Subject Description Form

Subject Code	COMP5222
Subject Title	Software Testing and Quality Assurance
Credit Value	3
Level	5
Pre-requisite/ Exclusion	Nil
Objectives	The objectives of this subject are to: 1. present effective testing techniques (both black-box and white-box) for ensuring high quality software; 2. learn metrics for managing quality assurance and understand capabilities of test tools.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a) understand the application of quality, cost of quality, quality model in real-life cases; b) apply white-box testing, black-box testing, inspection techniques and test tools in complex real-life applications; c) evaluate systems critically with performance testing and usability testing based on testing metrics.
Subject Synopsis/ Indicative Syllabus	• **Software Quality Concepts:** Software quality problems. Quality definition. Cost of quality, Quality model. • **Code-based Testing Techniques:** Control flow and data flow testing. Mutation testing. Symbolic evaluation. Domain testing. • **Specification-based Testing Techniques:** Equivalence partitioning. Boundary value analysis. Cause-effect graphing. Random testing. State machine testing. Formal program verification. • **Inspection Technique:** Process, Role, Templates. • **Management of Software Quality:** Responsibility. Test cycle (unit, integration, system, alpha and beta testing phases). Design and code reviews. Test plans. Test tools. Quality metrics. Quality prediction. In-process quality tracking.
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	b	c
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	66 hours
	Total student study effort	**105 hours**
Reading list and references	(1) Jorgensen, P.C., 2013, Software Testing: A Craftsman's Approach, 4th Ed, Auerbach Publications. (2) Myers, G.J., Sandler, C., Badgett, T., 2011, The Art of Software Testing, 3rd Ed, Wiley. (3) McCaffrey, J.D., 2009, Software Testing: Fundamental Principles and Essential Knowledge, BookSurge Publishing.	