

PHY2060 Syllabus

PHY 2060 - Enriched Physics 1 - FALL 2021

Periods 4 & 5 class number 18480

INSTRUCTOR: G. R. Stewart, NPB2132, 352 392 9263, stewart@phys.ufl.edu

OFFICE HOURS

M, 2:00 – 3:00 pm, via Zoom at 983 0380 0226 (passcode 201405). F2F (face to face) Tuesday, 9-10 am, in my office NPB 2132. Or other times, either Zoom or F2F, by appointment.

Invite link: <https://ufl.zoom.us/j/98303800226?pwd=T1FRdDdNQFTNUIwdUVna3ZZZWNIz09>

Class web site on Canvas at eLearning: <https://elearning.ufl.edu/>

Objectives/Goals

PHY2060 is an introductory course in mechanics, covering aspects of kinematics and dynamics (both linear and rotational), conservation laws, harmonic motion, and special relativity. Students should learn these subjects, and be able to apply their knowledge to problems in mechanics.

MEETINGS

Tuesday 10:40 am - 12:35 pm (periods 4+5), NPB 1011

Thursday, 10:40 am – 12:35 pm NPB 1002 (note room change from Tuesday's class)

TEXTBOOK

Resnick, Halliday, Krane: Physics, Volume 1 [5th Edition, Wiley, ISBN 978-0-471-32057-9].

READING ASSIGNMENTS

You are expected to read the material to be covered in each lecture before coming to the class. The lectures will cover a lot of material listed in the schedule, but they are not designed to be a substitute for the text. The lectures will consist mainly of illustrating concepts with experiments and demonstrations, discussing additional material omitted in the text, pointing out subtle points and common mistakes, and asking questions to find out and clarify misconceptions. The homework and exams will be based on materials covered in lectures as well as those listed in the schedule.

EXPECTATIONS

The course will cover a lot of novel material, and you should be prepared to invest a substantial amount of time. There will be a large number of conceptual questions in homework and exams, and memorization of problems will not help to earn a good grade.

Further Content: Grading Method, Schedule of Lectures, Homework

Grading METHOD

Grading will be based on an absolute point scale from 0 to 100. The letter grade assignment will be based on the student's total point score. Points will be assigned for homework (max 20 points), and exams (max 80 points). The conversion to letter grades will be done using the following conversion table after rounding the total number of points to zero decimal places.

Letter Grade	Point Range
A	≥ 85
A-	≥ 78
B+	≥ 71
B	≥ 65
B-	≥ 58
C+	≥ 51
C	≥ 45
C-	≥ 42
D+	≥ 38
D	≥ 35
D-	≥ 30
E	< 30

HOMEWORK

Homework is assigned weekly, and will be communicated via reference to the Canvas web site for our class. Cooperation on homework is permitted and discussion of problems among students is encouraged. The instructor will not solve homework problems until after the due date for the homework assignment, although you may pose questions and the instructor may give some cryptic hints. Each homework set carries a maximum score of 10 points. The final homework score is calculated as an average of all homework scores, dropping the 2 worst homeworks.

EXAMS

In addition to the final exam, two other in-class exams will be administered. These will cover significant chunks of the class material. Each exam will carry a maximum score of 80 points. The final exam will also carry a maximum score of 80 points. The total score for exams will be computed based on the formula:

$$0.33* [E1 + E2 + F]$$

where E1, E2, and F are the scores on the two 'midterm' exams and final, respectively.

SCHEDULE OF LECTURES (tentative)

The schedule below lists the topics planned for each lecture, cross-referenced to the text, as well as the date of each exam. This schedule is likely to evolve. It is your *responsibility* to be aware of any changes announced in class. (Many announcements will also be posted on the Web.)

