INTI International University & Colleges™

COURSE STRUCTURE

Name of Course: DISCRETE MATHEMATICS

Course Code: MAT1104

Credit Hours: 3

Prerequisite/co-requisite: MAT1103 FUNDAMENTALS OF MATHEMATICS

Summary: This course covers topics on bases and number representation, computer representation and arithmetic, Boolean algebra, propositional calculus, sets and functions, coding and graphs.

Course Learning Outcomes:
Upon completing this course, the students will be able to:
CLO1: Solve mathematics problems in computing using discrete mathematics. (C3, PLO1)
CLO2: Use algebra, set and the graph theory to solve mathematical problems in computing. (C3, PLO7)
CLO3: Analyze the logic and graph theory using the algebraic method. (C4, PLO2)

Course Format:

Total Student Learning Time (SLT) (L = Lecture; T = Tutorial; P = Practical; EL = E-Learning):					
Learning Hours				Independent Learning (hr)	Total Student Learning Time (hr)
L	T	P	EL		
14	14	0	14	78	120

Teaching and Delivery Methods/ Teaching Methodology:

Lectures, Tutorial and Practical/Laboratory work delivered in a combination of blended & independent learning

E-Learning provided by INTI makes learning more accessible and convenient for the students. The blended model utilized by INTI is the integration of E-learning via INTI's Learning Management System and the conventional lecturer-led classroom activities. INTI students are required to access to the online learning materials (additional notes, reading materials, online assessments, discussion forums and etc.), so as to acquire a complete learning process. This also promotes self-directed learning in encouraging INTI students to be independent learners.

Syllabus:

Course Content Outline	CLO*
Bases and Number Representation: Real numbers and the decimal number system. The binary number system. Conversion from decimal to binary. The octal and hexadecimal systems. Arithmetic in non-decimal bases.	1, 2
Computer Representation and Arithmetic: Representing numbers in a computer. Representing integers. Arithmetic with integers. Representing real numbers. Arithmetic with real numbers. Binary coded decimal representation.	1, 2
Boolean Algebra: Boolean functions. Representing Boolean functions. Logic gates. Minimization of circuits (Karnaugh maps).	1, 2
Propositional Calculus: Statements. Logical connectives. Logical equivalence. Truth tables. Formal proof.	1, 2, 3
Sets, Functions and Relations: Set theory. Set operations. Cardinality. Functions and their algebra. Relations.	1, 2
Graphs: Definitions of graph and tree. Shortest path (Dijkstra's Algorithm).	1, 2, 3
Coding: Basic idea of information. Simple coding schemes. Idea of error correction. Cryptography and public key codes.	1, 2

Student Evaluation:

Continuous Assessment		Percentage (%)	CLO
1	Test	20	1
2	Assignment	20	3
3	Quiz	20	1
Final Assessment		**Percentage (%)**	**CLO**
Final Exam		40	2
Total		**100%**	

Final exam format:
Duration: 2 hours
The students will be required to answer ALL questions.

Grading Scale:
A+ (90-100), A (80–89), A- (75-79), B+ (70-74), B (65–69), B- (60–64), C+ (55–59) C (50–54), C- (45–49), D (40–44), F (0–39), RP (Resit Pass) Marks capped at 50, RF (Resit Fail) (0-49)

IMPORTANT NOTE:
STUDENTS ARE REQUIRED TO **"PASS"** BOTH CONTINUOUS AND FINAL ASSESSMENT IN ORDER TO PASS THE SUBJECT.

Additional Information:

Main Reference(s) Supporting Course:

1. Hunter, D.J. (2017) [Essentials of Discrete Mathematics](#), 3rd ed., Jones & Bartlett (**511 HUN 2017**).

Additional Reference:

1. Rosen, KH. (2019). Discrete Mathematics and its Applications. 8th ed., McGraw Hill.