Subject Description Form

Subject Code	COMP1411
Subject Title	Introduction to Computer Systems
Credit Value	3
Level	1
Pre-requisite / Co-requisite / Exclusion	Nil
Objectives	The objectives of this subject are to: 1. introduce students to generic structures and components constituting computer systems; 2. educate students to the interplay of computer systems and programming; and 3. expose students to contemporary computer systems composed of miniature computers and multiple computers.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: *Professional/academic knowledge and skills* (a) understand the key components and structures of computer systems; (b) understand the role of programming in computer systems; (c) recognise the contemporary development of computer systems towards smaller, smarter, and more powerful directions; and *Attributes for all-roundedness* (d) recognise the recent development of computing technologies.
Subject Synopsis/ Indicative Syllabus	**Topic** **1. Introduction to Computer Systems** Concepts of a digital system; overview of computer system structures; computer evolution and performance. **2. Computer Systems Structure** A seven-layer viewpoint: applications, high-level programming languages, assembly language, operating systems, instruction set and CPU, microcode, logic gates.

	3. **Computer Systems and Programming**
	Information representation; program representation; compilers and interpreters; systems programming and applications programming; concurrent and parallel programs; graphics card and GPU; external storage; computer networks; network programming; internet and web.
	4. **Contemporary Computer Systems**
	Standalone systems; embedded systems; client/server systems; web-based systems; distributed systems; cloud systems; smart devices and systems; internet of things and integrated systems.

Teaching/ Learning Methodology	Lectures provide students with the main concepts of the course, together with comprehensive examples, through classwork with questions and answers for easy understanding. Tutorials offer the opportunity for students to review the lecture materials through tutorial exercises. Homework assignments help students to develop analytical and problem-solving skills on more realistic scenarios.

Assessment Methods in Alignment with Intended Learning Outcomes						

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed			
		a	b	c	d
Continuous Assessment	**55%**				
1. Class Exercises and Assignments	25%	✓	✓	✓	✓
2. Quizzes and Tests	30%	✓	✓	✓	
Examination	**45%**	✓	✓	✓	
Total	100%				

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

All items are relevant to the assessment of ILO a, ILO b and ILO c, i.e. to understand the key structure and components of computer systems, the linkage with programming, and development in contemporary systems.

Class exercises and assignments are also used to assess forward looking and lifelong learning with computer systems development trend, i.e. ILO d. For instance, article reading and critique of recent systems could be adopted.

Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.

	Other student study effort:	
	▪ Assignments, Tests, Examination	66 Hrs.
	Total student study effort	105 Hrs.
Reading List and References	**Reference Books:** 1. Warford, J. Stanley, *Computer Systems. Jones & Bartlett Learning*, 5th Edition, 2017. 2. Bryant, Randal E. and O'Hallaron, David R., *Computer Systems: A Programmer's Perspective*, 3rd Edition, Pearson, 2016. 3. Articles from journals and magazines, such as Communications of ACM, IEEE Computer, IEEE Internet Computing.	