KEMENTERIAN PENDIDIKAN MALAYSIA

COURSE OUTLINE

POLITEKNIK MALAYSIA
KUCHING SARAWAK

COURSE CODE: DBM2033 COURSE NAME: DISCRETE MATHEMATICS	DATE OF ISSUE: 01 JULY 2019 PAGE: Page 1 of 7

COURSE	: DBM2033 DISCRETE MATHEMATICS
PROGRAM	: DDT2A, DDT2B, DDT2C
INSTRUCTIONAL DURATION	: 15 WEEKS
CREDIT(S)	: 3
PREREQUISITE(S)	: NONE

SYNOPSIS

DISCRETE MATHEMATICS course introduces students to logical and mathematical thinking. This focuses on providing basic logic, sets, relations and functions, as well as graphs and trees which in symbolic tools, graphical concepts and numerical calculattions. This course also addresses the counting principle as well as induction and recursion which are related to the information technology programme.

Prepared by:	Certified by:
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Signature:	Signature:
Date: 25.6.19	Date: 28/06/2019

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COURSE LEARNING OUTCOMES (CLO)

Upon completion of this course, students should be able to:

CLO	Course Learning Outcome	Program Learning Outcome(s)	Taxonomies & Soft Skills	Assessment Methods	Recommended Delivery Methods
CLO1	Explain the basic terminology of basic logic, proofs, counting principles, functions, relations and sets.	PLO1	C2	Quiz, Test, Tutorial Exercise Final Test	Interactive Lecture, Discussion and Q&A Session
CLO2	Perform the standard operations associated with proposition logic, graphs and trees.	PLO1	C3	Quiz, Test, Tutorial Exercise Final Test	Interactive Lecture, Discussion and Q&A Session
CLO3	Solve related mathematical problems using appropriate concepts, formulas and techniques.	PLO1, PLO4	C4, A3	Assignment Final Test	Interactive Lecture, Discussion and Q&A Session

PLO	Program Learning Outcome
PLO1	Apply the foundation of computing, mathematics and soft skills to be competent and possess strong understanding in related Information Technology (IT) fields.
PLO4	Demonstrate strong analytical and critical thinking skills to troubleshoot and solve problems within realistic constraints by applying knowledge, principles and skills in IT.

Remark:

LD4 Critical thinking and problem solving skills

DISTRIBUTION OF STUDENT LEARNING TIME

Topic	Dependent Learning						Independent Learning				Total SLT
			Others								
	Lectures	Tutorial	Quiz	Tutorial Exercise	Assignment	Final Test	Lectures	Tutorial Exercise	Preparation for Final Assessment	Final Test	
1	5	5		0.5		0.5	4	4	2.25	0.5	120
2	6	5	0.25	0.5		0.5	5	5	2	0.5	
3	4	6	0.5	0.75		1	7	7	2	0.5	
4	4	6	0.25			2	5	5	1	0.5	
5	4	2	0.25		2		4	8.75			
Total	23	24	1.25	1.75	2	4	25	29.75	7.25	2	120

WEEKLY SCHEDULE

WEEK	TOPIC	ASSESSMENT PLAN
1-3 01.07.19- 21.07.19	Chapter 1 – Basic Logic and Proofs a. Propositional logic b. Compound proposition c. Truth table d. Bitwise operations e. Formulae in proposition logic f. Aplication of propositional logic g. Predicate logic h. Proofs i. Logical equivalence rules j. Inference to validate arguments k. Rules of inference	
4-6 22.07.19- 11.08.19	Chapter 2 – Sets, Relations and Functions a. Sets and set operation b. Discrete structures built with the help of sets c. Set notation and operation on sets d. Venn diagram to represent set operaations e. D'Morgan's Law f. Relations g. Functions h. Graphs of the Floor and Ceiling functions i. Standard operations associated with sets, functions and relations	Tutorial Exercise 1 Quiz 1
MID SEMESTER BREAK		
7-9 19.08.19- 08.09.19	Chapter 3 – Graphs and Trees a. Concept of graphs b. Properties of graph c. Graph representations d. Types of graphs e. Path, cycles and planarity in graphs f. Isomorphic graphs g. Euler paths and Euler circuits in graphs h. Hamilton paths and Hamilton circuits in graphs i. Travelling Salesman Problem (TSP) j. Concept of trees k. Spanning trees l. Binary search tree m. Tree Traversals	Tutorial Exercise 2 Tutorial Exercise 3 Quiz 2
10-12 09.09.19- 29.09.19	Chapter 4 – Induction and Recursion a. Mathematical induction b. Induction proofs steps: Bases and Inductive step c. Recursion	Tutorial Exercise 4 Quiz 3

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WEEK	TOPIC	ASSESSMENT PLAN
13-14 30.09.19- 13.10.19	Chapter 5 – Basic Counting Rules a. Counting principles b. Decomposition rules/counting principle c. Complex counting problems typically require a combination of the sum and product rules d. Permutations and combinations	Assignment Quiz 4
15-18 14.10.19- 10.11.19	**FINAL EXAMINATION**	Final Test

ASSESSMENT

Component	Topic	Assessment Method	Quantity of Assessment	Percentage	Total
Continuous Assessment (CA)	T2, T3, T4, T5	Quiz	4	15%	60%
	T1, T2, T3, T4	Tutorial Exercise	4	20%	
	T5	Assignment	1	25%	
	T1, T2, T3, T4	Final Test	4 Subjective Questions (Compulsory)	40%	40%
Total					**100%**

ATTENDANCE

The students should adhere to the rules of attendance as stated in the latest version of *Arahan-Arahan Peperiksaan dan Kaedah Penilaian*:

1. Student must attend not less than 80% of lecture hours as required for the course.
2. The student will be prohibited from attending any lecture and assessment activities upon failure to comply the above requirement. Zero mark will be given to the course.

REFERENCES

Main:

Kenneth H. Rosen, (2011). *Discrete Mathematics with Applications 7th Edition.* USA: McGraw-Hill Education
(ISBN : 978-0073383095)

Jenkyns, T.&n Stephenson, B., (2012). *Fundamentals of Discrete Maths for Computer Science: A Problem-Solving Primer (Undergraduate Topics in Computer Science).* New York: Springer.
(ISBN: 978-1447140689)

Additional:

Babu, R. (2011). *Discrete Mathematics.* India: Pearson Education.
(ISBN: 978-81-317-3310-3)

Epp. S, S., (2011). *Discrete Mathematics with Applications 4th Edition.* USA: CENCAGE Learning
(ISBN : 978-0-095-39132-6)

Gallier, J. (2011). *Discrete Mathematics.* New York: Springer.
(ISBN: 978-1-4419-8045-5)

Garrier, R. & Taylor, J. (2010). *Discrete Mathematics: Proofs, Structures and Applications, 3rd Edition.* USA:CRC Press.
(ISBN: 97-1-4398-1280-8)

Hunter, D. (2012). *Essentials of Discrete Mathematics, 2nd Edition.* USA: John & Bartlett Learning.
(ISBN: 978-1-4496-0442-4).

N. Chandrasekaran & M.Umaparvathi. (2010). *Discrete Mathematics.* India: PHI Learning Private Limited.
(ISBN: 978-81-203-3938-5)

Rosen, K., (2011). *Discrete Mathematics and Its Application,* 7th Edition. USA: McGraw-Hill
(ISBN: 978-0073383095)