# 8/15/2020

# 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:** Discrete Structures

**BRCC Course Rubric:** CSCI 2003

**Previous Course Rubric**: CSCI 200

**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:**

**CIP Code:** 11.0701

**Course Description:** Introduces logic and mathematics for solving problems required in the theoretical study of computer science. Topics include sets, functions, formal logic, proof techniques, combinatorics, relations, matrices, Boolean algebra, finite state machines, and combinational and sequential circuits.

**Prerequisites:**  MATH 1223 (or MATH 111)

**Co-requisites:** None

**Suggested Enrollment Cap:** 25

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

1. Construct a discrete structure.

2. Use basic ideas to manipulate basic structures.

3. Recognize standard prepositional logic connectives used to convert logical expressions into conjunctive and disjunctive normal form.

4. Demonstrate the ability to write and evaluate proofs.

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

1. Student participation

2. In-class assignments and quizzes

3. Formal presentation

4. Homework assignments

5. Instructor-prepared tests

**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. Basic logic

A. Proofs and algorithms

B. Induction

C. Boolean algebra

D. Predicate logic

II. Functions, relations and sets

A. Basics of functions and sets

B. Equivalence and order relations

C. Recursive definitions and algorithms

D. Functional programming (in Scheme)

III. Integers and Integer Algorithms

A. Basics

B. Counting

C. Modular arithmetic

D. Greatest common divisor, prime numbers

E. Probability

IV. Introduction to Algorithm Analysis

A. Introduction to Order of functions

B. Elementary Recurrence relations

C. Analysis of several simple algorithms

V. Topics: one or more of the following:

A. Introduction to Graphs and Trees

B. Introduction to Matrices

C. Introduction to Program correctness

D. Regular expressions

E. Relational algebra and elementary SQL

F. Boolean Algebra and circuits