

Subject Description Form

Subject Code	COMP5411		
Subject Title	Fundamentals of Operating Systems		
Credit Value	3		
Level	5		
Pre-requisite/ Exclusion	Nil		
Objectives	<p>The objectives of this subject are to:</p> <ol style="list-style-type: none"> 1. enable students to learn about key concepts in operating systems; 2. enable students to understand limitations and appreciate innovative solutions; and 3. enable students to apply the knowledge in system and application development and problem solving 		
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a) quickly understand current operating systems and propose enhancement to them when given some particular requirements; b) develop part of operating system components to function properly by programming implementation; and c) use the knowledge learned in the subject to solve real problems encountered in real applications that are related to operating systems. 		
Subject Synopsis/ Indicative Syllabus	<ul style="list-style-type: none"> • Fundamental concepts of operating systems: Operating systems architecture; process management; memory management; file management; protection and security; distributed systems. • Process management: Process and threads; multiprogramming; CPU scheduling; process synchronization; interprocess communication; deadlock handling. • Memory management: Paging; segmentation; virtual memory; page replacement. • File management: File and directory; storage allocation; free-space management; disk scheduling; RAID. • Protection and security: Access control; capabilities; authentication; encryption. • Advanced topics and case studies: Distributed operating systems; client/server systems; fault-tolerance; operating systems design and implementation; Unix; Linux. 		
Teaching/Learning Methodology	Class activities including - lecture, tutorial, lab, workshop seminar where applicable		
Assessment Methods in Alignment with Intended Learning Outcomes	Specific Assessment Methods/Tasks	% weighting	Intended subject learning outcomes to be assessed
			a

	Assignments, Tests & Projects	55	✓	✓	✓
	Final Examination	45	✓	✓	✓
	Total	100			
Student study effort expected	Class Contact:				
	Class activities (lecture, tutorial, lab)			39 hours	
	Other student study effort:				
	Assignments, Quizzes, Projects, Exams			65 hours	
	Total student study effort			104 hours	
Reading list and references	<p>(1) Silberschatz, A., Galvin, P. and Gagne, G., 2011, Operating System Concepts, 8th Ed, Wiley.</p> <p>(2) Tanenbaum, A., 2014, Modern Operating Systems, Second Edition, 4th Ed, Prentice-Hall.</p> <p>(3) Stallings, W., 2011, Operating Systems: Internals and Design Principles, 7th Ed, Prentice-Hall.</p>				