# 1/4/2023

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 2 February 2023

Term and Year of Implementation: Spring 2023

**Course Title:** The Nature of Mathematics

**BRCC Course Rubric:** MATH 1003

**Previous Course Rubric**:

**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:** CMAT 1204

**CIP Code:** 27.0101

**Course Description:** Covers logic, the algebra of logic, computers, and number systems; networks and combinatorics; probability and statistics. This course is for students majoring in liberal arts and social sciences.

**Prerequisites:**  Appropriate mathematics placement test score

**Co-requisites:** None

**Suggested Enrollment Cap:** 40

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

1. Apply basic concepts from set theory and graph theory to solve problems from real life.

2. Develop techniques to evaluate arguments and compound statements using algebraic logic.

3. Apply selected topics related to statistics and probability to improve decision making through an understanding of expected value and statistical normalcy.

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

Use processes and models to solve quantitative problems. (General Education Competency: Quantitative and Symbolic Reasoning)

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

1. Instructor-created exams and homework

2. A comprehensive departmental final exam will be given

**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. Problem Solving and Critical Thinking

A. Inductive and Deductive Reasoning

B. Estimation and Graphs

C. Problem Solving

II. Set Theory

A. Basic Set Concepts

B. Venn Diagrams and Subsets

C. Venn Diagrams and Set Operations

D. Set Operations and Venn Diagrams with Three Sets

E. Surveys and Cardinal Numbers

III. Logic

A. Statements, Negations, and Quantified Statements

B. Compound Statements and Connectives

C. Truth Tables for Negation, Conjunction, and Disjunction

D. Truth Tables for the Conditional and Biconditional

E. Equivalent Statements, Conditional Statements, and De Morgan’s Laws

F. Arguments and Truth Tables

G. Arguments and Euler Diagrams

IV. Counting Methods and Probability

A. The Fundamental Counting Principle (FCP)

B. Permutations

C. Combinations

D. Fundamentals of Probability

E. Probability with the FCP, Permutations, and Combinations

F. Events Involving Not and Or; Odds

G. Events Involving And; Conditional Probability

H. Expected Values

V. Statistics

A. Sampling, Frequency Distribution, and Graphs

B. Measures of Central Tendency

C. Measures of Dispersion

D. The Normal Distribution

E. Scatter Plots, Correlation, and Regression Lines