UC 12314 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 M.M.

2. Faculty Contact Person: Donna Stokes Telephone: 3-3588 Email: dstokes@uh.edu

RECEIVED APR - 4 2013

3. Course Information on New/Revised course:
   - Instructional Area / Course Number / Long Course Title: PHYS / 1302 / Introductory General Physics II
   - Instructional Area / Course Number / Short Course Title (30 characters max.) PHYS / 1302 / INTRODUCTORY GENERAL PHYSICSII
   - 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 / 1302 / Introductory General Physics II
   - Course ID: _____ Effective Date (currently active row): _____

9. Proposed Catalog Description: (If there are no prerequisites, type in "none".)
   Cr: 3. (3-0). Prerequisites: PHYS 1301. Description (30 words max.): Primarily for majors other than physics and engineering. Credit may not be applied toward a degree for both PHYS 1302 and 1322. Thermodynamics, electromagnetism and modern physics.

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 1302 Introductory General Physics II

Please attach in separate documents:

X Completed CBM003 Add/Change Form with Catalog Description

X 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 and apply laws such as Gauss' law, Coulomb' laws and Kirchoff's law; (2) apply basic physics laws to solve real life problems; to develop the processes of logical thinking and reasoning; (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

X 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 Matering Physics, 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 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 choses 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 X 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

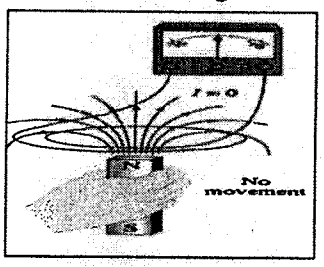
Associate Dean

4/4/13

Physics 1302 – Introduction to General Physics II

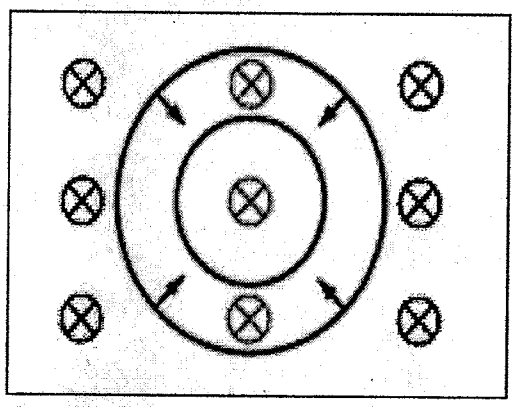
Sample Concept test (clicker questions) for chapter covering Magnetic Flux and Faraday's Law of Induction

1. **A In order to change the magnetic flux through the loop, what would you have to do?**



a) **drop the magnet**
b) **move the magnet upward**
c) **move the magnet sideways**
d) **only a) and b)**
e) **all of the above**

2. **If a coil is shrinking in a magnetic field pointing into the page, in what direction is the induced current?**



a) **clockwise**
b) **counterclockwise**
c) **no induced current**

Physics 1322 – University Physics II
Sample Homework/Exam Problems

Short Answer/Essay

1. A surveyor is using a magnetic compass 6.1 m below a power line in which there is a steady current of 100 A. (a) What is the magnetic field at the site of the compass due to the power line? (b) Will this field interfere seriously with the compass reading? The horizontal component of Earth's magnetic field at the site is 20 μT.

Problems

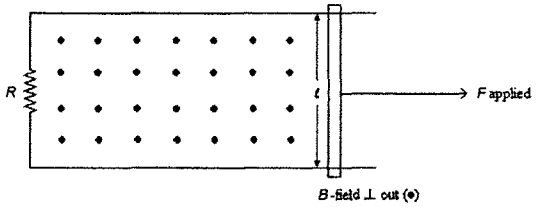
1. A magnetic field is oriented at an angle of theta to the normal of a rectangular area a by b. (a) If the magnetic flux through this surface has a magnitude of Phi, what is the strength of the magnetic field?

2. A wire loop is placed in a magnetic field that is perpendicular to its plane. The field varies with time as shown in the figure. (a) Rank the six regions of time in order of decreasing magnitude of the induced emf.

3. A circular loop of one turn and radius 5.0 cm is positioned with its axis parallel to a magnetic field of 0.60 T. By means of high explosives, the area of the loop is suddenly reduced to essentially zero in 0.50 ms. What emf is induced in the loop?

