PHYS 2426 General Physics II
Department of Physical and Environmental Science
Summer II 2018

A. COURSE INFORMATION

Course number/section: PHYS 2426.001/101/102/103
Class meeting time: MTWR 2:00 pm – 3:55 pm
Class location: EN 107

B. INSTRUCTOR INFORMATION

Instructor: Galina Reid
Office location: NRC 1110
Office hours: MTWR 4:00 pm – 5:15 pm
Telephone: (361) 825-3685
e-mail: galina.reid@tamucc.edu

Physics 2426 carries 4 credits. Concurrent registration in Physics 2426.001 (lecture section) and Physics 1401. 101/102/103 (lab sections) is required. Letter grade will be awarded to you in PHYS 2426.001 only; 25% weight will be given to lab work in determining your final letter grade.

C. COURSE DESCRIPTION

Introduction to oscillatory and wave phenomena, electricity and magnetism. The classical theory of fields will be used to study electric and magnetic phenomena, including light, and their role in modern technology. Laboratory activities provide introduction to empirical methods in science. This course counts toward the natural science component of University Core Curriculum.

D. PREREQUISITES AND COREQUISITES

Prerequisites: MATH 2414 or placement beyond MATH 2414; PHYS 2425
Co-requisites: Laboratory Safety Online Seminar (SMTE0095.W01)
Students must pass this web-based course to be allowed to start physics labs. Take the course from the Blackboard before coming to the first lab. Labs start on the day of 7/2/18.

E. REQUIRED TEXTBOOK, READINGS AND SUPPLIES

Though the text book is recommended, WebAssign registration is required in order to work on the assigned homeworks. WebAssign page could be accessed from class Blackboard page (WebAssign link is in the blue menu of the left).


Students are required to have a scientific calculator and a pair of safety glasses for the laboratory.

Lab Manual: Lab Materials are posted on the Blackboard.
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

After successfully completing this course, students will be able

- to use the technical language required to precisely describe electric and magnetic fields
- to recognize the physical principles governing the electromagnetic phenomena
- to explain scientifically and qualitatively the nature of electromagnetism
- to answer quantitative questions on electromagnetism
- to design elementary experiments testing the physical principles behind electromagnetism, 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:

To work together and share responsibility to conduct satisfactorily laboratory experiments and communicate their findings.
G. INSTRUCTIONAL METHODS AND ACTIVITIES

Laboratory: Laboratory safety is of primary importance and all students should stop immediately their activities and follow the laboratory instructor’s instructions if any safety issue was to arise. Failure to follow safety instructions will result in dismissal from the laboratory at the discretion of the laboratory instructor possibly without the possibility to make-up the laboratory.

All laboratory experiments will be performed in groups of three and will require a collaborative lab report. However, each lab partner is individually responsible for recording experimental observations and data. If one lab partner recorded experimental data and two did not, and the first lab partner dropped the course or is unreachable and uncommunicative, two other lab partners are still responsible for completing work on that lab on time.

There is NO a makeup day. If a student has a valid excuse to miss lab, the lab instructor will exempt the report and QUIZ grades. Otherwise, the student must attend another lab section. No more than two reports could be exempt as stated in “Lab Rules and Regulations” posted on Blackboard and announced during the first lab. Additionally, grades for only 12 out of 13 labs would be included into the overall grade calculation where the lowest grade will be dropped.

The lab report on an experiment should be comprehensive, including a clear analysis of the experimental results. The required structure of the lab report is posted on the Blackboard and will be explained to students during first lab. The lab instructor will evaluate group's quality of work, the care taken in collecting data and in performing the experiment, and understanding of physics evident from the analysis of the data and discussion of it in the report. A lab report on an experiment is due at midnight on Sunday of the same week. The average grade for the laboratory reports is 80% of lab grade.

Pre-laboratory practice will be assigned ahead of each lab. Students must complete the assigned work prior to coming to the lab in order to succeed in Pre/Post Quizzes that will precede the experiment. The average grade for Pre/Post Quizzes is 20% of the lab grade.

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. Each student must have access to a copy of the files the group created; bring a portable data storage device to the lab or save the work on remote drives accessible through a network.

Readings: Reading will be assigned ahead of the lecture. Students must have done the assigned reading for a class before coming to that class. Conceptual questions and problems from lectures and textbook will be used in the exams.

Online Homeworks: There will be weekly online homeworks with published deadlines on the class Blackboard. Access code for WebAssign is required. Each student will get web downloadable customized tests, the answers to which should be submitted online. The solution to the tests will be available after the tests deadlines, if the server is functioning normally. The website for accessing the online tests, submitting your answers and getting the solutions could be accessed from the class Blackboard. Students are encouraged to work together on the homework and to seek help from the instructor, and other resources. However, getting the correct answers and good grades on the homeworks without understanding the process of the solution will not guarantee success in class. Some of the homework
questions will be asked on Final Exam where no collaboration or use of the additional resources will be allowed.

**Exams:** All exams will be of the "closed book" kind with a formula sheet provided as part of the exam handout.

**Every Monday** there will be 45 minutes **Mini Exam** on material covered during the prior week. Each Mini Exam will have both conceptual questions and numerical problems, as well as a possibly questions based on the physics and measurement techniques students have learned in the lab. While 80% of questions will be of the multiple-choice type there will be “open end” questions for which students should clearly and legibly write the answers on the assessment. Students are encouraged to look over Mini Exam copies when they are returned and contact the instructor at the end of the same class period the Mini Exam was returned if you notice a problem with the grading.