Lecture #	Date	Section# from Text
1	8/24	First class: Units (Chap. 1); Motion in one dimension (Secs. 2-3 to 2-6)
2	8/26	Force and Newton's laws (Secs. 3-2 to 3-8)
3	8/31	Reference frames and relative motion (Secs 3-2, 4-6), Projectile motion (Secs. 4-1, 4.3)
4	9/02	Projectile motion (Secs 4-3 and 4.4), Uniform circular motion (Sec 4.5)
5	9/07	Uniform circular motion (Sec 4.5),
6	9/9	Tension, normal forces and frictional forces (Secs 5-2, 5-3)
7	9/14	Uniform circular motion (Sec 5-4), Linear momentum and impulse (Secs 6-2, 6-3)
8	9/16	Conservation of Momentum, One dimensional collisions (Secs 6-4, 6-5)

9	9/21	Many-particle Systems (Secs 7-3, 7-4)
10	9/23	Many-particle Systems (Secs 7-5, 7-6)
11	9/28	Rotational Kinematics (Secs 8-1 to 8-6)
Exam 1	9/30	Exam in class
12	10/05	Torque and Rotational Inertia (Secs 9-1 to 9-4)
13	10/07	Rotational Dynamics (Secs 9-5 to 9-8)
14	10/12	Conservation of Angular Momentum (Secs 10-1 to 10-5)
15	10/14	Work, Energy and Power (Secs 11-1 to 11-3), Work Done by a Variable Force (Sec 11-4)
16	10/19	The Work-Energy Theorem (Secs 11-6 to 11-8)
17	10/21	Potential Energy (Secs 12-1 to 12-5)
18	10/26	Conservation of Energy (Secs 13-1 to 13-5)
19	10/28	Gravitation (Secs 14-2 to 14-7)
20	11/2	Simple Harmonic Oscillations (Secs 17-1 to 17-4)
21	11/4	Real Harmonic Oscillations (Secs 17-5, 17-7 and 17-8)
22	11/09	Review
	11/11	Exam 2
23	11/16	Postulates of special relativity (Sec 20-2)
24	11/18	Time dilation and length contraction (Sec 20-3)
	11/23- 25	Thanksgiving
25	11/30	The Lorentz transformation (Secs 20-4 to 20-7)
26	12/2	Review
27	12/7	Last day of class
Final Exam		<ul style="list-style-type: none"> Class #18480, meets 4,5th periods: Wednesday Dec 15, 7:30–9:30 am

Homework Assignments

Homework assignments earn up to 20 of the total 100 points of the grade score. Homework assignments are given out each Tuesday during lecture (or available on Elearning) and are due the following Tuesday at the start of class (electronic submission). Homework grading will be done in such a way that two worst homework scores are ignored in the computation of the final score. Therefore, there will be no extensions or makeup homework assignments. The only exception is long-term illness which will be reviewed on a case by case basis.

Homework Due Dates

Set	Homework Subject	Due Date
Homework 1	Chap. 2	Aug 31, 2021
Homework 2	Chaps. 2,3,4	Sept 2, 2021
Homework 3	Chap. 4, Chap. 5	Sep 9, 2021
Homework 4	And so on.	Sep 16, 2021

Further important information:

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

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/>.

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. 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.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Phone numbers and contact sites for university counseling services and mental health services: <http://www.counseling.ufl.edu/cwc/Default.aspx>; 392-1575, University Police Department 392-1111 or 9-1-1 for emergencies.

Diversity/inclusion:

Physics is practiced and advanced by a scientific community of individuals with diverse backgrounds and identities and is open and welcoming to everyone. The instructional team recognizes the value in diversity, equity and inclusion in all aspects of this course. This includes, but is not limited to differences in race, ethnicity, gender identity, gender expression, sexual orientation, age, socioeconomic status, religion and disability. Students may have opportunities

to work together in this course. We expect respectful student collaborations such as attentive listening and responding to the contributions of all teammates.

Physics, like all human endeavors, is something that is learned. Our aim is to foster an atmosphere of learning that is based on inclusion, transparency and respect for all participants. We acknowledge the different needs and perspectives we bring to our common learning space and strive to provide everyone with equal access. All students meeting the course prerequisites belong here and are well positioned for success.

In class recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040