# 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 I

**BRCC Course Rubric:** PHYS 2133

**Previous Course Rubric**: PHYS 221

**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 2133

**CIP Code:** 40.0801

**Course Description:** Covers kinematics and dynamics using Newton’s laws of motion, momentum, work and energy; rotational kinematics and dynamics, equilibrium and elasticity, and harmonic motions. This calculus-based physics course is intended for engineering and physical science majors.

**Prerequisites:**  MATH 2115 (or MATH 210) with grade of ‘C’ or better

**Co-requisites:** MATH 2125

**Suggested Enrollment Cap:** 24

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

1. Demonstrate knowledge of classical mechanics based on Newton’s laws of motion by solving dynamics problems, including work, energy and momentum.

2. Relate linear dynamics to rotational dynamics by solving problems in areas that include rotational energy and angular momentum.

3. Apply principles of classical statics to solve problems in equilibrium, elasticity of materials, and oscillations.

4. 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. Measurement

A. SI System

B. Significant Digits

II. Kinematics and Motion

A. Motion in a straight line

B. Vectors and motion in more than one dimension

C. Newton's Law of Motion

III. Classical Dynamics – Various Force

A. Gravity

B. Normal Force

C. Tension

D. Friction

IV. Energy, Conservation and Momentum

A. Work and Energy

B. Potential Energy

C. Momentum and Conservation of Momentum

D. Collisions and Systems of Particles

V. Rotational Motion

A. Rotational Kinematics

B. Rotational Dynamics

C. Rotational Energy

VI. Statics

A. Equilibrium – Force and Torque

B. Elasticity of Materials

VII. Simple Harmonic Motion