Semester and year: 
Course Number: 
Meeting Times and Locations: 

Instructor: 
Office Location: 
Phone: 
Office Hours: 
Email Address: 

**COURSE TITLE AND NUMBER:** PHY-290 Physics II

**PRE-REQUISITE:** MAT-280 Calculus I, with a grade of "C" or better, PHY-280 with a grade of "C" or better

**CO-REQUISITE:** MAT-281 Calculus II

**COURSE CREDITS:** 4

**COURSE HOURS:** 3 lecture hours; 3 laboratory hours

**COURSE CLASSIFICATION:** General Education Course

**COURSE DESCRIPTION:** Physics II is the continuation of PHY-280, Physics I, and is primarily a study of electricity and magnetism. It covers electrostatics, electrical circuits, magnetic fields and forces, capacitance and inductance, Maxwell's equations, and the properties of fluids.

**REQUIRED TEXT** – Options:


STUDENT LEARNING OBJECTIVES: As a result of meeting the requirements of this course, students will be able to:

1. Identify and describe in his or her own words the concepts and meaning behind the physical principles and laws encountered in the course.
2. Use correct terminology to describe physical processes and carry out problem solving.
3. Create sketches, diagrams, and graphs to describe physical processes and problem solving.
4. Apply appropriate mathematical relationships in the description of physical processes and problem solving.
5. Demonstrate proper use of laboratory instrumentation to perform measurements and data acquisition during laboratory sessions.

These objectives are intimately interwoven throughout the physics sequence and serve as a repeated reinforcement of the knowledge and skills necessary for the student to become successful in the engineering or scientific program of his or her choice. This course serves as foundations for further study in engineering, physics, astronomy, and many other areas, including chemistry, biology, environmental science, and the health professions.

CHEATING/PLAGIARISM: Physics II follows a Zero Tolerance Policy towards Cheating/Plagiarism. The definition and consequences of Cheating/Plagiarism are described in the Bergen Community College Catalog under ACADEMIC REGULATIONS.

ASSESSMENT MEASURES: The student learning objectives will be assessed by:

1. Test scores.
2. Laboratory experiments and written laboratory reports.
3. Essay questions on laboratory reports (and possibly exams) will be used to assess the students' knowledge of physical principles and understanding of problem solving techniques.
4. Word problems on exams and laboratory reports that will require:
   a. The construction and reading of graphs.
   b. The use of precise sketches and diagrams, correct application of physical principles, and the correct use of computational skills.
   c. Derivations of formulas requiring algebraic, trigonometric, and calculus-based manipulations.

GENERAL GRADING POLICY: The grade for the course is weighted:

1. Four or more non-cumulative (modular) "hourly" exams and possibly quizzes 45%
2. Laboratory (performance and written reports) 25%
   (Attendance required in at least 70% of the experiments that the class performs).
   At least 70% of the experiments must be performed and handed in to pass the course no matter how high the test scores.
3. Final exam (cumulative) 30%

INSTRUCTOR'S GRADING POLICY: An instructor may modify the General Grading Policy, and the instructor will provide that policy.
CLASS ATTENDANCE/LATENESS POLICIES: Class Attendance is defined in the Bergen Community College Catalog under Class Attendance:

"All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes."

ABSENCE OF INSTRUCTOR: Instructor Absence is defined in the Bergen Community College Catalog under Absence of Instructor which reads, in part:

"Students are expected to wait twenty minutes for a faculty member to come to class."

A daily listing of cancelled classes will be listed at the BCC home page under Class Cancellations located at the bottom of the home page (www.bergen.edu). A daily list of cancelled classes may also be posted in the main building and in Ender Hall. Students should consult these cases before going to class. If students find a class cancelled which has not been listed, they should report this to the Divisional Dean's office, A-304, or the Evening Office, C-107

SERVICES FOR STUDENTS WITH DISABILITIES
Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

ELECTRONIC DEVICES: The use of portable electronic devices such as cell phones, voice and/or video recorders, pagers, laptop or portable computers is not permitted while class (Lecture and Laboratory) is in session. Please TURN OFF these devices before entering class. Cell phone calculators are not permitted.

MATERIALS AND SUPPLIES: In addition to the required text and laboratory manual the following supplies should be purchased:

1. Several #2 (soft) pencils.
2. A pocket-sized scientific calculator (solar cell recommended to avoid battery failure at crucial times). The functions must include direct and inverse trigonometric functions, natural logarithm, and exponents. A linear regression routine would be very helpful.

COURSE CONTENTS:
1. Elementary Fluid Statics and Dynamics
2. Coulomb's Law for Electric Fields
3. Gauss' Law for Electric Fields
4. Electric Potential Energy and Electric Potential
5. Dielectric Materials
6. Capacitance
7. Direct Current Circuits and Kirchhoff's Rules
8. Magnetic Fields and Their Effects on Moving Charges
9. Sources of the Magnetic Field and the Biot-Savart Law
10. Gauss' Law for Magnetic Fields
12. Inductance
13. Alternating Current Circuits and Electromagnetic Energy
14. Maxwell's Equations, the Lorentz Force, and Electromagnetic Waves
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<td>Resistances in Series and Parallel</td>
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<td>Introduction to the Oscilloscope</td>
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**TEXT ASSIGNMENTS:**

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**THE FINAL EXAM (COMPREHENSIVE)**

**BIBLIOGRAPHY AND SUPPORTING MATERIALS:**


All BCC students enrolled in credit courses are entitled to a WebAdvisor account. With WebAdvisor, you may register online, check your schedule, room assignments, GPA, and find out what courses you need to take. To find out more about WebAdvisor or to sign up online, visit [http://go.bergen.edu](http://go.bergen.edu)! While there, please make sure you give us your preferred email address. You'll find directions how to do this at [http://go.bergen.edu/email].

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