

UC 12315 135

CBM003 ADD/CHANGE FORM

Undergraduate Council
 New Course Course Change
 Core Category: Life/Phys Sci Effective Fall ~~2013~~ 2014

or

Graduate/Professional Studies Council
 New Course Course Change
 Effective Fall 2013

1. Department: Physics College: NSM

APPROVED SEP - 4 2013

2. Faculty Contact Person: Donna Stokes Telephone: 3-3588

Email: dstokes@uh.edu

M.M.

3. Course Information on New/Revised course:

RECEIVED APR - 4 2013

• Instructional Area / Course Number / Long Course Title:
PHYS / 1321 / University Physics I

• Instructional Area / Course Number / Short Course Title (30 characters max.)
PHYS / 1321 / UNIVERSITY PHYSICS I

• SCH: 3.00 Level: FR CIP Code: 40.0801.00 Lect Hrs: 3 Lab Hrs: 0

4. Justification for adding/changing course: To meet core curriculum requirements

5. Was the proposed/revised course previously offered as a special topics course? Yes No

If Yes, please complete:

• Instructional Area / Course Number / Long Course Title:

____ / ____ / ____

• Course ID: ____ Effective Date (currently active row): ____

6. Authorized Degree Program(s): BA/BS

• Does this course affect major/minor requirements in the College/Department? Yes No

• Does this course affect major/minor requirements in other Colleges/Departments? Yes No

• Can the course be repeated for credit? Yes No (if yes, include in course description)

7. Grade Option: Letter (A, B, C ...) Instruction Type: lecture ONLY (Note: Lect/Lab info. must match item 3, above.)

8. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title

PHYS / 1321 / University Physics I

• Course ID: ____ Effective Date (currently active row): ____

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)

Cr: 3. (3-0). Prerequisites: Credit for or concurrent enrollment in MATH 1432. Description (30 words max.): Primarily for science and engineering majors. Credit may not be applied toward degree for both PHYS 1321 and 1301. Mechanics of one- and two-dimensional motion, dynamics, energy, momentum, rotational dynamics and kinematics, statics, oscillations, and waves.

10. Dean's Signature: _____ Date: _____

Print/Type Name: _____

REQUEST FOR COURSES IN THE CORE CURRICULUM

Originating Department or College: Physics/NSM

Person Making Request: Donna Stokes

Telephone: 713-743-3588

Email: dstokes@uh.edu

Dean's Signature: _____

Date: [Click here to enter text.](#)

Course Number and Title: Phys 1321 University Physics I

Please attach in separate documents:

Completed CBM003 Add/Change Form with Catalog Description

Syllabus

List the student learning outcomes for the course (Statements of what students will know and be able to do as a result of taking this course. See appended hints for constructing these statements):

Upon completion of this course, students will be able to (1) master the physical concepts of force and energy; (2) apply these to obtain solutions to technical problems; use this scientific foundation to continue studies in more advanced courses in science and engineering. (3) convey knowledge of the principles of physics and be able to use these principles to solve problems; (4) take a real life problem and use physical principles and mathematical tools to describe the problem.

Component Area for which the course is being proposed (check one):

***Note:** If you check the Component Area Option, you would need to also check a Foundational Component Area.

Communication

American History

Mathematics

Government/Political

Science

Language, Philosophy, & Culture

Social & Behavioral Science

Creative Arts

Component Area Option

Life & Physical Sciences

Competency areas addressed by the course (refer to appended chart for competencies that are required and optional in each component area):

X Critical Thinking

X Teamwork

X Communication Skills

Social Responsibility

X Empirical & Quantitative Skills

Personal Responsibility

Because we will be assessing student learning outcomes across multiple core courses, assessments assigned in your course must include assessments of the core competencies. For each competency checked above, indicated the specific course assignment(s) which, when completed by students, will provide evidence of the competency. Provide detailed information, such as copies of the paper or project assignment, copies of individual test items, etc. A single assignment may be used to provide data for multiple competencies.

Critical Thinking:

Problems/questions which require critical thinking skills will be included in homework assignments. Homework assignments are assigned through Wiley Plus, the online homework system associated with the textbook used for the course. Sample homework problems/questions are included.

Problems and questions which require critical thinking will also be included on examinations for the course.

Communication Skills:

Communication skills will be assessed through essay/short answer questions and/or problems assigned through the Wiley Plus online homework system.

Empirical & Quantitative Skills:

Empirical and quantitative skills will be assessed through essay/ short answer questions and/or problems assigned through the Wiley Plus online homework system and/or exams for the course.

