SINF90001 Database Systems & Information Modelling

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: Three contact hours per week, in the following general pattern: One lecture, of approximately 1 hour Immediately followed by one tutorial or lab of approximately 1 hour Immediately followed by one discussion/lecture of approximately 1 hour Total Time Commitment: Not available
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements for this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
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Subject Overview:	The subject introduces key topics in modern information organization, particularly with regard to structured databases. The well-founded relational theory behind modern structured query language (SQL) engines, has given them as much a place behind the web site of an organization and on the desktop, as they traditionally enjoyed on corporate mainframes. Topics covered include: the managerial view of data, information and knowledge; entity relationship (ER) and extended entity relationship (EER) modelling; normalization and denormalization; database modelling in UML; the SQL language; data integrity; transaction processing and data warehousing. In addition to traditional database applications, alternative technologies such as XML, web services, data mining and organizational memory technologies such as groupware will be briefly surveyed.
Objectives:	Upon satisfactory completion of this subject, students should: # Have an understanding of the different technologies available to manage structured data, and the evolutionary process that led to them. # Understand the differences between data, information and meta-data. # Know the strengths and weaknesses of structured data and tagged data. # Understand notions including: the enterprise data model (EDM), conceptual modelling, the entity relation (ER) model, the logical model, the physical model, information engineering (IE) and information systems architecture (ISA). # Be able to construct conceptual data models from real-world, natural language Requirements documents. # Be able to apply conceptual modelling to application domains that are new to them, using several bottom-up analysis and design techniques, including Noun-Verb analysis.

	# Be able to competently use a CASE tool (computer-aided software engineering). # Have the ability to define key-based and fully-attributed data models. # Be able to apply Data Normalisation to their models. # Be competent in basic SQL and familiar with the usage of advanced SQL commands. # Understand the need and mechanism for transaction processing. # Understand the so-called ACID properties of transactions and the 2-phase commit. # Understand the relationship of database systems to data warehousing, OLAP, decision support systems (DSS) and data mining. # Understand the differences between ER and Object-oriented (OO) modelling and appreciate how they have influenced each other. # Recognise and understand different modelling notations with respect to databases, including both EER and UML Class diagrams. # Understand what makes a good data model and learn effective modelling strategies to improve the quality of them. # Be familiar with the current technologies and techniques for putting web browser-based interfaces in front of database systems (JavaScript, HTML V5, CSS, ASP and JSP). # Be familiar with the Web Services paradigm including notions and terms such as REST, JSON, SOAP and WSDL. # Understand meta-data, meta-models and their usage. # Be able to adapt and apply their learned modelling techniques, to client-side, end-user mashups of Internet-based services and database resources.
Assessment:	The first assignment (10%) requires a conceptual database design, due around the fifth week of semester (three conceptual diagrams in ER and CASE notation, and 1000 words in a data dictionary format). The second assignment (15%) requires answers to 24 set questions against a known database with fixed data contents - requiring the formulation of 24 SQL Select commands, which is due around the seventh week of semester (requires 24 SQL commands). The third assignment (25%), like the first, requires a conceptual database design for a real-world project (students are given the Requirements document) done in teams of two students, and is due around the tenth week of semester (requires three conceptual diagrams in ER and CASE notation, and 1000 words in a data dictionary format). A two-hour open book examination (part multiple choice, part ER diagrams in graphical notation) in the examination period (50%). Satisfactory completion of the examination and assignment components is necessary to pass the subject.
Prescribed Texts:	There are no prescribed texts for this subject. An extensive set of subject notes will be available from the University Bookshop.
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	The student will acquire skills in Information Modelling - a generic skill that will serve the student well throughout a career in Information Systems. Scoping within analysis is also a valuable cross-discipline skill honed during this subject.
Related Course(s):	Bachelor of Information Systems (Degree with Honours) Graduate Certificate in Information Systems Master of Information Systems Master of Information Technology Master of Science (Information Systems)