COURSE OUTLINE

MTH122

Prepared: The Mathematics Department   Approved: Sherri Smith

Course Code: Title	MTH122: COMPUTER MATHEMATICS
Program Number: Name	:
Department:	MATHEMATICS
Semester/Term:	17F
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
Essential Employability Skills (EES):	#3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems.
Course Evaluation:	Passing Grade: 50%, D
Evaluation Process and Grading System:	
Books and Required Resources:	Mathematics for Data Processing by Robert McCullough Publisher: Prentice-Hall Edition: 3
Course Outcomes and Learning Objectives:	

Evaluation Type	Evaluation Weight
Tests (6)	100%

Course Outcome 1.

Basic algebra review

Learning Objectives 1.

1. Define the sets of numbers: natural numbers, integers, rational numbers and real numbers.
2. Know the properties of real numbers and given an example, name the property.
3. Know the rules of exponents and simplify exponential and radical expressions.

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4. Use BEDMAS to evaluate arithmetic and algebraic expressions.
5. Solve equations and inequalities of first degree or solve for a specified variable.
6. Convert units of measure using the SI metric system.

Course Outcome 2.

Number systems

Learning Objectives 2.

1. Identify the face value and place value of the digits in a number.
2. Write a base 10 number in expanded form.
3. Using base 2,4,8,and 16, convert to and from base 10 using various methods.
4. Perform the operations of addition and subtraction using base 2,4,8,and 16 numbers.

Course Outcome 3.

Computer considerations

Learning Objectives 3.

1. Define significant digits, accuracy and precision.
2. State the accuracy and precision of a quantity, and round off to a given accuracy.
3. Write a number in decimal notation, standard notation and engineering notation.
4. Convert between frequency and period using SI units.
5. Use the one byte method and two`s complement form for negatives to store an integer.
6. Represent a real number with four bytes using the IEEE standard.

Course Outcome 4.

Sets

Learning Objectives 4.

1. Write a set by listing the elements of the set.

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2. Write a set by using set-builder notation.
3. List all the subsets and proper subsets of a given set.
4. State and perform the operations of union, intersection and complement.
5. Draw a Venn diagram to find the relationship between sets A, B, and C.
6. Know the basic properties of sets and given an example, name the property.

Course Outcome 5.

Logic

Learning Objectives 5.

1. Define a statement, compound statement and a connective.
2. Construct a truth table using various connectives and statements.
3. Using a truth table, show that two statements are equivalent.
4. Define a tautology and a contradiction.
5. Using a truth table or a Venn diagram, show whether an argument is valid or invalid.
6. Know the basic properties of mathematical logic and given an example, name the property.

Course Outcome 6.

Boolean algebra

Learning Objectives 6.

1. Use the two operations of Boolean algebra to evaluate a binary expression.
2. Show the way electricity flows in a parallel circuit and in a series circuit.
3. Draw a network to represent a given Boolean expression.
4. Know the basic properties of networks and given an example, name the property.
5. Simplify a network by writing the property used in each step of the simplification.
6. Find the output from a pair of numbers passing through an AND gate, OR gate or NOT gate.
7. Draw a logic circuit to represent a Boolean expression.
8. Find the output from a half-adder and full-adder circuit for a given condition.

Date:	Thursday, August 31, 2017
	Please refer to the course outline addendum on the Learning Management System for further

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information.