A. COURSE INFORMATION
Course number/section: PHYS 2426.001/101/103/104
Class meeting time: MTWR 12:00 pm – 1:45 pm
Class location: CI 126

B. INSTRUCTOR INFORMATION
Instructor: Galina Reid
Office location: NRC 1110
Telephone: (361)825-3685
Office hours: MTWR 4:00 pm – 5:00 pm
E-mail: galina.reid@tamucc.edu
Appointments: request an appointment via e-mail

C. COURSE DESCRIPTION
Catalog Course Description
Calculus based 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. The idea of the universe as a law governed system will be developed. This course counts toward the natural science component of University Core Curriculum.

D. PREREQUISITES AND COREQUISITES
Prerequisites
PHYS 2425 and MATH 2414 (or placement beyond MATH 2414)
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 first day of the semester.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Thought 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); Blackboard roster is linked to the WebAssign roster. WebAssign registration comes with E-version of the text book ‘Physics for Scientists and Engineers, by Serway & Jewett, 9th Edition Hybrid, ISBN10: 1305116429, ISBN-13: 9781305116429. Other E-version of the textbook is expectable as long as it gives a student an access to WebAssign.
F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

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 electric and magnetic fields, and to recognize the physical principles governing the electromagnetic phenomena. Students will be able to scientifically explain the nature of electromagnetism qualitatively, answer quantitative questions on electromagnetism, and design elementary experiments to test 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. 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.

There will be NO lab make up opportunity. A student who missed lab due to reasons of sickness (backed by your doctor's note) or family emergency must complete lab with another lab section.

The lab report on an experiment should be comprehensive, including a clear analysis of the experimental results. The required structure of the lab report will be explained to you in the lab and posted on the Blackboard. 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 the beginning of the next lab period. The average grade for the laboratory reports is 80% of the 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. Students should bring a portable data storage device to the lab to save the files created. Alternately, save the 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 the created files.

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 several online homeworks with published deadlines on the course progression page and WebAssign. 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 exams 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. 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 students have learned in the lab. While 60% of questions will be of the multiple-choice type there will be short answer and “show your work” questions for which students should clearly and legibly write the answers on the exam. Students are encouraged to look over 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. Graded exams 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 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 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 his 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.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Breakdown of the course grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Homeworks</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 3</td>
<td>20%</td>
</tr>
<tr>
<td>Laboratory</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Final grading is as follows: A = 90 – 100%, B = 80 -90%, C = 70 – 80%, D = 60 -70%, F < 60%.
I. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior. See Full University Policy at [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity)

- **Classroom/Professional Behavior**

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course by Friday, July 24, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted. After July 24, 2015 a student will not be allowed 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](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](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**
  Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)
### J. COURSE CONTENT/SCHEDULE

<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 | 7/6  | Introduction & Expectations: Electric Charge and Electric Forces | Ch. 23.1-23.3 | Electrostatics  
Open: 7/6@noon  
Due: 7/13@midnight |
|      | Math review | 7/7  | Electric Field | Ch. 23.4-23.7 |          |
|      | Electrostatics | 7/8  | Gauss Law | Ch. 24 |          |
|      |          | 7/9  | Electric Potential Energy | Ch. 25 |          |
| 2    | Electrical Measurements | 7/13 | DC Circuit, Ohm’s Law | Ch. 27 | Current Electricity  
Open: 7/13@noon  
Due: 7/19@midnight |
|      | RC Circuits | 7/15 | Capacitors and Capacitance | Ch. 26, 28.4 |          |
|      |          | 7/16 | Test #1 | |          |
| 3    | Magnetic Field | 7/20 | Magnetic Field | Ch. 29.1 | Magnetic Field  
Open: 7/20@noon  
Due: 7/26@midnight |
|      | e/m Calculation | 7/21 | Motion of a Charged Particle in Magnetic Field | Ch. 29.2-29.3 |          |
|      | Oscilloscope | 7/22 | Torque on a Current loop. Magnetic Moment | Ch. 29.4-29.6 |          |
|      |          | 7/23 | Biot-Savart and Amper’s Laws | Ch. 30 |          |
| 4    | Transformers | 7/27 | Electromagnetic Induction | Ch. 31 | Electromagnetic Induction  
Open: 7/27@noon  
Due: 8/2@midnight |
|      | Simple Oscillator | 7/28 | Inductance. AC Circuits | Ch. 32 |          |
|      | Standing Waves | 7/29 | Electric Power Generation. EM waves | Ch. 33-34 |          |
|      |          | 7/30 | Test #2 | |          |
| 5    | Reflection and Refraction | 8/3  | Nature of Light | Ch. 35 | Optics  
Open: 8/5@noon  
Due: 8/6@midnight |
|      | Image Formation | 8/4  | Image Formation | Ch. 36 |          |
|      | Interference of Light | 8/5  | Wave Properties of Light | Ch. 37-38 |          |
|      |          | 8/6  | Test #3 | |          |

### K. OTHER INFORMATION

#### 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.