Teamwork:

Peer instruction using personal response devices (clickers) will be used to administer concept tests consisting of 2-3 short multiple-choice conceptual questions will be used to assess teamwork. Concept questions are asked to the class as a whole and each student chooses an answer. The students are encouraged to share their opinions on the problem with their peers in small groups of 2-3 people. Each student is allowed the opportunity to explain their answer and engage in discussion if their answers are different. The question is asked a second time and students select their answer. The correct answer is revealed and a distribution of the solutions chosen is shown. This allows the instructor as well as the student the opportunity to see where misconceptions may be occurring, how the student grasp the concepts and how well the student work together. A sample concept test is included.

Teams consisting of 5-8 people will be assigned to create a study guide for each of the 4 exams for the course. The study guides will be posted in Blackboard and students will be able to choose the study which is best for use to prepare for the exam. Each group will have to work together to determine what will be included on the study guide and the best format for presenting it to the students.

Social Responsibility:

Click here to enter text.

Personal Responsibility:

Click here to enter text.

Will the syllabus vary across multiple section of the course? Yes No

If yes, list the assignments that will be constant across sections:

Click here to enter text.

Inclusion in the core is contingent upon the course being offered and taught at least once every other academic year. Courses will be reviewed for renewal every 5 years.

The department understands that instructors will be expected to provide student work and to participate in university-wide assessments of student work. This could include, but may not be limited to, designing instruments such as rubrics, and scoring work by students in this or other courses. In addition, instructors of core courses may be asked to include brief assessment activities in their course.

Dept. Signature: _____

The following courses have been reviewed and approved by the NSM Curriculum Committee to meet the new core requirements. Given the length of the individual submissions I have elected to submit these requests by electronic means only.

Natural Sciences: Core Courses

BIOL 1309 – Human Genetics and Society

BIOL 1310 – General Biology

BIOL 1320 – General Biology

BIOL 1361 - Introduction to Biological Science I

BIOL 1362 - Introduction to Biological Science II

CHEM 1301 – Foundations of Chemistry

CHEM 1331 – Fundamentals of Chemistry I

CHEM 1332 – Fundamentals of Chemistry II

GEOL 1302 - Introduction to Global Climate Change

GEOL 1330 - Physical Geology

GEOL 1340 - Introduction to Earth Systems

GEOL 1350 - Introduction to Meteorology

GEOL 1360 - Introduction to Oceanography

GEOL 1376 - Historical Geology

PHYS 1301 - Introductory General Physics I

PHYS 1302 - Introductory General Physics II

~~PHYS 1321 - University Physics I~~

PHYS 1322 - University Physics II

Mathematics: Core Courses

MATH 1310 – College Algebra

MATH 1311 – Elementary Mathematical Modeling

Math/Reasoning: Core Courses

COSC 1306 – Computer Science and Programming

MATH 1330 - Precalculus

MATH 1431 - Calculus I

MATH 1432 - Calculus II

MATH 2311 - Introduction to Probability and Statistics

Writing in the Disciplines: Core Courses

BCHS Biochemistry Lab II

BIOL 3311 - Genetics Lab

PHYS 3313 - Advanced Lab I



Ian Evans

Associate Dean

4/4/13

Physics 1321 – University Physics I

Sample Concept test (clicker questions) for chapter covering Motion in 2- and 3-D

1. Which one of the following statements concerning the displacement of an object is false?
 - a) Displacement is a vector quantity that points from the initial position of an object to its final position.
 - b) The magnitude of an object's displacement is always equal to the distance it traveled from its initial position to its final position.
 - c) The magnitude of an object's displacement is the shortest distance from its initial position to its final position.
 - d) The direction of an object's displacement is indicated by an arrow that begins on the initial position of the object and ends on its final position.

2. A professional golfer's club strikes a ball on a tee and launches the ball at an angle of 40° . Which one of the following statements concerning the acceleration of the ball is true, if the effects of air resistance are ignored?
 - a) While the ball is in the air, its acceleration is zero m/s^2 .
 - b) At the highest point of the ball's flight, its acceleration is instantaneously equal to zero m/s^2 .
 - c) As it is rising, its acceleration decreases from 9.8 m/s^2 to zero m/s^2 at its highest point.
 - d) The acceleration is equal to $(9.8 \text{ m/s}^2)(\sin 40^\circ) = 6.3 \text{ m/s}^2$.
 - e) While the ball is in the air, its acceleration is 9.8 m/s^2 .

