COURSE OUTLINE: MTH0122 - COMPUTER MATH

Prepared: The Mathematics Department
Approved: Martha Irwin, Chair, Community Services and Interdisciplinary Studies

Course Code: Title	MTH0122: COMPUTER MATHEMATICS
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Semesters/Terms:	19F
Course Description:	This course presents mathematics needed in computer studies. Emphasis is placed on developing logical thinking skills and an algorithmic approach to problem-solving.
Total Credits:	4
Hours/Week:	3
Total Hours:	45
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 10 Manage the use of time and other resources to complete projects.
Course Evaluation:	Passing Grade: 50%, D
Books and Required Resources:	Mathematics for Data Processing by Robert McCullough Publisher: Prentice-Hall Edition: 3rd ISBN: 9780895827005 Calculator - Sharp EL-520XTB (available in the bookstore)
Course Outcomes and Learning Objectives:	Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
1. Basic algebra review	1.1 Define the sets of numbers: natural numbers, integers, rational numbers and real numbers. 1.2 Know the properties of real numbers and given an example, name the property. 1.3 Know the rules of exponents and simplify exponential and radical expressions. 1.4 Use BEDMAS to evaluate arithmetic and algebraic expressions. 1.5 Solve equations and inequalities of first degree or solve for a specified variable. 1.6 Convert units of measure using the SI metric system.

Course Outcome 2	Learning Objectives for Course Outcome 2
2. Number systems	2.1 Identify the face value and place value of the digits in a number. 2.2 Write a base 10 number in expanded form. 2.3 Using base 2,4,8,and 16, convert to and from base 10 using various methods. 2.4 Perform the operations of addition and subtraction using base 2,4,8,and 16 numbers.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Computer considerations	3.1 Define significant digits, accuracy and precision. 3.2 State the accuracy and precision of a quantity, and round off to a given accuracy. 3.3 Write a number in decimal notation, standard notation and engineering notation. 3.4 Convert between frequency and period using SI units. 3.5 Use the one byte method and two`s complement form for negatives to store an integer. 3.6 Represent a real number with four bytes using the IEEE standard.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Sets	4.1 Write a set by listing the elements of the set. 4.2 Write a set by using set-builder notation. 4.3 List all the subsets and proper subsets of a given set. 4.4 State and perform the operations of union, intersection and complement. 4.5 Draw a Venn diagram to find the relationship between sets A, B, and C. 4.6 Know the basic properties of sets and given an example, name the property.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Logic	5.1 Define a statement, compound statement and a connective. 5.2 Construct a truth table using various connectives and statements. 5.3 Using a truth table, show that two statements are equivalent. 5.4 Define a tautology and a contradiction. 5.5 Using a truth table or a Venn diagram, show whether an argument is valid or invalid. 5.6 Know the basic properties of mathematical logic and given an example, name the property.
Course Outcome 6	**Learning Objectives for Course Outcome 6**
6. Boolean algebra	6.1 Use the two operations of Boolean algebra to evaluate a binary expression. 6.2 Show the way electricity flows in a parallel circuit and in a series circuit. 6.3 Draw a network to represent a given Boolean expression. 6.4 Know the basic properties of networks and given an example, name the property. 6.5 Simplify a network by writing the property used in each step of the simplification.

	6.6 Find the output from a pair of numbers passing through an AND gate, OR gate or NOT gate. 6.7 Draw a logic circuit to represent a Boolean expression. 6.8 Find the output from a half-adder and full-adder circuit for a given condition.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Test 1	10%
Test 2	20%
Test 3	10%
Test 4	20%
Test 5	20%
Test 6	20%

CICE Modifications:

Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

A. Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

B. Tests may be modified in the following ways:

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

C. Tests will be written in CICE office with assistance from a Learning Specialist.

The Learning Specialist may:

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

D. Assignments may be modified in the following ways:

	1. Assignments may be modified by reducing the amount of information required while maintaining general concepts. 2. Some assignments may be eliminated depending on the number of assignments required in the particular course. ***The Learning Specialist may:*** 1. Use a question/answer format instead of essay/research format 2. Propose a reduction in the number of references required for an assignment 3. Assist with groups to ensure that student comprehends his/her role within the group 4. Require an extension on due dates due to the fact that some students may require additional time to process information 5. Formally summarize articles and assigned readings to isolate main points for the student 6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment **E. Evaluation:** Is reflective of modified learning outcomes. **NOTE:** Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes
Date:	August 28, 2019
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.