 21 | Quiz 5 due | Circular Motion and Newtonian Gravity |
| Monday | Sep 28 | Quiz 6 due | Work and Energy |
| Wednesday | Oct 4 | Quizzes 1-6 close | |
| Thursday | Oct 5 | EXAM 1 | Covers Modules 1-6 |
| | | Any two-hour slot starting between 8 a.m. and 9 p.m. | |
| Monday | Oct 12 | Quiz 7 due | Momentum |
| Monday | Oct 19 | Quiz 8 due | Rotational Motion and Equilibrium |
| Thursday | Oct 26 | Quiz 9 due | Structure of Matter |
| Tuesday | Oct 30 | Quiz 10 due | Fluids and Archimedes' Principle |
| Wednesday | Nov 1 | Quizzes 7-10 close | |
| Thursday | Nov 2 | EXAM 2 | Covers Modules 7-10 |
| | | Any two-hour slot starting between 8 a.m. and 9 p.m. | |
| Monday | Nov 7 | Quiz 11 due | Temperature and Heat |
| Thursday | Nov 10 | Quiz 12 due | Waves and Sound |
| Monday | Nov 15 | Quiz 13 due | Electrostatics |
| Monday | Nov 22 | Quiz 14 due | Electric Currents |
| Thursday | Nov 29 | Quiz 15 due | Magnets and Magnetism |
| Monday | Dec 6 | Quiz 16 due | Light Rays |
| Wednesday | Dec 10 | Quizzes 11-16 close | |
| Thursday | Dec 11 | EXAM 3 | Covers Modules 1-16 |
| | | Any two-hour slot starting between 8 a.m. and 9 p.m. | |

All times are Eastern time. All quiz deadlines are at 9:00 p.m.

DISCLAIMER: This syllabus represents the instructor's current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.