3. A bicycle racer is traveling at constant speed v around a circular track. The centripetal acceleration of the bicycle is ac . What happens to the centripetal acceleration of the bicycle if the speed is doubled to $2v$?
 - a) The centripetal acceleration increases to $4ac$.
 - b) The centripetal acceleration decreases to $0.25 ac$.
 - c) The centripetal acceleration increases to $2ac$.
 - d) The centripetal acceleration decreases to $0.5ac$.
 - e) The centripetal acceleration does not change.

Physics 1321 – University Physics I
Sample Homework/Exam Problems

Short Answer/Essay

1. Figure 2-19 gives the velocity of a particle moving along the x axis. Point 1 is at the highest point on the curve; point 4 is at the lowest point; and points 2 and 6 are at the same height. What is the direction of travel at (a) (3 points) time $t = 0$ and (b) (2 points) point 4? (c) (3 points) At which of the six numbered points does the particle reverse its direction of travel? (d) (2 points) Rank the six points according to the magnitude of the acceleration, greatest first.

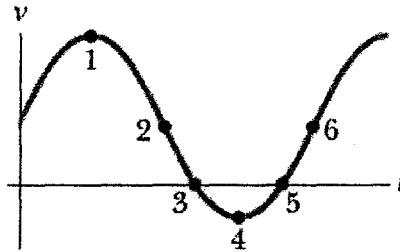
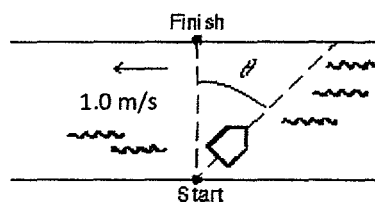


FIGURE 2-19

Problem

1. A red train traveling at 72 km/h and a green train traveling at 144 km/h are headed toward each other along a straight, level track. When they are 950 m apart, each engineer sees the other's train and applies the brakes. The brakes slow each train at the rate of 1.0 m/s^2 . Is there a collision? If so, answer yes and give the speed of the red train and the speed of the green train at impact, respectively. If not, answer no and give the separation between the trains when they stop.
2. A girl wishes to swim across a river to a point directly opposite as shown. She can swim at 2.0 m/s in still water and the river is flowing at 1.0 m/s . At what angle θ with respect to the line joining the starting and finishing points should she swim?



Multiple Choice

1. An object is shot from the back of a railroad flatcar moving at 40 km/h on a straight horizontal road. The launcher is aimed upward, perpendicular to the bed of the flatcar. The object falls:
 - A) in front of the flatcar
 - B) behind the flatcar
 - C) on the truck
 - D) either behind or in front of the flatcar, depending on the initial speed of the object
 - E) to the side of the flatcar
2. An airplane makes a gradual 90° turn while flying at a constant speed of 200 m/s. The process takes 20.0 seconds to complete. For this turn the magnitude of the average acceleration of the plane is:
 - A) zero
 - B) 40 m/s^2
 - C) 20 m/s^2
 - D) 14 m/s^2
 - E) 10 m/s^2
3. A girl jogs around a horizontally circle with a constant speed. She travels one fourth of a revolution, a distance of 25 m along the circumference of the circle, in 5.0 s. The magnitude of her acceleration is:
 - A) 0.31 m/s^2
 - B) 1.3 m/s^2
 - C) 1.6 m/s^2
 - D) 3.9 m/s^2
 - E) 6.3 m/s^2



UNIVERSITY of HOUSTON

COLLEGE OF NATURAL SCIENCES & MATHEMATICS

HTTP://NSM.UH.EDU

COURSE TITLE/SECTION: Physics 1321 University Physic I/Class Number #####

TIME: class time and days

LOCATION: Building and room number

FACULTY: Professor's name

OFFICE HOURS:

Day and time and by appointment
Science and Research #1, Rm. ####

E-mail: email@uh.edu

Phone: (713) 743-3###

FAX: (713) 743-3589

I. Course: Physics 1321 - University Physics I

- A. Catalog Description:** Primarily for science and engineering majors. Mechanics of one- and two-dimensional motion, dynamics, energy, momentum, rotational dynamics and kinematics, statics, oscillations, and waves.
- B. Prerequisites:** Credit for or concurrent enrollment in MATH 1432, Calculus II. Credit may not be applied toward a degree for University Physics I, PHYS 1321 and General Physics I, PHYS 1301.

- II. Course Learning Objectives:** The objective of this course is to learn the principles of mechanics through application of Newton's laws, understand the concept of energy and be able to apply these concepts to describe the motion of objects.

