

UC 12313 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:

• Instructional Area / Course Number / Long Course Title:
PHYS / 1301 / Introductory General Physics I

• Instructional Area / Course Number / Short Course Title (30 characters max.)
PHYS / 1301 / INTRODUCTORY GENERAL PHYSICS I

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

RECEIVED APR - 4 2013

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 / 1301 / Introductory General 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: MATH 1330 or equivalent. Description (30 words max.): Primarily for majors other than physics and engineering. Credit may not be applied toward a degree for both PHYS 1301 and 1321. Elementary principles of mechanics.

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 1301 Introductory General 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) comprehend the fundamental principles in mechanics; (2) use the formalisms of the theory and mathematical techniques of mechanics to solve problems mwhich involves application, analysis, and synthesis of the fundamental principles; (3) convey knowledge of the basics principles of physics and be able to use these principles to solve elementary problems; (4) take a real life problem and use physical principles and basic mathematical tools to describe the problem; (5) to communicate orally and in writing in a clear concise manner the concepts of Physics.

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 Mastering Physics, the online homework system associated with the textbook used for the course. Sample homework problems/questions are included.

Problems/questions which require critical thinking will also be included on examinations for the course. Sample exam problems/questions are included.

Communication Skills:

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

Empirical & Quantitative Skills:

Empirical and quantitative skills will be assessed through essay/ short answer questions and/or problems assigned through the Mastering Physics online homework system.

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

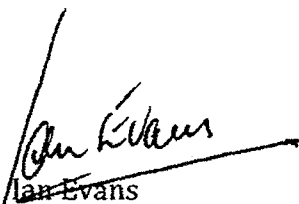
MATH 2311 - Introduction to Probability and Statistics

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 1301 – Introduction to General Physics I

Sample Concept test (clicker questions) for chapter covering two-dimensional kinematics

1. A small cart is rolling at constant velocity on a flat track. It fires a ball straight up into the air as it moves. After it is fired, what happens to the ball?
 - a) it depends on how fast the cart is moving
 - b) it falls behind the cart
 - c) it falls in front of the cart
 - d) it falls right back into the cart
 - e) it remains at rest

2. From the *same* height (and at the *same* time), one ball is dropped and another ball is fired horizontally. Which one will hit the ground first?
 - a) the “dropped” ball
 - b) the “fired” ball
 - c) they both hit at the same time
 - d) it depends on how hard the ball was fired
 - e) it depends on the initial height

3. The spring-loaded gun can launch projectiles at different angles with the same launch speed. At what angle should the projectile be launched in order to travel the greatest distance before landing?
 - a) 15°
 - b) 30°
 - c) 45°
 - d) 60°
 - e) 75°

Physics 1301 – Introduction to General Physics I
Sample Homework/Exam Problems

Short Answer/Essay

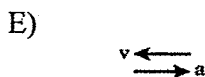
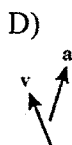
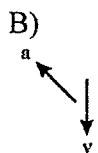
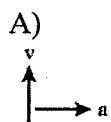
1. Driving down the highway, you find yourself behind a heavily loaded tomato truck. You follow close behind the truck, keeping the same speed. Suddenly a tomato falls from the back of the truck. Will the tomato hit your car or land on the road, assuming you continue moving with the same speed and direction? Explain and sketch the path of the tomato.

Problem

2. In a friendly game of handball, you hit the ball essentially at ground level and send it toward the wall with a speed of 14 m/s at an angle of 34° above the horizontal. (a) How long does it take for the ball to reach the wall if it is 3.8 m away? (b) How high is the ball when it hits the wall?

Multiple Choice

1. A glider is tugged by an airplane at 81 m/s when it is released. If the original speed was along the horizontal and the glider is now under a constant acceleration of 2.4 m/s^2 at 1.1° below the horizontal due to air drag, how long will it take to reach the ground 5.7 km below?
A) 500 s
B) 250,000 s
C) 2.2 s
D) 4.8 s
2. Shown here are the velocity and acceleration vectors for an object in several different types of motion. In which case is the object slowing down and turning to its right?





UNIVERSITY of HOUSTON

COLLEGE OF NATURAL SCIENCES & MATHEMATICS

[HTTP://NSM.UH.EDU](http://NSM.UH.EDU)

COURSE TITLE/SECTION: Physics 1301 Introductory General Physics I/Class Number #####

TIME: Time and Days **LOCATION:** Building and room #

FACULTY: Instructor name **OFFICE HOURS:** Time and days and by appointment
Building and room #

E-mail: e-mail@uh.edu

Phone: (713) 743-####

FAX: (713) 743-3589

I. Course: Physics 1301 - Introductory General Physics I

A. **Catalog Description:** Elementary principles of mechanics and heat.

B. **Prerequisites:** MATH 1330. Primarily for majors other than physics, mathematics, and engineering. Credit may not be applied toward a degree for both PHYS 1301 and University Physics I, PHYS 1321.

