Subject Description Form

Subject Code	COMP202
Subject Title	Discrete Structures
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Pre-requisite/Co-requisite: Nil Exclusion: COMP207, COMP210
Objectives	• To introduce students to the concepts and applications of discrete mathematical structures. • To help students attain the fundamental mathematical knowledge and reasoning skills they need to be successful in upper-level computing subjects.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: *Professional/academic knowledge and skills* (a) apply discrete structures knowledge and skills to solve real world problems using computers; (b) understand the major mathematical knowledge in computer systems; (c) apply the computer programming techniques to solve practical engineering problems; *Attributes for all-roundedness* (d) acquire mathematical knowledge and skills required to further study other more advanced computing-related subjects; (e) relate learned mathematical knowledge to other computing subjects.
Subject Synopsis/ Indicative Syllabus	**Topic** **1. Set, relations and functions** Sets, relations and functions, equivalence, cardinality, order relations. **2. Propositional and predicate logic** Logical expressions; truth tables; Karnaugh maps; tautologies; deduction; predicates; quantifiers. **3. Graphs and trees** Representing graphs and graph isomorphism; connectivity; Euler and Hamilton Paths; shortest path problems; planar graphs; graph coloring; trees and tree traversal; spanning trees and minimum spanning trees. **4. Modeling computation** Automata; grammars and languages.

Teaching/Learning Methodology

- Lectures are designed to clearly explain mathematical topics included in the subject.
- Tutorials are set in the class to assist students to solve related questions.
- Appropriate assignments and quiz are given to encourage student learning of mathematical knowledge.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
1. Assignments	60%	✓		✓	✓	
2. Tutorial exercises			✓	✓		✓
3. Quiz		✓	✓	✓	✓	✓
4. Mid-term		✓	✓	✓	✓	
5. Examination	40%	✓	✓	✓	✓	
Total	100 %					

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assignments and quiz can assist students in the learning of mathematics knowledge and extending their study to computing-related subjects. Quiz, mid-term and examination can force students to independently acquire required mathematical knowledge to attain the learning outcomes.

Student Study Effort Required

Class contact:	
▪ Lecture	39 Hrs.
▪ Tutorial	0 Hrs.
Other student study effort:	
▪ Assignment	10 Hrs.
▪ Review	21 Hrs.
Total student study effort	70 Hrs.

Reading List and References

Textbooks:

1. Richard Johnsonbaugh, *Discrete Mathematics*, 7th Edition, Prentice-Hall, 2008, ISBN: 0131593188.

2. Rosen, K. H. *Discrete Mathematics And Its Applications*, Fifth Edition, McGraw Hill, 2003.

	Reference Books: 1. Dossey, J.A., Discrete Mathematics, Fourth Edition, Addison Wesley, 2002. 2. Kolman, B., Busby, R.C. and Ross, S.C., Discrete Mathematical Structures, Fourth Edition, Prentice Hall, 2000. 3. Truss, J.K., Discrete Mathematics for Computer Scientists, Second Edition, Addison-Welsey, 1999. 4. Hein, J.L., Discrete Structures, Logic and Computability, Second Edition, Jones & Bartlett Publishers, 2002.