

433-661 High Performance Database Systems

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: 24 hours of lectures and 11 hours of workshops; Non-contact time commitment: 84 hours Total Time Commitment: Not available
Prerequisites:	Some previous knowledge of database management as covered in an undergraduate database subject. Knowledge of operating systems and database management at the level of a third year undergraduate program.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>
Coordinator:	Prof Rao Kotagiri
Subject Overview:	<p>Successful companies and organisations rely on the effective and efficient manipulation of data. These include telecommunication companies, banking, retailing, airlines, manufacturing, process control and government instrumentalities. Many end-user applications require the support of a database system. For these applications to be effective, a database system must provide secure and reliable storage of data and be able to retrieve and process the data very efficiently. Knowledge of how the database system works at the architectural level is essential to achieve correct behaviour and the best possible performance for these applications. This subject explores various mechanisms which are used by database systems to provide the features that applications require. Topics covered include database architecture: centralised, distributed, client-server; transaction models: ACID properties, pessimistic locking, optimistic locking, flat transactions, nested transactions, deadlock detection and management; recovery: write-ahead logging, shadow paging; indexing structures: Btrees, hash files, multi-attribute indexing; relational operations: join algorithms, query optimisation; and performance: benchmarking, TPC benchmarks, object-oriented benchmarks. All topics are addressed in the context of both relational and object-oriented database systems, including various commercial database systems.</p>
Objectives:	<p>On successful completion, students should:</p> <ul style="list-style-type: none"> # have detailed knowledge of database systems, both at a conceptual and an architectural level; # have detailed knowledge of database transaction and recovery techniques and concepts; # be able to explain common algorithms for search and indexing; # be familiar with some existing relational and object-oriented database systems; # be able to undertake problem identification, formulation and solution; # have a capacity for independent critical thought, rational inquiry and self-directed learning; and # have a profound respect for truth and intellectual integrity, and for the ethics of scholarship.

Assessment:	Project work of approximately 48-hours undertaken during semester (30%) and a 2-hour written examination (70%).
Prescribed Texts:	None
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
Related Course(s):	Master of Engineering in Distributed Computing Master of Information Technology Master of Software Systems Engineering