**The Final Exam** will be comprehensive and in the same format as mini exams though twice as long.

Mini Exams will be given back to students, however, the Final Exam will only be made available for inspection upon request on Monday, August 6 between 10am and 12pm but the copies will not be returned to the student and the student cannot copy the exam.

**H. MAJOR COURSE REQUIREMENTS AND GRADING**

Final composite numerical grade is based on the following weightings to the different components:

<table>
<thead>
<tr>
<th>Evaluation Type</th>
<th>Percentage of Total Grade</th>
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</thead>
<tbody>
<tr>
<td>Online Homework Average</td>
<td>25%</td>
</tr>
<tr>
<td>Mini Exam Average</td>
<td>25%</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:

<table>
<thead>
<tr>
<th>% Grade</th>
<th>Letter Grade</th>
<th>Catalog Meaning of the Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 89.5%</td>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>79.5% to 89.5%</td>
<td>B</td>
<td>Good</td>
</tr>
<tr>
<td>69.5% to 79.5%</td>
<td>C</td>
<td>Average</td>
</tr>
<tr>
<td>59.5% to 69.5%</td>
<td>D</td>
<td>Passing</td>
</tr>
<tr>
<td>Below 59.5%</td>
<td>F</td>
<td>Failing</td>
</tr>
</tbody>
</table>
I. COURSE POLICIES

Grade Insurance: The numerical value of the grade will be rounded to one decimal place. Example: 89.44 will be considered as B. Attendance of Supplemental Instruction sessions and submission of bonus essays will be used by the instructor in making decision on the letter grade for the students with borderline numerical grade. 10% of the SI attendance could be added to the final numerical grade or points for the bonus essay could be added to a corresponding term exam grade in order to move the letter grade to the next category.

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 at your earliest convenience regarding your absence.

Sources of help: The instructor strongly encourages you to see her on a regular basis to clarify your understanding of the course material and to seek her help in completing the homework. FREE mathematics and physics tutoring services are available via the CASA, GSSC 119, Phone 825-5933; students are strongly encouraged to make use of this service. Students should also form a peer group of classmates to collectively study and understand physics. The university has a contract with an online commercial tutoring service, smarthinking.com, through which our students can obtain round the clock free one-on-one online tutoring.

J. COLLEGE AND UNIVERSITY POLICIES

• Academic Integrity (University)
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 a failing grade.

• Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• 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 sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.
Deadline for Dropping a Course with a Grade of W (University)
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 your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. 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. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

Grade Appeals (College of Science and Engineering)
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 at 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.

Disability Services
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 (361) 825-5816 or visit Disability Services 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. http://disabilityservices.tamucc.edu/

K. 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.

L. GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lab topic</th>
<th>Date</th>
<th>Lecture topic</th>
<th>Reading assignment</th>
<th>Homeworks</th>
</tr>
</thead>
</table>
| 1    | Introduction | 7/2  | Introduction & Expectations | Ch. 23.1-23.3 | Electrostatics  
Open: 7/2@noon  
Due: 7/8@midnight |
|      | Electrostatics (online completion is available) | 7/3  | Electric Field. | Ch. 23.4-23.7 |  |
|      | No lab | 7/4  | No Lecture |  |  |
|      |  | 7/5  | Electric Potential Energy | Ch. 25 |  |
| 2    | Ohm’s Law | 7/9  | Electric current and Ohm’s Law | Ch. 27 | Current Electricity  
Open: 7/9@noon  
Due: 7/15@midnight |
|      | Configuration of resistors | 7/10 | Resistors in Series and Parallel | Ch. 28.1-28.2 |  |
|      | RC Circuits | 7/11 | Electric Circuits Calculations | Ch. 28.3 |  |
|      | No lab | 7/12 | Capacitors and Capacitance | Ch. 26, 28.4 |  |
| 3    | Magnetic Field | 7/16 | Magnetic Field | Ch. 29. 1 | Magnetic Field  
Open: 7/16@noon  
Due: 7/22@midnight |
|      | Charge in Magnetic Field | 7/17 | Motion of Charged Particle in Magnetic Field | Ch. 29.2-29.3 |  |
|      | Oscilloscope | 7/18 | Torque on a Current loop. Magnetic Moment. | Ch. 29.4-29.6 |  |
|      | No lab | 7/19 | Biot-Savart and Amper’s Laws | Ch. 30 |  |
| 4    | Electric Transformers | 7/23 | Electromagnetic Induction | Ch. 31 | Electromagnetic Induction  
Open: 7/23@noon  
Due: 7/29@midnight |
|      | Simple Oscillator | 7/24 | Electric Power Generation. | Ch. 32  
Ch. 33 |  |
|      | Standing Waves | 7/25 | AC and EM Oscillations |  |  |
|      | No lab | 7/26 | Waves | Ch. 34 |  |
| 5    | Interference of Light | 7/30 | Nature of Light. | Ch. 35 | Optics  
Open: 7/29@noon  
Due: 8/3@midnight |
|      | Reflection and Refraction | 7/31 | Image Formation | Ch. 36 |  |
|      | Image Formation | 8/1  | Wave Properties of Light | Ch. 37 |  |
|      | No lab | 8/2  | Diffraction Patterns and Polarization | Ch.38 |  |
|      |  | 8/3  | Final Exam |  |  |