Upon completion of this course, students will be able to:

1. master the physical concepts of force and energy;
2. be able to apply these to obtain solutions to technical problems;
3. use this scientific foundation to continue studies in more advanced courses in science and engineering.

Other learning outcomes include:

1. Students completing this course will be able to convey knowledge of the principles of physics and be able to use these principles to solve problems.
2. Students will be able to take a real life problem and use physical principles and mathematical tools to describe the problem.

III. **Course Content:** This course will cover chapters 1-17 which include the following topical areas:

1. Vectors
2. Newtonian Mechanics: Motion in 1-D, 2-D and 3-D
3. Newton's Laws: Force and Motion
4. Work and Energy
5. Momentum and Collisions
6. Noninertial Reference Systems
7. Rotational of Rigid Bodies
8. Gravity
9. Fluids
10. Oscillations about Equilibrium
11. Waves

IV. **Course Structure:**

The web address for the class is www.yourclasswebaddress.

V. **Textbooks:**

Fundamentals of Physics, 9th edition, by Halliday, Resnick and Walker. Binder version with access code to Wiley Plus is available at the UH bookstore. The access code with or without an e-book is available at <http://www.wileyplus.com/>.

VI. **Course Requirements**

A. **Reading Assignments:** Reading quizzes covering the material from the reading assignment, consisting of 2-3 questions/problems, will be assigned over Blackboard for each chapter. The quizzes will be available at least 24 hours before they are due and they will be due by the beginning of the lecture time. There will be a time limit for taking the quiz and you will be allowed 2 attempts for each quiz. Solutions for the quizzes will be discussed during the lecture and will be posted on the class website.

B. **Written Assignments:** 3-10 homework problems will be assigned at the beginning of each chapter and will be due approximately one week from that date. Three of the assigned problems will need to be turned in on paper to be graded and the remaining problems will be due on-line through Wiley Plus. They will be graded on a scale of 0 to 5, where 5 points are given for a completely correct solution and 0 points for a totally incorrect solution. Late homework is only accepted with a valid excuse. The URL for accessing this course at Wileyplus.com is listed below:

<http://edugen.wiley.com/yourclaassurl/>

C. **Exams:** There will be one **diagnostic exam**, three **regular exams** and a **final exam** for a total of five exams for the class. The **required diagnostic exam** for this course will test

your basic mathematical skills in algebra, geometry, trigonometry, calculus and word problem solving. The exam consists of 20 multiple choice questions. It is a one hour exam and no calculators are allowed. The exam will be administered by CASA Testing Center **January 7 – 23rd**. You can log onto the CASA website to make a reservation at <http://casa.uh.edu> or you may go to room 222 Garrison Gym. You will be able to reserve a spot to take the exam approximately one week before the exam opens.

The diagnostic exam is worth 3% of your final grade for the course. If you score above 70%, you should be well prepared to pass the course, 51 - 70%, you should review algebra, trigonometry and pre-calculus, 50% and below, you should consider dropping the course or re-enrolling once you have improved your math and problem solving skills. **YOU DO NOT NEED TO SEND PROOF OF PREREQUISITE FOR THIS COURSE.**

The **regular exams** will be given during the scheduled examination period for this course which is on Fridays from 5:30 – 7:00 pm (see note on the course listing). The regular exams will cover 2-4 chapters and will consist of 2 to 3 problems each worth 10 – 20 points and 3-4 conceptual questions each worth 5 points. Partial credit will be given. Each regular exam will be worth 14 % of your final grade for a total of 42% for the three regular exams. The **final exam** will be comprehensive covering all chapters covered for the course. The format of the final exam will be similar to that of a regular exam. This exam will be given during the University scheduled time.

There are no makeup exams for this course. The lowest exam score will be replaced by the final exam score if the final exam score is higher.

- D. Teamwork Component: (Extra Credit)** A team work component will be evaluated in this course by one of the two methods below.

Concept test will be administered during lecture for each chapter. Answers for the concept tests will be submitted using a personal remote system (clicker). Students will discuss these questions in teams of 2-3 students as a method of peer instruction. Each clicker costs \$40 plus tax. For the detailed Clicker purchasing information, please contact

Barnes & Noble in the UC
4800 Calhoun Rd.
126 University Center
Houston, TX 77204
Phone: 713-748-0923

NOTE: You can use your book loan to buy a clicker through the bookstore. See **Blackboard for clicker registration instructions.**

Teams consisting of 5-8 people will be assigned to create a study guide for each of the 4 exams for the course. The study guides will be posted in Blackboard and students will be able to choose the study which is best for use to prepare for the exam. Each group will have to work together to determine what will be included on the study guide and the best

format for presenting it to the students.

