

# Unit Outline

School of Computing and Mathematics  
College of Health and Science

<b>Unit Name</b>	<b>Database Design and Development</b>
<b>Unit Number</b>	<b>300104</b>
<b>Unit Coordinator</b>	<b>Zhuhan Jiang</b>
<b>Session</b>	Spring, 2011
<b>Handbook Summary</b>	The main purpose of this unit is to provide students with an opportunity to gain a basic knowledge of database design and development including data modelling methods, techniques for database design using a set of business rules that are derived from a case study and finally implementation of the database using a commercial relational database management system. The unit also examines a number of important database concepts such as database administration, concurrency, backup and recovery and security. At the same time student learning and intercommunication skills are enhanced by running tutorial presentations and group assignments.
<b>Credit Points</b>	10
<b>Assumed Knowledge</b>	Programming Fundamentals (300580).
<b>Pre-requisites</b>	NIL
<b>Co-requisites</b>	NIL
<b>Units incompatible with and not to be counted for credit with</b>	200129 - Database Principles for Business Information Systems
<b>Unit Level</b>	Two (2)
<b>Attendance Requirements</b>	All lectures and all tutorial/practicals
<b>Mode of Delivery</b>	Day, on campus
<b>Enrolment Restriction</b>	NIL, subject to maximum allowed class size
<b>Unit Learning Outcomes</b>	<p>At the conclusion of this unit, students will be able to</p> <ul style="list-style-type: none"> <li>Describe components of a database system, advantages and disadvantages of a database system, roles peoples play and the historical development of a database system in the context of a Relational Database Management System (RDBMS).</li> <li>Apply basic skills in database modelling, including ER diagrams and normalization in RDBMS.</li> <li>Explain the basic concepts of relational algebra and apply them in queries.</li> <li>Describe the general concepts of transaction management.</li> <li>Identify concepts in database administration.</li> <li>Describe concepts in database security and backup.</li> <li>Be able to define and manipulate data using structured query language (SQL)</li> <li>Design and develop a database for a business application using a commercial database management system.</li> </ul>
<b>Unit Content</b>	<ul style="list-style-type: none"> <li>Introduction to database concepts and ANSI Spark 3 level architecture.</li> <li>Concepts in data modelling.</li> <li>Integration of data and data independence.</li> <li>Translating a case study into relational concepts and integrity constraints.</li> <li>Introduction to relational algebra/calculus.</li> <li>Data modelling: conceptual, logical and physical database design.</li> <li>Data definition and manipulation using SQL.</li> <li>Concepts in generalization and specialization.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Anomalies in databases and data normalization.</li> <li>▪ Database administration.</li> <li>▪ Introduction to database security and encryption.</li> <li>▪ Introduction to transaction management, concurrency and locking.</li> </ul>
<b>Assessment Items and Weighting</b>	<p>Continuous assessment: 50%</p> <ul style="list-style-type: none"> <li>- Tutorial/Practical exercises: 20% <ul style="list-style-type: none"> <li>◦ Weekly attendance of tut/prac classes (8%)</li> <li>◦ 2 group presentations during the tut/prac classes (4%)</li> <li>◦ Additional Exercises selected from the tut/practicals (8%)</li> </ul> </li> <li>- Assignment 1 (group work): 15%</li> <li>- Assignment 2 (group work): 15%</li> </ul> <p>Final examination: 50%</p> <p>Please see the Learning Guide for more details on the topics.</p> <p>The final examination is the only compulsory component. A student will receive an AF (absent fail) grade if not attending the final exam. Otherwise, a student will pass this unit if he or she achieves an overall 50% or over. Other grades will be determined according to the usual UWS grading scheme.</p> <p>Final marks and grades are subject to confirmation by the School and College Assessment Committee which may scale, modify or otherwise amend the marks and grades for the unit, as may be required by University policies.</p>
<b>Textbook</b>	<ul style="list-style-type: none"> <li>▪ Connolly, Thomas and Begg, Carolyn (2009) Database Systems – A Practical Approach to Design, Implementation, and Management, 5th Edition, Pearson Education International.</li> <li>▪ See the accompanying Learning Guide for additional references.</li> </ul>
<b>On-line Learning</b>	<ul style="list-style-type: none"> <li>▪ Students must ensure to have regular Internet access to the vUWS and the School's websites.</li> <li>▪ Students must regularly check the unit website for the latest information and announcements.</li> </ul>
<b>Special Requirements</b>	<ul style="list-style-type: none"> <li>▪ Desirable to have at home a computer that has installed with Microsoft Access.</li> <li>▪ Desirable to have a USB memory stick.</li> </ul>
<b>Others</b>	<ul style="list-style-type: none"> <li>▪ This Unit Outline should be read in conjunction with the Learning Guide, which contains finer and additional details and requirements on studying this unit.</li> </ul>