



**HOUSTON COMMUNITY COLLEGE
CENTRAL COLLEGE
PHYSICS 2325: University Physics I
Fall 2018
Class Number 11334**

Time: 11:00 am – 12:20 pm, Mondays and Wednesdays

Location: CE – Learning Hub Building, Room 314

Textbook: *Fundamentals of physics*, 10th edition, by Halliday, Resnick, and Walker

Instructor: Aaron Marks

Email: aaron.marks@hccs.edu

Office Hours: By appointment only

Learning Web Page:

Important course materials such as this syllabus, the homework schedule and exam reviews can be found on my learning web page. (<http://learning.hccs.edu/faculty/aaron.marks>)

Course Description:

Prerequisites: Must have completed MATH 2413 or higher.

Fundamental principles of physics, using calculus, for science, computer science, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving.

Homework Assignments: Problems are assigned from the text after every chapter is covered. Students are strongly advised to attempt all these selected problems and other problems from the text. In general, students who fail to do these assigned problems will not do well in the course. *Homework assignments are to be turned in at the start of class on the day they are due to be counted for full credit.* Late homework is accepted for half credit (until the date of the final class session before the final exam). Homework can be done collaboratively but every student is responsible for submitting their own solutions. All work necessary in obtaining a solution should be shown to receive full credit.

Exam Procedures: During exams, all book bags, satchels, cellphones, notebooks, laptops etc. will be placed at the side of the desk. Visits to the restroom will be limited. All exams are closed book and note. An equation sheet will be provided for each exam. The purpose of the exam is to test knowledge of the principles and theories presented during class. Exam problems will be similar (*not the same!*) as examples worked during class or problems from the homework. Exam grades will be curved. *No exam grade is ever dropped!*

Make-up Exams: *There are no make-up exams*, therefore, make every effort to take exams on their scheduled date. *If an exam is missed, a zero will be recorded for that exam grade!!* In extremely rare circumstances, if a valid excuse has been approved (by the instructor), the corresponding section on the final exam will count as both parts of your final exam grade as well as the missed exam grade. Should you miss more than one exam, you will be dropped from the course.

Academic Responsibility: Please refer to the Student Handbook concerning grievances, complaints, discipline (including student conduct), and scholastic dishonesty and student rights.

Cell phones and beepers: All cell phones and pagers should be set on “silent” or “vibrate” during class times. If a student is observed talking, texting, playing games, etc. on a cell phone during class they may be asked to leave.

Recording: Absolutely no recording of any sort unless otherwise recommended by ADA office.

Final course grade:

The final grade is based on the total possible score of 100%, which the student can accumulate from all tests, class work, homework, and the final exam. Exam grades will be curved however homework, laboratory and the total class grade are generally not curved. *Extra credit is not given for any reason.*

Grading Scale:

Three Mid-Term Exams (19% each):	57%
Homework:	18%
Final Exam (mandatory):	25%

Grading Scale: A = 90 – 100%
B = 80 – 89%
C = 70 – 79%
D = 60 – 69%
F > 60

Withdrawal Policy:

Be certain you understand HCC policies about dropping a course. It is your responsibility to withdraw officially from a class and prevent an “F” from appearing on your transcript. When considering withdrawal from a course, remember that:

- No grade is given and your transcript reflects no record of the course if you withdraw before the Official Date of Record.
- A “W” (indicating withdrawal) appears on your transcript if you drop a course after the Official Date of Record and before the final deadline.
- The final deadline to drop a course is four weeks before fall or spring semester finals and one week before summer semester exams

Attendance Policy:

HCC’s Attendance Policy is stated in Students Handbook as follows: *“You are expected to attend all lecture classes and labs regularly. You are also responsible for materials covered during your absences. Instructors may be willing to consult with you for make-up assignments, but it is your responsibility to contact the instructor. Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. You may be dropped from a course after accumulating absences in excess of 12.5 percent of the total hours of instruction (lecture and lab). For example:*

- *For a three credit-hour lecture class meeting three hours per week (48 hours of instruction), you can be dropped after six hours of absence.*
- *For a four credit-hour lecture/lab course meeting six hours per week (96 hours of instruction), you can be dropped after 12 hours of absence.”*

If circumstances significantly prevent you from attending classes, please inform the instructor.

Disability Support Services (DSS):

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <http://www.hccs.edu/district/students/disability-services/>

TITLE IX OF THE EDUCATION AMENDMENTS OF 1972, 20 U.S.C. A§ 1681 ET. SEQ.

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status-in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to: David Cross, Director EEO/Compliance at (713) 718-8271 or Institutional.Equity@hccs.edu

Campus Carry:

At HCC the safety of our students, staff, and faculty is our first priority. As of August 1, 2017, Houston Community College is subject to the Campus Carry Law (SB11 2015). For more information, visit the HCC Campus Carry web page at <http://www.hccs.edu/district/departments/police/campus-carry/>

Tentative Class Schedule:

This is a rough outline of the expected course content. Anything and everything is subject to change. A "Q" in front of a homework problem denotes the problem is in the "Questions" section at the end of each chapter, otherwise all problems come from the "Problems" section at the end of each chapter. Late homework is accepted but at half credit.

