PHYS 3332 – Electromagnetic Field Theory  
PENS Department and the Texas Physics Consortium  
Fall 2020

A. COURSE INFORMATION

- **Course number/section:** PHYS 3332
- **Class meeting time:** MWF 01:00PM-01:50PM
- **Class location:** CCH 249, TTVN Video Classroom
- **Course Websites:** [http://wtclass.wtamu.edu/](http://wtclass.wtamu.edu/)

B. INSTRUCTOR INFORMATION

- **Instructor:** Dr. C. S. Baird
- **Office location:** West Texas A&M University, ANS 114A
- **Office hours:** MTWTh 02:00PM-04:00PM
- **Telephone:** (940) 397-4184 (office)
- **E-mail:** cbaird@wtamu.edu
- **Appointments:** Appointments outside of the office hours should be scheduled via email

- **Course Facilitator:** Dr. Barbara Szczerbinska
- **Office location:** NRC 3508
- **Office hours:** Tuesday 8:15AM-9:15AM, 2PM-3PM  
  Wednesday 10AM-12PM  
  Thursday 8:15AM-9:15AM, 2PM-3PM
- **Telephone:** (361) 825-3916
- **E-mail:** Barbara.Szczerbinska@tamucc.edu
- **Appointments:** Appointments outside of the office hours should be scheduled via email

C. COURSE DESCRIPTION

**Catalog Course Description**
This course contains a mathematical introduction to electricity and magnetism, including electrostatics, Laplace's equation, the theory of dielectrics, magnetostatic fields, electromagnetic induction, magnetic fields of currents, and Maxwell's equations.

**Extended Course Description**
This course is being offered by the Texas Physics Consortium as part of the Joint BS degree with a Physics Major. All TPC courses use the WTClass system for class management (instead of Blackboard). For more information on TPC, please visit our website (http://www.tarleton.edu/tpc/) or speak with the Local Facilitator.

The Course Syllabus from the sending institution will be provided for students and will be the primary Syllabus that the instructor will follow. This Syllabus exists to make sure you have all of the information summarized in one place and that you are informed about TAMUCC policies.
D. **PREREQUISITES AND COREQUISITES**

**Prerequisites:**
PHYS-2426 – University Physics II

**Co-requisites:**
MATH 3315 – Differential Equations or MATH 2415 – Calculus III

E. **REQUIRED TEXTBOOK, READINGS AND SUPPLIES**

**Required Textbook:**

**Supplies:**
- Internet access is vital for interacting with the instructor and the local facilitator.
- Access to a scanner may be required to submit homework assignments. The Local Facilitator can help with this.

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.

**Course learning objectives:**

Upon successful completion of this course, students will:
1. Know Coulomb’s law and be able to use it to solve for the electrostatic force applied upon a point charge by a collection of other point charges.
2. Know the definitions of standard terms in electromagnetism including electric potential, electric field, magnetic field, magnetic vector potential, induction, capacitance, etc.
3. Know the formula for the electric field due to an infinitesimal point charge and be able to use it to calculate the electric field due to either a collection of discrete point charges or a continuous surface, line or volume charge density.
4. Know the formula for the electric potential due to an infinitesimal point charge and be able to use it to calculate the electric potential due to either a collection of discrete point charges or a continuous surface, line or volume charge density.
5. Be able to find the electric field at a point in space given the electric potential
6. Be able to apply Gauss’ Law to solve for the electric field in an electrostatic problem that involves a high degree of symmetry.
7. Be able to apply various solution techniques to solve Poisson’s and Laplace’s Equations.
8. Know the meaning of polarization, displacement vector, and dielectric constant and be able to use these concepts to solve problems involving dielectric media.
9. Be able to determine the magnetic field created by either a line, area, or volume current density.
10. Be able to write Maxwell’s equations in both integral and differential form.
11. Be able to show that the solution to Maxwell’s equations for time varying fields in free space are electromagnetic waves with the speed c.
12. Be able to apply mathematical techniques necessary to solve E&M problems including the application of vectors, vector and integral calculus

G. INSTRUCTIONAL METHODS AND ACTIVITIES
Classes will be held via live a video conference among all of the Texas Physics Consortium schools. Students will be able to ask questions during class, and the instructor will see who is asking the question.

H. MAJOR COURSE REQUIREMENTS AND GRADING
Course requirements and grading will be discussed by the instructor during the first class. According to TAMU-CC Final Examination schedule, the final exam for this course will take place on December 2\textsuperscript{nd}, 2020 at 11:00AM-01:30PM

I. COURSE CONTENT/SCHEDULE
The expected content and schedule will be distributed by the instructor during the first class. Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning

J. COURSE POLICIES
COVID-19
Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.
The course instructor will discuss specific course policies during the first class.

K. 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.C0.03, 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 required 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.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf. 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/
• Civil Rights Complaints
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

• 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. OTHER INFORMATION
• Academic Advising
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

• Academic Calendar

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<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>August 19</td>
<td>Classes begin Regular Fall</td>
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<td>August 26</td>
<td>Last day to late register or add a class</td>
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<td>September 3</td>
<td>12th Class Day Census</td>
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<td>September 7</td>
<td>Labor Day Holiday- Campus Closed</td>
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M. GENERAL DISCLAIMER
We reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. We will announce such changes in a timely manner during regularly scheduled lecture periods.