PHYS 1402  

**Instructor:** Dr. Jeff Spirko  
**Office:** EN-313  
**Web Page:** Blackboard  
**Class:** 1402.001: MTWR Noon-2pm, CS-111  

**PHYS 1402** General Physics I Summer 2014 – Syllabus  

Physics 1402 carries 4 credits. Concurrent registration in Physics 1402.001 (lecture section) and Physics 1402.101/102 (i.e. a lab section) is required. The letter grade will be awarded to you in Phys 1402.001 only; 25% weight will be given to lab work in determining your final letter grade.

**Course Description:** Introduction to Electromagnetism and Optics. Topics include electricity, magnetism, electromagnetic waves and their applications. The idea of the universe as a law governed system will be developed. Laboratory activities provide introduction to empirical methods in physics.

**Prerequisites:** General Physics I (PHYS 1401) and College Algebra (MATH 1414). Proficiency in college level algebra is essential in order to successfully complete this course. We will be using some basic trigonometry during the course.

**Learning Objectives:** This core course addresses the following four core objectives: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, and Teamwork.

Content wise after successfully completing this course, students will be able to use the technical language required to precisely describe motion, and to recognize the physical principles governing the motion of objects. Students will be able to scientifically explain the nature of motion qualitatively, answer quantitative questions on motion, and design elementary experiments to test the physical principles behind motion, accepted as valid by the community of physicists. More specifically upon successful completion of this course, the student should be able to demonstrate mastery of the following outcomes and competencies:

**Critical Thinking Skills:**

1) To discuss how a few concise physical laws can precisely describe the physical world for a large range of time and space scales. In this course such discussions will focus mostly on electromagnetism.  
2) To interpret physical electric and magnetic processes through physical laws.  
3) To analyze and evaluate a given physical situation in order to derive a solution to a given problem based on the laws of Physics.

**Empirical and Quantitative Skills:**

1) To solve problems and find solutions of dynamical physical processes by manipulating and analyzing numerical data.  
2) To arrive at informed conclusions regarding the dynamic of physical processes by manipulating and analyzing observable facts.

**Communication Skills:**

1) To express in writing findings developed and interpreted through the course of laboratory exercises.  
2) To express graphically findings developed and interpreted through the course of laboratory exercises.
Teamwork:

1) To work together and share responsibility to conduct satisfactorily laboratory experiments and communicate their findings.

Major Course Requirements

- **Safety training**: A safety orientation will be given during early in the course. As an alternative, an online safety course is available on [http://safety.tamucc.edu/Training.html](http://safety.tamucc.edu/Training.html). One of these safety training options is required for continued participation in this course.
- **Laboratories**: Labs begin the first day of class! They are explained below and in lab. Both Lab Reports and Pre-Lab Quizzes are included in the lab portion of the course.
- **Exams**: Three exams will be given during lecture.
- **Homework**: Homework will be given on WebAssign.

Required Textbook

There is only one required “book” this semester: access to Enhanced WebAssign (www.webassign.net). It includes access to the **online eBook** and the homework. (Most students don’t like the online eBook.)

To get onto WebAssign, you’ll need two things:

- Our Class Key: PHYS 1402.001: tamucc 8492 2048
- Paid Access, which is available by one of several methods:
  - Free and automatic during the first 14 days of class.
  - Automatic if you previously bought Life-of-Edition access for our book.
  - Purchased directly on the WebAssign website.
  - As an Access Code card that comes with a new or used textbook from the Bookstore.
  - As a separate Access Code card, which must be from Cengage Learning (ISBN 9780538738071). Caution, I’ve seen students buy used Access Code cards and have them not work. *Caveat emptor.*

What is the actual textbook?

  - Online eBook (comes with WebAssign access)
  - Hardcover, possibly only Volume 2
  - Paperback “Hybrid” (leaves out the homework questions)

Bring a calculator to every lecture.

**Sources of help:** The instructor strongly encourages you to see him on a regular basis to clarify your understanding of the course material and to seek his help in completing the homework. FREE mathematics and physics tutoring services are available via the **CASA, GSSC 119, Phone 825-5933**; you are strongly encouraged to make use of this service. You should also form a peer group of your classmates to collectively study and understand physics.