Date	Topic	Chapter	Homework
8/27	Introduction, Units	1	Hwk 1: due 9/5 Ch.1: 3, 12, 15, 21, 23, 41, 54
8/29	Position, Velocity, Acceleration	2	
9/3	No Class		
9/5	Motion in 1D	2	Hwk 2: due 9/12 Ch.2: 1, 5, 11, 15, 25, 28, 44, 48, 49, 54a
9/10	Vectors	3	Hwk 3: due 9/17 Ch.3: Q2, 3, 7, 13, 17, 22, 23, 27
9/12	Motion in 2D	4	Hwk 3: due 9/19 Ch.4: Q5, Q17, 3, 16, 22, 28, 43, 90

9/17	Newton's Laws	5	Hwk 4: due 9/24 Ch.5: Q3, 3, 7, 17, 29, 34, 45, 49, 57, 78
9/19	Friction	6	
9/24	Circular Motion	6	Hwk 5: due 9/26 Ch. 4: 56, 59 Ch.6: 6, 13, 16, 19, 25, 27, 42, 43, 51, 70
9/26	Work and Energy	7	Hwk 7: due 10/10 Ch.3: 41 Ch.7: Q3, 2, 8, 14, 18, 19, 27, 31, 35, 43, 55
10/1	Review 1		
10/3	Exam 1	Ch. 1 – 6	
10/8	Conservation of Energy	8	Hwk 8: due 10/15 Ch.8: Q5, 1, 3, 7, 18, 24, 31, 55, 86, 100
10/10	Momentum and Impulse	9	
10/15	Collisions	9	Hwk 9: due 10/22 Ch.9: Q3, 2, 19, 25, 26, 51, 54, 60, 74, 86, 101
10/17	Rotational Kinematics	10	
10/22	Rotational Dynamics	10	Hwk 10: due 10/29 Ch.10: 1, 4, 10, 11, 22, 25, 35, 38, 43, 51, 71, 81, 93
10/24	Rolling motion	11	
10/29	Review 2		
10/31	Exam 2	Ch. 7 – 10	
11/5	Angular Momentum	11	Hwk 11: due 11/12 Ch.11: Q5, 2, 9, 21, 24, 25, 28, 37, 38, 44, 51, 60
11/7	Static Equilibrium	12	Hwk 12: due 11/14 Ch.12: Q7, 10, 17, 20, 23, 28, 64, 68
11/12	Gravitation	13	Hwk 13: due 11/19 Ch.13: Q4, 3, 6, 17, 31, 36, 43, 53, 61, 63, 85
11/14	Fluids	14	Hwk 14: due 11/21 Ch.14: 3, 6, 10, 14, 28, 32, 35, 52, 59, 64, 77
11/19	Oscillatory Motion	15	Hwk 15: due 11/26 Ch.15: Q7, 6, 9, 17, 29, 30, 33, 47, 58, 115
11/21	Temperature and Heat	18	Hwk 16: due 12/3 Ch. 18: Q11, 4, 10, 17, 23, 27, 31, 36, 43, 44
11/26	Review 3		
11/28	Exam 3	Ch. 11 – 14	
12/3	Kinetic Theory	19	Hwk 17: due 12/5 Ch. 19: 4, 7, 21, 24, 25, 35, 39, 42, 47, 72
12/5	Final Review		Last day to submit late homework!
12/10	Final Exam	Ch. 1 – 15, 18, 19	

Problem Solving in Physics:

Physics is a lot like driving or swimming - you have to learn by doing it. You could read a book on driving and memorize every word in it, but when you are behind the wheel the first time you are going to have hard time to coordinate what you memorize in practice. After some training you will find that driving is the easiest thing to do. Similarly, you can read your text book and/or your note book carefully; memorize every equation and formula in it but when you finish you still have not learned physics. To learn physics you have to go beyond passive reading; you have to interact with physics and experience it by doing (solving) problems. Below is presented a brief summary of problem solving steps in physics. The suggestions should help to develop a systematic approach in problem solving. It should be underlined that at the outset that there is no recipe for solving problems in physics --- it is a creative activity. In fact the opportunity to be creative is one of the attractions in physics. The following suggestions then are not intended as a rigid set of steps that must be followed like steps in computer programming. Rather, they provide a general guideline that experienced problem solvers find to be effective.

Read the problem carefully Before you can solve a problem you need to know exactly what information it gives and what it asks you to determine. This is essential first step in problem solving.

Sketch the system You may say that this is not that important. It is important and worth doing it. A sketch helps you to acquire a physical feeling for what is going on. It also provides an opportunity to label those quantities that are known and those that are not determined. A good sketch is often the key to determining how to go about solving a problem.

Visualize the physical process This may be the most difficult, but at the same time the most creative, part of the problem -solving process. From your sketch and visualization, try to identify the physical process at work in the system. Then develop a strategy -a game plan - for solving the problem.

Identify appropriate equations Once a plan/strategy has been developed, find the appropriate equations to carry it out.

Solve the equations Use basic algebra to solve the equations identified in the previous step. Work with variables at first only substituting numerical values near the end of the calculations.

Check your answers Once you have an answer, check to see if it makes sense: (i) Does it have the right dimension? If you determine force the dimension should not be in seconds! (ii) Is the numerical value reasonable? 10/100 should not give a 1000!!!

Explore limits/special cases

Finally, it is tempting to look for shortcuts when doing a problem -- to look for a formula that seems to fit and some numbers to plug into it. It may seem harder to think ahead, to be systematic as you solve the problem, and then to think back over what you have done at the end of the problem. The extra effort is worth it, however, because by doing these things you will develop powerful problem - solving skills that can be applied to unexpected problems you may encounter on exams --- in life in general!!