Multiple Choice

1. The area of a loop of wire is reduced by a factor of 2 while the rate of change of magnetic field applied is doubled. What happens to the induced emf in that loop of wire?
   A) It is doubled.
   B) It is reduced by a factor of 2.
   C) It is reduced by a factor of 4.
   D) It is quadrupled.
   E) It stays the same.



2. A conducting bar moves along frictionless conducting rails connected to a 4.00-Ω resistor as shown in **Figure 23-11**. The length of the bar is 1.60 m and a uniform magnetic field of 2.20 T is applied perpendicular to the paper. What is the applied force required to move the bar to the right with a constant speed of 6.00 m/s?
   A) 8.60 N
   B) 9.30 N
   C) 10.6 N
   D) 12.6 N
   E) 18.6 N

UNIVERSITY of HOUSTON
COLLEGE OF NATURAL SCIENCES & MATHEMATICS HTTP://NSM.UH.EDU

COURSE TITLE/SECTION: Physics 1302 Introductory General Physics II/Class Number ######

TIME: Class time and days **LOCATION:** Building and room #

FACULTY: Instructor's Name **OFFICE HOURS:** Time and days and by appointment
Building and room

E-mail: e-mail address@uh.edu **Phone:** (713) 743-#### **FAX:** (713) 743-3589

I. Course: Physics 1302 - Introductory General Physics II

A. Catalog Description: Electromagnetism and modern physics.

B. Prerequisites: PHYS 1301. Primarily for majors other than physics and engineering. Credit may not be applied toward a degree for PHYS 1302 and University Physics II, PHYS 1322.

II. Course Learning Objectives: The objective of this course is to learn the principles of electromagnetism and modern physics.

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

1. comprehend and apply laws such as Gauss' law, Coulomb' laws and Kirchoff's law;
2. be able to apply basic physics laws to solve real life problems;
3. to develop the processes of logical thinking and reasoning.

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 chapters 16-32 which includes the following topical areas:

1. Electric Charge, Forces and Fields

2. Electric Potential and Potential Energy
3. Electric Current and DC Circuits
4. Magnetism and Faraday's law
5. Electromagnetic Waves
6. Optics
7. Quantum and Atomic Physics
8. Thermal Physics

IV. Course Structure:

The web address for the class is www.yourclasswebaddress.

V. Textbooks

Physics, 4th Edition, James S. Walker. Binder version with access code to Mastering Physics is 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 three **regular exams** and a **final exam** for a total of four exams for the course.

The **regular exams** will be given during the Friday examination period and the date of each exam will be announced one week in advance. They will cover 2-4 chapters and will consist of 5-10 multiple choice and possibly 2-3 free response questions.

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 exam scheduled time.

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.

VII. Evaluation and Grading

10% Reading Quizzes
20% Homework
15% Regular Exam I
15% Regular Exam II
15% Regular Exam III
25% Final Exam (Date, Time, Building and room #)

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 # and building. My mailbox is located in the Physic office, room 617 in Science and Research # 1. My office hours will be from time and days. If you cannot see me during those times, you may schedule an appointment with me by calling me at (713) 743-3507 or e-mailing me at e-mail address@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.

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

Spring 2013 Course Schedule - TTh

	Chapter	Comments
15-Jan-13	19	
17-Jan-13	19	
22-Jan-13	20	
24-Jan-13	20	
29-Jan-13	21	*Jan 30 - Last Day to Drop Without a W*
31-Jan-13	21	
5-Feb-13	22	
7-Feb-13	22	
11-Feb-13	23	
13-Feb-13	23	
18-Feb-13	24	
21-Feb-13	24	
22-Feb-13	Exam	**Exam 1, Ch. 19-22, Friday 5:30 - 7pm**
25-Feb-13	25	
27-Feb-13	25	
5-Mar-13	26	
7-Mar-13	26	
11-15-Mar-13	Spring Break	
19-Mar-13	28	
21-Mar-13	28&30	
26-Mar-13	30	
28-Mar-13	31	*Mar 27- Last Day to Drop with a W*
29-Mar-13	Exam	**Exam 2, Ch. 23-28, Friday 5:30 - 7pm**
2-Apr-13	31	
4-Apr-13	32	
9-Apr-13	32	
11-Apr-13	16	
16-Apr-13	16	
18-Apr-13	17	
23-Apr-13	17	
25-Apr-13	18	
26-Apr-13	18	**Exam 3, Ch. 16-17 and 30-32, Friday 5:30 - 7pm**
4-May-13	**Departmental Final Exam Saturday, 8- 11 am**	**Final, Ch. 16-28 and 30-32, Saturday 8-11 am**