II. **Course Learning Objectives:** The objective of this course is Learn the principles of mechanics through application of Newton's laws a.

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

1. comprehend the fundamental principles in mechanics.
2. use the formalisms of the theory and mathematical techniques to solve problems. This involves application, analysis, and synthesis of the fundamental principles.

Other learning outcomes include:

1. Students completing this course will be able to convey knowledge of the basics principles of physics and be able to use these principles to solve elementary problems.
2. Students will be able to take a real life problem and use physical principles and basic mathematical tools to describe the problem.
3. Student will have the ability to communicate orally and in writing in a clear concise manner the concepts of Physics.

III. **Course Content:** This course will cover chapter 1 – 15 which include the following topical areas:

1. Vector in Physics
2. Newtonian Mechanics: Motion in 1-D and 2-D
3. Work and Energy
4. Momentum and Collisions
5. Rotational Kinematics, Dynamics and Energy
6. Gravity
7. Oscillations about Equilibrium
8. Waves and Sound
9. Fluids

IV. Course Structure:

The web address for the class is www.yourclasswebaddress.

V. Textbooks

Physics, Fourth Edition, James S. Walker. Binder version with access code to Mastering Physics available at the UH bookstore.

VI. Course Requirements

- A. Warm up Assignments:** Reading assignments will be given 3-4 times during the semester. **Reading quizzes** covering the material from the reading assignment, consisting of 2-3 questions/problems, will be assigned over Blackboard. 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:** (See Mastering Physics for HW 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 Mastering Physics**. 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.
- 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 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.**

If you score below 65% on the diagnostic exam, you can take a math tutorial to increase your diagnostic exam score to 65% but no greater. You must complete all tutorial sub-test as well as the final test with a score of 80% or greater.

OR

If you just wish to improve your math skills, you can complete a math tutorial which has been set up by the Department of Physics.

The math tutorial course is set up through My Readiness Test, an online math tutorial offered by the publisher of the textbook for the course. If you purchased a textbook from the UH Bookstore, you will receive a free access code to My ReadinessTest. If you did not purchase your textbook through the UH bookstore, you can purchase a code for My Readiness test for \$15 through the publisher's website listed below.

http://www.myreadinesstest.com/support/mpt/contactus_stu.htm

See the Department of Physics website after December 14th for more details on how to register and access the math tutorial through My Readiness Test.

Statistics: A study on 543 student enrolled in Phys 1301 at UH, showed that of the students who scored below 65% on the diagnostic exam, 78% of those completing the math tutorial passed the course while only 45% of those who did not complete the math tutorial passed the course. These statistics show that it may be your advantage to complete the math tutorial to increase your chances of passing the 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 and exam schedule on next page). The regular exams will cover 2-4 chapters and will consist of 10-20 multiple choice problems. 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 Departmental final exam 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.

1. 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.**

2. 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.

Spring 2013 Course Schedule - TTh

	Chapter	Comments
15-Jan-13	Intro, 1	
17-Jan-13	2	
22-Jan-13	2	
24-Jan-13	3	
29-Jan-13	3 & 4	<i>Jan 30 - Last Day to Drop Without a W</i>
31-Jan-13	4	
5-Feb-13	4	
7-Feb-13	5	
11-Feb-13	5	
13-Feb-13	6	
18-Feb-13	6	
21-Feb-13	7	
22-Feb-13	Exam 1, Friday 5:30 - 7pm	Covering chapters 1-5
25-Feb-13	7	
27-Feb-13	8	
5-Mar-13	8	
7-Mar-13	9	
11-15-Mar-13	Spring Holiday	
19-Mar-13	9	
21-Mar-13	10	
26-Mar-13	10	
28-Mar-13	11	<i>Mar 27- Last Day to Drop with a W</i>
29-Mar-13	Exam 2, Friday 5:30 - 7pm	Covering chapters 6-9
2-Apr-13	11	
4-Apr-13	12	
9-Apr-13	12	
11-Apr-13	13	
16-Apr-13	13	
18-Apr-13	14	
23-Apr-13	14	
25-Apr-13	15	
26-Apr-13	Exam 3, Friday 5:30 - 7pm	Covering chapters 10-14
4-May-13	Departmental Final Exam Saturday, 8- 11 am	Covering chapters 1-15

VII. Evaluation and Grading

- 3% Diagnostic Exam
- 10% Reading Quizzes
- 20% Homework
- 14% Regular Exam I
- 14% Regular Exam II
- 14% Regular Exam III
- 25% Final Exam (Day, time, location)

Policy on grades of I (Incomplete): The grade of "I" (Incomplete) is a conditional and temporary grade given when a student, for reasons beyond his or her control, has not completed a relatively small portion of all requirements. Sufficiently serious, documented situations include illness, death in the family, etc.

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 day and times. If you can not see me during those times, you may schedule an appointment with me by calling me at (713) 743-### or e-mailing me at e-mail@uh.edu.

IX. Bibliography

References: Physics, Algebra/Trig, Eugene Hecht; 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.