

COMP90050 Advanced Database Systems

Credit Points:	12.5															
Level:	9 (Graduate/Postgraduate)															
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.															
Time Commitment:	Contact Hours: 36 hours, made up of 24 one-hour lectures (two per week) and 12 one-hour workshops (one per week) Total Time Commitment: 200 hours.															
Prerequisites:	<p>One of the following:</p> <table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>SINF90001 Database Systems & Information Modelling</td> <td>Not offered 2016</td> <td>12.50</td> </tr> <tr> <td>INFO20003 Database Systems</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>INFO20001 Informatics 3: Content Management</td> <td>Not offered 2016</td> <td>12.50</td> </tr> <tr> <td>INFO90002 Database Systems & Information Modelling</td> <td>Semester 1, Semester 2</td> <td>12.50</td> </tr> </tbody> </table> <p>AND Completion of 50 points of third year computing study or equivalent. GRADUATE Admission to Masters degree.</p>	Subject	Study Period Commencement:	Credit Points:	SINF90001 Database Systems & Information Modelling	Not offered 2016	12.50	INFO20003 Database Systems	Semester 2	12.50	INFO20001 Informatics 3: Content Management	Not offered 2016	12.50	INFO90002 Database Systems & Information Modelling	Semester 1, Semester 2	12.50
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SINF90001 Database Systems & Information Modelling	Not offered 2016	12.50														
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INFO20001 Informatics 3: Content Management	Not offered 2016	12.50														
INFO90002 Database Systems & Information Modelling	Semester 1, Semester 2	12.50														
Corequisites:	None															
Recommended Background Knowledge:	None															
Non Allowed Subjects:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>COMP90010 Web Technologies and Applications</td> <td>Not offered 2016</td> <td>12.50</td> </tr> </tbody> </table> <p>433-421 Web Technologies and Applications 433-461 High Performance Database Systems 433-621 Web Technologies and Applications 433-661 High Performance Database Systems</p>	Subject	Study Period Commencement:	Credit Points:	COMP90010 Web Technologies and Applications	Not offered 2016	12.50									
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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															
Contact:	Prof Rao Kotagiri email: kotagiri@unimelb.edu.au (mailto:kotagiri@unimelb.edu.au)															

Subject Overview:	<p>AIMS</p> <p>Many applications require access to very large amounts of data. These applications often require reliability (data must not be lost even in the presence of hardware failures), and the ability to retrieve and process the data very efficiently.</p> <p>The subject will cover the technologies used in advanced database systems. Topics covered will include: transactions, including concurrency, reliability (the ACID properties) and performance; and indexing of both structured and unstructured data. The subject will also cover additional topics such as: uncertain data; Xquery; the Semantic Web and the Resource Description Framework; dataspace and data provenance; datacentres; and data archiving.</p> <p>INDICATIVE CONTENT</p> <p>Topics include:</p> <ul style="list-style-type: none"> # Introduction to High Performance Database Systems # Issues of Performance and Reliability # Transaction Processing # Recovery from Failures # Map Reduce Models.
Learning Outcomes:	<p>INTENDED LEARNING OUTCOMES (ILO)</p> <p>On completion of this subject the student is expected to:</p> <ol style="list-style-type: none"> 1 Understand issues related performance and reliability in building applications involving large-scale database systems 2 Understand Database Technologies used in large-scale applications such as Google search Engines 3 Understand the concepts and technologies underpinning new forms of Web data 4 Deep knowledge of transaction processing and recovery from failures and concepts employed in modern database systems
Assessment:	<p>One written assignment (40%), due in approximately week 12, of approximately 3500 words long, requiring approximately 50 - 55 hours of work per student. The assignment is an extensive survey of a research topic related to database technologies and requires an oral presentation to the class. The assignment is designed to address Intended Learning Outcomes (ILOs) 1-4 and all General skills A 2-hour end-of-semester written examination (60%). This test assesses all topics covered in the subject.</p>
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
Generic Skills:	<p>On completion of the subject the student should have the following skills:</p> <ul style="list-style-type: none"> # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Ability to manage information and documentation # Capacity for creativity and innovation # Ability to communicate effectively, with the engineering team and with the community at large.
Notes:	<p>LEARNING AND TEACHING METHODS</p> <p>This course is taught over 12 weeks, each week with two one hour formal lectures and a one hour workshop. During the workshops the students are given problems to solve to reinforce the previous week's lecturing material. The problem solving nature of the workshops is geared for the students to learn and understand the concepts of the subject material.</p> <p>INDICATIVE KEY LEARNING RESOURCES</p>

	<p>Transaction Processing: Concepts and Techniques (The Morgan Kaufmann Series in Data Management Systems) by Jim Gray and Andreas Reuter</p> <p>Lecture slides</p> <p>Addition published articles in Journals and Conferences</p> <p>CAREERS / INDUSTRY LINKS</p> <p>The concepts developed in the subject are relevant to many fields including IT, Engineering, Commerce, Government Organizations, Research Institutes and Institutions in Medicine where large scale database are used. Many industries are moving their applications to Cloud Platforms and understanding performance issues will be key to success to such transformations.</p>
Related Course(s):	<p>Doctor of Philosophy - Engineering</p> <p>Master of Information Technology</p> <p>Master of Information Technology</p> <p>Master of Philosophy - Engineering</p> <p>Master of Science (Computer Science)</p>
Related Majors/Minors/ Specialisations:	<p>B-ENG Software Engineering stream</p> <p>MIT Computing Specialisation</p> <p>MIT Distributed Computing Specialisation</p> <p>MIT Spatial Specialisation</p> <p>Master of Engineering (Software)</p>