TITLE OF COURSE: CSC 113 Computer Logic and Discrete Mathematics   **Credits: 3**

TERM:

PREREQUSITE(S): MAT 100 or 106 or 107 or higher

INSTRUCTOR:
OFFICE HOURS: **LOCATION**:

EMAIL ADDRESS   **PHONE**:

1. **COURSE DESCRIPTION:**
   This course covers widely applicable mathematical tools for computer science, including topics from combinational logic, set theory, number theory, relations, functions, graph theory, Combinatorial applications include Karnaugh Map techniques for logic simplification and, it includes practice in reasoning formally and proving theorems.

2. **COURSE OBJECTIVES:**
   Upon completion of this course, students will be able to:
   ➢ Understand and distinguish among numbering systems such as Binary, Decimal, Hexadecimal and Octal.
   ➢ To convert from one numbering system to another.
   ➢ To represent data in many forms such Binary, Binary Coded Octal (BCO), and Binary Coded Hexadecimal (BCH).
   ➢ Perform some simple arithmetic operations using different numbering systems.
   ➢ Understand the relationship between Boolean algebra and logic gates.
   ➢ Express Boolean function in logical gates.
   ➢ Draw and map the truth tables for logical expressions.
   ➢ Implement and understand the Large Circuit Integration (LCI) using Karnaugh Map reduction techniques.
   ➢ Understand and implement the concepts of sets, graphs, trees and networks.

3. **TEXTBOOK REQUIRED:**
   Required: Discrete Mathematics 8th Edition
   By: Richard Johnson Baugh.
      ISBN-13: 978-0-321-96468-1
      ISBN-10:   0-321-96468-3

   Note: *Related topics will be selected from the following chapters: 1, 2, 9, 10, 7, 8 and may be chapter 6.*
   Supplements: certain topics will be introduced from:

Logic and Discrete Mathematics: A Computer Science Perspective
By: **Jean-Paul Tremblay**,

4. **EVALUATION METHODS:**
    ***Student will be graded based on*:**
    - Lab and class participation **10%**
    - **Midterm Examination 30%**
    - Final Examination **30%**
    - Homework assignments **and Quizzes 30%**

Grading policy:

95 - 100	**A**
90 - 94	**A-**
85 - 89	**B+**
80 - 84	**B**
75 - 79	**C+**
70 - 74	**C**
65 - 69	**D**
0 - 64	**F**

Course Rules:
- No makeup exams will be given for missing tests, unless official and authenticated documents are provided.
- Late Homework assignments will not be accepted.
- No makeup for homework and lab assignments
- All homework assignments must be handed in in the form of a hard copy.
- No homework assignments will be accepted by e-mail.
- The schedule for the tests and the laboratory assignments depends on the covered material.

5. **ATTENDANCE POLICY:** Students are expected to attend all classes and are responsible for material covered in missed classes. Three or more absences may result in failure of the course. **Absences during exams** without proper or valid justifications will result in a zero for that exam. **Valid justifications** include doctor's notes, police reports for accidents, flight tickets. When properly justified, absence during exams could be made up and the **make-up exam** should be scheduled within two weeks after the missed exam. Missing the final exam will result in an "Incomplete" grade that could turn into an F within a few weeks after the end of the semester. Students averaging a D grade and having completed most of their work could have the opportunity to improve their final grade by making up their missing assignments during the break, but they have to consult with their instructor and submit the "Incomplete" form.

6. **CLASS PARTICIPATION**: that includes individual contributions during class sessions and during group activities. It also includes DIY in-class practice exercises, questions, answers or comments during lectures. Absences will be awarded a zero for participation. A full class participation is worth 10 points.
    Note: all questions and explanations must be addressed to the class' attention and otherwise would be considered negative class participation.

7. **USE OF ELECTRONIC COMMUNICATION DEVICES:**
Cellular phones should be put in vibration mode and put away during lectures and exams. The use of any electronic device during an exam could result in failure of the exam, and could also result in failure of the course. Also, laptops and tablets are not allowed during the lecture unless used to access class materials. Tablets could be used for note taking.

Note. If you expect an emergency call during an exam, you should notify you professor or the exam proctor beforehand, and a specific action should be taken to ensure an appropriate outcome.