**Communicating with the Instructor and Classmates:** You are encouraged to see the instructor personally during his office hours. You are also welcome to call him on the phone or e-mail him with physics questions (E-mail is the preferred and most efficient mean of communication). The instructor will post course related materials and announcements on the course Blackboard site. It is your responsibility to keep yourself informed of these announcements. Updates to the syllabus (if necessary) will be posted on Blackboard.
Laboratory: A detailed lab policy is posted on Blackboard. Laboratory safety is of primary importance. If any safety issue arises, students should immediately stop their activities and follow the laboratory instructor’s instructions. A safety orientation will be given at the beginning of the course. Students are required to familiarize themselves with safety procedures, find out the location of safety equipment, and follow safety procedures throughout the semester. Failure to do so will result in dismissal from the laboratory at the discretion of the laboratory instructor possibly without the possibility to make-up the laboratory.

Laboratory Teamwork: All experiments will be performed in groups and will require a group lab report. Each one of you is individually responsible for recording experimental observations and data. If your lab partner recorded experimental data and you did not, and if your lab partner dropped the course or is unreachable and uncommunicative, you are still responsible for completing work on that lab on time. At the end of the semester each group member will be asked to fill the Team Self-Assessment form at the end of the syllabus to evaluate how the group functions and evaluate the team members individual contributions to the team work.

Lab reports should be comprehensive, including both the clearly labeled data and a brief but clear analysis of the experimental results. The lab grader will evaluate the quality of the measurements and the interpretation. Lab reports will be due by the midnight the next day after the lab is performed (even if lab is not held the next day). Lab reports will count as 80% of the lab grade.

At the beginning of each lab, we will have a Pre-Lab quiz. The purpose is so that you read the lab instructions and practice the calculations ahead of time. A Pre-Lab Practice will be posted on BlackBoard so that you have an idea of what questions will be asked. Some additional questions may be asked about important parts of the lab instructions. Lastly, some questions will be regarding the previous lab, as a sort of post-lab assessment. Pre-Lab Quizzes are open notes and you may use a computer. Pre-Lab Quizzes will count as 20% of the lab grade.

Lab Make Up: You will not be allowed a lab make up opportunity unless you have been granted the instructor's prior approval for an absence, or for reasons of a documented health emergency or family emergency. You must contact the instructor within a few days after missing lab to obtain an approval. Consider attending another lab group on the same day to avoid missing labs.

In the rare event that a discipline problem arises in the laboratory, the instructor can ask the student(s) to leave the laboratory. Discipline problems include student behavior disrupting the conduct of the laboratory or behavior disrespectful of the instructor or other students. The instructor will be the judge of such behavior. For the first offense the student(s) will be asked to make up the end of the lab at the end of the semester. If a student was asked more than once to leave the laboratory, no further make-up lab opportunities will be provided and the student will be given a grade of zero for this additional lab(s).

Use of Computers: Many experiments require the use of PCs in the physics laboratory. Computer skills that the student should acquire in this course include (a) the use of available physics software, and (b) creating and using a spreadsheet, including graphing and linear regression. You should bring a portable data storage device to the lab to save the files you and your group created. Alternately, save your work on remote drives accessible through a network. Each student must have access to a copy of the files the group created. Spend a few minutes at the end of the lab period to copy, for your use, the files you have created. The instructor cleans the desk top on the physics lab microcomputers frequently and student created files will be deleted at that time.

Assigned Reading: Reading will be assigned ahead of the lecture. You must read the book! Read the assigned reading for a class before coming to that class. Conceptual questions and problems from lectures and textbook will be asked on exams. You are encouraged to work together on the homework and to seek help from the instructor, and other resources.
Online Homework: There will be several online homework assignments with published deadlines on WebAssign. Therefore, access to WebAssign is required. The class code is listed above. Each student will get customized problems to be completed online. The solution to the problems will be available after the tests deadlines, if the server is functioning normally.

Exams: All exams will be “closed book” with a formula sheet provided as part of the exam handout. There will be both conceptual questions and numerical problems on the exams, as well as a possibly questions based on the physics and measurement techniques you have learned in the lab. Your answers to exam questions should be clearly and legibly written on the exam. While most questions will be of the multiple-choice type you should still show your work and calculations on the exam sheet. Please look over your exam copies when they are returned and contact the instructor at the end of the same class period the exam was returned if you notice a problem with the grading of your copy. Graded exams will be provided to the students for exams taking place during the semester. The final exam will be made available for inspection and study upon request but the copies will not be returned to the student and the student cannot copy the exam. Exam dates and times for term exams will be tentatively posted on the course progression page and will also be announced in class. More specific guidance on material for the exams will be provided prior to the exams.

Policy on Make Ups for Exams: There are NO provisions for making up exams except in cases where prior arrangements have been made with the instructor and which are approved by university guidelines. Valid reasons for missing a lab, quiz or an exam are (1) health related, backed by a doctor's note, (2) family emergency which can be documented, (3) job interview with the letter of invitation for the interview, and (4) participation in a previously scheduled athletic, or university event or travel to a conference. In case of emergency resulting in not informing the instructor of your absence from class, contact the instructor within a week regarding your absence.

