# 4/8/2021

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 27 April 2021

Term and Year of Implementation: Fall 2021

**Course Title:** Engineering Physics III

**BRCC Course Rubric:** PHYS 2153

**Previous Course Rubric**: PHYS 223

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 3-0-3

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 45-0-45

**Louisiana Common Course Number:** CPHY 2153

**CIP Code:** 40.0801

**Course Description:** Covers gravity, electricity and magnetism. This calculus-based physics course is intended for engineering and physical science majors.

**Prerequisites:** PHYS 2133 (or PHYS 221) and MATH 2125 (or MATH 211) with grades of ‘C’ or better

**Co-requisites:** None

**Suggested Enrollment Cap:** 24

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Demonstrate comprehension of the fundamental principles of universal gravity.

2. Apply basic concepts in electrostatics to solve related problems.

3. Apply electronic circuitry theory to solve related problems.

4. Solve related problems using fundamental principles of magnetism and electromagnetic induction.

5. Relate physics principles to everyday life.

**General Education Learning Outcome(s):** This course supports the development of competency in the following area(s). Students will:

Engage the scientific method of inquiry, analysis, and problem solving. (General Education Competency: Scientific Reasoning)

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Administration of unit exams during the semester and a comprehensive final exam at the end of the semester.

2. Instructor-designed assignments including, but not limited to, written and oral assignments, projects, homework, and quizzes. All assignments will be graded using an instructor-designed rubric.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

I. Universal Gravity

A. Newton’s Law of Gravity

B. Superposition Principle and Shell Theorem

C. Gravitational Potential Energy

D. Kepler’s Laws

II. Electric Force and Electric Field

A. Electric Charge

B. Coulomb’s Law

C. Electric Field and Gauss' Law

D. Electric Potential

E. Capacitance

III. Electric Circuits

A. Electric Current

B. Resistance and Ohm’s Law

C. Electric Circuits and Kirchoff’s Law

IV. Magnetism

A. Magnetic Force and Magnetic Field

B. Bio-Savart’s Law and Ampere’s Law

V. Electromagnetic Induction

A. Faraday’s Law and Lenz’s Law

B. Generator and Transformer

C. Magnets and Magnetic Materials

VI. Maxwell’s Equation

A. Gauss’s Law for Magnetism

B. Induced Magnetic Field

C. Electromagnetic Waves