

## Subject Description Form

<b>Subject Code</b>	COMP2411
<b>Subject Title</b>	Database Systems
<b>Credit Value</b>	3
<b>Level</b>	2
<b>Pre-requisite/ Co- requisite/ Exclusion</b>	Pre-requisite: COMP1011 or equivalent
<b>Objectives</b>	<p>The objectives of this subject are to:</p> <ol style="list-style-type: none"> <li>1. design, develop, implement, and administrate a database system of considerable complexity;</li> <li>2. possess enough background to evaluate various DBMSs of different data models and make the appropriate selection for an organization.</li> </ol>
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <p><i>Professional/academic knowledge and skills</i></p> <ol style="list-style-type: none"> <li>(a) acquire a good understanding of the architecture and functioning of database management systems, as well as to be able to use the associated tools and techniques;</li> <li>(b) understand and apply the principles and practices of good database design and analysis;</li> <li>(c) recognize the direction of database technology and their implication so as to manage and plan database system developments.</li> </ol> <p><i>Attributes for all-roundedness</i></p> <ol style="list-style-type: none"> <li>(d) appreciate development of database technologies for lifelong learning, e.g., web databases;</li> <li>(e) build up on team spirit, presentation and technical writing skills.</li> </ol>

<b>Subject Synopsis/ Indicative Syllabus</b>	<ol style="list-style-type: none"> <li>1. Basic concepts of database system - Database and its applications; DBMS design objectives and its components; ANSI/SPARC three-level system architecture; data independence.</li> <li>2. Database design - Entity-relationship model; functional dependencies; normalization.</li> <li>3. Relational data model - Relational structure; relational languages: relational algebra, relational calculus, SQL; relational constraints: entity constraints, referential integrity constraints and foreign keys.</li> <li>4. File structures and physical database design - File organization; indexing and hashing.</li> <li>5. Application design and query processing - Relational view definition and management; equivalence of query expressions, estimation of query-processing cost, join strategies; embedded SQL.</li> <li>6. Implementation issues - Buffer management; transaction processing; concurrency control; crash and recovery; security and integrity.</li> </ol>
<b>Teaching/Learning Methodology</b>	<p>This subject emphasizes the technical/practical aspects of database design and development. It is intended to equip the student with knowledge and practical experience on the real-life/industrial database application development.</p> <p>The lectures will be used to deliver course material that will be practiced/reinforced during the labs and tutorials.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific Assessment Methods/Tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	e
	Assignments, Tests & Projects	55	✓	✓	✓	✓	✓
	Final Examination	45	✓	✓	✓		
	Total	100					
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge, skills and understanding of <b>Database Systems</b>, thus, <b>continuous assessment</b> is the most appropriate assessment method, including 55% individual assignment, tests and projects. Moreover, 45% examination are included and is held at the end of the semester.</p>							
Student study effort expected	Class Contact:						
	Lecture						39 hours
	Tutorial/Lab						13 hours
	Other student study effort:						
	Assignments, Tests, Projects, Exams						67 hours
	Total student study effort						119 hours
Reading list and references	<ol style="list-style-type: none"> <li>1. Michael Manning. Database Design, Application Development, &amp; Administration, 3rd (international) edition, McGraw-Hill, 2007.</li> <li>2. David Kroenke. Database Processing: Fundamentals, Design and Implementation, 11th edition, Prentice Hall, 2010.</li> <li>3. A Silberschatz, H.F. Korth, S. Sudarshan. Database System Concepts 6th Edition. McGraw Hill, 2011.</li> <li>4. Hector Garcia-Molina, Jeffrey D. Ullman &amp; Jennifer Widom. Database System Implementation, Prentice Hall, 3<sup>rd</sup> edition, 2008.</li> <li>5. C. J. Date. An Introduction to Database Systems, Addison-Wesley Longman, 2004.</li> </ol>						