# 8/12/2020

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 2 September 2020

Term and Year of Implementation: Fall 2020

**Course Title:** Elementary Differential Equations and Linear Algebra

**BRCC Course Rubric:** MATH 2904

**Previous Course Rubric**: MATH 290

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 4-0-4

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 60-0-60

**Louisiana Common Course Number:**

**CIP Code:** 27.0503

**Course Description:** Introduces the student to first order differential equations, linear differential equations with constant coefficients, and systems of differential equations; vector spaces, linear transformations, matrices, determinants, linear dependence, bases, systems of equations, eigenvalues, eigenvectors, Laplace transforms, and Fourier series.

**Prerequisites:** Appropriate placement test score, or MATH 2125 (or MATH 211) with a grade of “C” or better

**Co-requisites:** None

**Suggested Enrollment Cap:** 35

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

1. Describe differential equations in terms of their basic ideas, terminology, and how they arise.

2. Use canonical procedures to solve first order linear differential equations and exact differential equations.

3. Discuss higher order differential equations.

4. Employ matrix operations to solve systems of differential equations and linear systems.

5. Utilize the theory of vector spaces and sub spaces, linear dependence and independence, basis and dimension, and change of basis using additional solution techniques such as Laplace Transforms and Fourier Series.

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

1. Instructor-created exams, quizzes, and/or homework

2. A comprehensive final exam

**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. First Order Differential Equations

II. Matrices and Systems of Linear Equations

III. Determinants

IV. Vector Spaces

V. Linear Transformations

VI. Linear Differential Equations of Order n

VII. Systems of Differential Equations

VIII. The Laplace Transform and Some Elementary Applications

IX. Series Solutions to Linear Differential Equations