Notes: For all exams you may use any type of calculator. A formula sheet will be provided with all necessary formulas needed to solve the problems. A listing of homework assignments, with due dates and exam dates with the chapters to be covered on the exam can be found on my website in Blackboard. Solution sets for all homework, quizzes and exams will also be posted there 2-3 days after they have been turned in to me.

VII. Evaluation and Grading

12% (Discretionary – may be used for Reading Quizzes, a few additional percents toward exam, up to instructor etc.)

15% Homework

3% Diagnostic Exam

14% Regular Exam I

14% Regular Exam II

14% Regular Exam III

25% Final Exam (Day, time and location)

Policy on grades of I (Incomplete): The temporary grade of I (incomplete) is a conditional and temporary grade given when students (a) are currently passing a course or (b) still have a reasonable chance of passing in the judgment of the instructor, but for non-academic reasons beyond their control have not completed a relatively small part of all requirements. Incompletes will be given only when documentation has been submitted to support the need to receive an incomplete, i.e., medical statements.

VIII. Consultation

My office is located in room ### of Science and Research #1. My mailbox is located in the Physic office, room 617 in Science and Research # 1. My office hours will be from (list days and times)

IX. Bibliography

References: Fundamentals of Physics, Halliday, Resnick, and Walker; The Feynman Lectures on Physics, R. Feynman, R.B. Leighton, and M. Sands

Addendum: Whenever possible, and in accordance with 504/ADA guidelines, the University of Houston will attempt to provide reasonable academic accommodations to students who request and require them. Please call 713-743-5400 for more assistance.

It is each student's responsibility to read and understand the Academic Honesty Policy found in the Student Handbook, which can be found at <http://www.uh.edu/dos/hdbk/acad/achonpol.html>.

Academic Dishonesty: Please see following website for information regarding academic dishonesty. www.uh.edu/honpol.

Religious Holy Days: Students whose religious beliefs prohibit class attendance or the completion of specific assignments on designated dates may obtain an excused absence. To do so, please make a written request for an excused absence and submit it to your instructor as soon as possible, to allow the instructor to make arrangements. For more information, see the Student Handbook. <http://www.uh.edu/dos/publications/handbook.php>

Standard Disclaimer: This syllabus is subject to change at the discretion of the instructor.

Spring 2013 Course Schedule MW with a Friday Recitation

Date	Chapter	Notes
15-Jan-13	1	
17-Jan-13	2	
18-Jan-13	Recitation	Problems/Interactive Learning
22-Jan-13	2	
24-Jan-13	3	
25-Jan-13	Recitation	Problems/Interactive Learning
29-Jan-13	3	
31-Jan-13	4	Jan 30 - Last Day to Drop Without a W
1-Feb-13	Recitation	Problems/Interactive Learning
5-Feb-13	4	
7-Feb-13	5	
8-Feb-13	Recitation	Problems/Interactive Learning
12-Feb-13	5	
14-Feb-13	6	
15-Feb-13	Recitation	Problems/Interactive Learning
19-Feb-13	6	
21-Feb-13	7	
22-Feb-13	Recitation Exam	Review/ Problems/Interactive Learning Exam 1, Ch. 1 - 5, Friday 5:30 - 7pm
26-Feb-13	7	
28-Feb-13	8	
1-Mar-13	Recitation	Problems/Interactive Learning
5-Mar-13	8	
7-Mar-13	9	
8-Mar-13	Recitation	Problems/Interactive Learning
11-15-Mar-13	Spring Break	
19-Mar-13	9	
21-Mar-13	10	
22-Mar-13	Recitation Exam	Review/ Problems/Interactive Learning Exam 2, Ch. 6-9, Friday 5:30 - 7pm
26-Mar-13	10	
28-Mar-13	11	Mar 27- Last Day to Drop with a W
29-Mar-13	Recitation	Problems/Interactive Learning
2Apr-13	11&12	
4-Apr-13	12&13	
5-Apr-13	Recitation	Problems/Interactive Learning
9-Apr-13	13	
11-Apr-13	14	
12-Apr-13	Recitation	Problems/Interactive Learning
16-Apr-13	14&15	
18-Apr-13	15	
19-Apr-13	Recitation	Problems/Interactive Learning
23-Apr-13	16	
25-Apr-13	17	
26-Apr-13	Recitation	

Exam

Review/ Problems/Interactive Learning

Exam 3, Ch. 10-15, Friday 5:30 - 7pm

7-May-13

Final Exam

Final, Ch. 1 – 17, 2-5 pm