Exam Grade Replacement: If an exam is missed for an excused reason, or if you simply do poorly on an exam, you have a chance to prove your physics knowledge on the Final Exam. Simply put, if you do better on the Final Exam than on one of the regular Exams, your Exam grade will be replaced with the Final Exam grade.

Grading policy: Your final composite numerical grade is based on the following weightings to the different components of the course:

<table>
<thead>
<tr>
<th>Evaluation Type</th>
<th>Percentage of Total Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebAssign Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Your letter grade will be determined using the university catalog's description of the meaning of each letter grade, and the instructor's criteria for translating that description to actual numerical grade ranges. (See the catalog's section on 'Grades'; A = Excellent, B = Good, C = Average, D= Passing, F = Failure; work not passed). The procedure for awarding letter grades will be as follows:
% Grade | Letter Grade | Catalog Meaning of the Grade
---|---|---
> 89.5% | A | Excellent
79.5% to 89.4% | B | Good
69.5% to 79.4% | C | Average
59.5% to 69.4% | D | Passing
Below 59.5% | F | Failing

**Extra Credit:** There is no provision for extra credit in this class.

**Academic Integrity/Plagiarism**

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in loss of credit for the assignment, failure in the class, or whatever other penalty the University deems appropriate. See [http://judicialaffairs.tamucc.edu/grievances.html](http://judicialaffairs.tamucc.edu/grievances.html) for more information.

**Dropping a Class**

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. According to the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)), Friday, July 25, 2014 is the last day to drop a class with an automatic grade of “W” this term.

**Statement of Civility**

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of gender, ethnic/racial origin, religious background, age, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

**Grade Appeals**

As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in
the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

Disabilities Accommodations

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Statement of Academic Continuity

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lab topic</th>
<th>Date (MW)</th>
<th>Lecture topic</th>
<th>Reading assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safety / Introductory</td>
<td>7/7</td>
<td>Introduction, Gravitational Field, Electric Charge, Electric Field</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Electric Field</td>
<td>7/8</td>
<td>Electric Energy, Electric Potential, Voltage, Capacitance</td>
<td>Chap 15, 16</td>
</tr>
<tr>
<td></td>
<td>2: Measurements &amp; Ohm’s Law</td>
<td>7/9</td>
<td>Electric Current, Resistance, Ohm’s Law</td>
<td>Chap 17</td>
</tr>
</tbody>
</table>
<pre><code>  |                                  |           |                                                                                |                    |
</code></pre>
<p>| 2    | 3: Series/Parallel                | 7/14      | Series and Parallel Circuits                                                   | Chap 18            |
|      | 4: RC Circuits                    | 7/15      | RC Circuits, Electrical Safety                                                 | Sec 18.5-18.8      |
|      | 5: Magnetic Fields                | 7/16      | Problem Solving                                                               |                    |
|      |                                  | 7/17      | <strong>Exam #1:</strong> Electrostatics and DC Circuits                                    |                    |
| 3    | 6: Electron in a Mag Field        | 7/21      | Magnetic Field, Magnetic Forces, Motion of a charge in a B Field, Magnetic Torques | Chap 19            |
|      | 7: Transformers                   | 7/22      | Magnetic Field Calculation                                                     | Chap 19.7-19.10    |
|      | 8: Oscilloscope                   | 7/23      | Faraday’s Law, Motional EMF                                                   | Chap 20            |
|                                  | 7/24      | Inductance                                                                    | Chap 20.5-20.7     |
| 4    | 9: Simple Harmonic Oscillator     | 7/28      | AC Circuits, Generators, Transformers                                         | Chap 21            |
|      | 10: Standing Waves                | 7/29      | <strong>Exam #2:</strong> Magnetism and AC Circuits                                        |                    |
|      | 11: Geometric Optics              | 7/30      | Oscillations, Waves, Standing Waves                                           | Chap 13            |
|      |                                  | 7/31      | Electromagnetic Waves                                                         | Chap 21.8-21.11    |
| 5    | 12: Interference                  | 8/4       | Optics                                                                        | Chap 22, 23, 25    |
|      | Make-Up                           | 8/5       | Diffraction &amp; Interference                                                    | Chap 24            |
|      | Make-Up                           | 8/6       | Problem Solving                                                               |                    |
|      | <strong>Final Exam</strong>                    | 8/7       | Final Exam: Comprehensive                                                    |                    |</p>