8. WEEKLY OUTLINE:

WEEK	TOPIC	ASSIGNED HW and READINGS	Lecture
1	Sets, Proposition, compound proposition, Conjunction, Dis-conjunction, Truth Tables (AND,OR, NOT, XOR), Lab (Group work)	Selected problems from end of ch1	L1 & L2 Ch 1
2	Conditional proposition, Logical Equivalence, Converse, bi-condition proposition, DE Morgan's low for Logic,	Selected problems from end of ch1 Programming assignment Lab and H/W	L 3 Ch 1
3	Lecture (Functions: Definitions, Domain, Range, One to One Injective, Hash functions (definetions, collision, examples)	Selected problem from end of the unit	L4 Ch3
4	Sequences and Strings(concepts, operations and exampals)	Selected problem from end of the unit Selected problem from end of the unit	L5 Ch 3
5	Go over Homework problems from previous class Relations (Matrices of Relations: Reflexive, Sympatric, Anti Sympatric, Transitiv) ** Equivelance Relations	selected questions from end of unit	L 6 Ch 3
6	Group work and individuals lab Relations (Matrices of Relations: Reflexive, Sympatric, Anti Sympatric, Transitiv) ** Equivelance Relations	elected questions from end of unit	
7	**Algorithms and Algorithms Analysis**	**Assign HW from Algorthims handout**	**L7, Ref Ch 4**
8	**MidTerm Exam**		
9	**Recursive Alqorithms**	**Assign HW from Algorthims handout**	(L8, Ref Ch 4, Ch 7)
10	**Spring Break** **No Class**		
11	**Numbering Theory (Ch 5) (Section 1)** **Binary, Hex, Octal, Decimal, Numbering systems**	Homeork, group work, programming assignmnet converting from one numeric system to another writing a program to do the converion Ariithmatic operations on different numeric systems(Add, mult, sub, divide)	L9, Ref ch5
12	**Numbering Theory (Ch 5) (Section 2)** **Arithmetic operators**	Homeork, group work, programming assignmnet converting from one numeric system to another writing a program to do the converion Ariithmatic operations on different numeric systems(Add, mult, sub, divide)	L10, Ref ch5
13	**Boolean Algebra and Combinational Circuits.**	end of Unit, homework and group work	L11, Ref Ch 11

14	L12 (A)Demorgan's Theory, Function realization, L12 (B)Karnaugh Map techniques for logic simplification and circuits integration.	end of Unit, homework and group work	L12(A,B), Ref Ch 11
15	Trees(Terminology, Spanning trees, Binry Trees, Trees Traversal) Graphs and Dikjistra Algorithm Automata(finite State) Grammer and languages	Aselected questions form a handout	L13 Ref Ch9 L14 R Ch8, Ch 12
16	**Final Exam**		

9. USE OF ELECTRONIC COMMUNICATION DEVICES:

> ➢ No internet browsing, instant messaging, chatting or E-mail during exams.

10. DISABILITY SUPPORT STATEMENT:

Students with disabilities who believe that they might need accommodations in this class are encouraged to contact, Disability Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student and individual student.

11. ACADEMIC INTEGRITY STATEMENT:

Academic Integrity Standards

Academic integrity is central to the pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students earn college credits by their honest efforts. When they are awarded a certificate of degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

Violations of the principle of academic integrity include:

- Cheating on exams
- Reporting false research data or experimental results
- Allowing other students to copy one's work to submit to instructors
- Communicating the contents of an exam to other students who will be taking the same test
- Submitting the same project in more than one course, without discussing this first with the instructor
- Submitting plagiarized work. Plagiarism is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work.

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Students who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. In some cases, serious or repeated instances of academic integrity violations may warrant further disciplinary action.

Student Classroom Recording Policy

- Hudson County Community College prohibits the audio-visual recording, transmission, and distribution of classroom sessions. Classes may only be recorded with the advance written permission of the instructor. The Hudson County Community College classroom recording policy must be listed in all syllabi.
- All classroom recordings can only be used for academic purposes by students enrolled in that class. Recordings may not be shared, reproduced, or uploaded to public websites or other mediums, and these recordings may contain copyrighted material and are prohibited from any form of commercial use.
- All students and guests must be informed that the class may be recorded. Due to issues related to privacy and the possible inhibition of student participation, instructors should be mindful of the effects of permitting classroom recording.
- Instructors should retain electronic or paper copies of their written consent to grant classroom recordings.
- Students must destroy their recordings at the end of the semester.
- Students who are granted permission to record their class by the office of Disability Support Services should inform the instructor beforehand and are subject to the policies outlined in this document.
- Violation of this policy is subject to disciplinary action listed under the code of conduct as included in the Student Handbook.