



**MONASH** University  
Information Technology

**FIT4038**  
**Database management and implementation**

**Unit Guide**

**Semester 1, 2010**

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

*Last updated: 25 Feb 2010*

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# **FIT4038 Database management and implementation - Semester 1, 2010**

## **Chief Examiner:**

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Contact hours: Thursdays 4-5pm

## **Lecturer(s) / Leader(s):**

### **Caulfield**

### **Associate Professor David Taniar**

Associate Professor  
Phone: +61 3 990 59693  
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Contact hours: Thursdays 4-5pm

## Introduction

Welcome to FIT4038 Database Design and Administration. This 6 point unit is a foundation to all technical master degrees in the Faculty of IT and an elective unit for all postgraduate programs in the Faculty of IT. This unit has been designed to provide you with an understanding of database design and administration. It explores many aspects of database design covering multidimensional database design, object-relational database design, physical database design, and semi-structured database design.

## Unit synopsis

This unit looks at the design and implementation issues of database management systems. Advanced database design using the object-relational approach and multi-dimensional database design are explored. Record, file and index structures are dealt with at the basic level. Higher level details of consistency, atomicity and durability are introduced along with modern trends in databases.

## Learning outcomes

At the completion of this unit students will be able to:

- understand object-relational database design;
- understand multi-dimensional database design;
- understand query optimisation and its impact on programming;
- understand the database management systems recovery, concurrency, and transaction management mechanisms;
- understand database trends and current research directions in database management;
- use design a complex database system; and
- use a database programming language to access a relational database system.

## Contact hours

2 hrs lectures/wk, 2 hrs laboratories/wk

## Workload

Workload commitments are:

- two-hour lecture and
- two-hour tutorial/laboratory
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.
- You will need to allocate up to 5 hours per week in some weeks, for use of a computer to access the Oracle databases.

## Unit relationships

### Prerequisites

FIT9019 or FIT9003

Knowledge of relational database principles, including SQL

## **Prohibitions**

FIT3118, CSE3000

## Teaching and learning method

### Teaching approach

The approach to teaching and learning include a weekly two-hour lecture and a two-hour (tutorial/laboratory). Additionally, each student should spend a minimum of 8 to 12 hours for personal study every week and should allocate up to 5 hours per week in some weeks for use of a computer, including time for newsgroup and discussion.

### Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, <http://mutts.monash.edu.au/MUTTS/>

### Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system: <http://allocate.its.monash.edu.au/>

### Unit Schedule

Week	Date*	Topic	Study guide	Key dates
1	01/03/10	Multidimensional Database Design: Introduction	Rob&Coronel Ch 9	
2	08/03/10	Multidimensional Database Design: Modelling	Rob&Coronel Ch 9	
3	15/03/10	Multidimensional Database Design: Queries	Rob&Coronel Ch 9	
4	22/03/10	Object-Relational Database Design: Design and Transformation	Object-Oriented Oracle textbook	
5	29/03/10	Object-Relational Database Design: Manipulations	Object-Oriented Oracle textbook	
Mid semester break				
6	12/04/10	Object-Relational Database Design: Advanced DW Design	Object-Oriented Oracle textbook	
7	19/04/10	Physical Database Design	Elmasri textbook	
8	26/04/10	Physical Database Design	Elmasri textbook	Mid Term Test, Week 8, Thur 29-April-2010, 12pm
9	03/05/10	Physical Database Design	Elmasri textbook	
10	10/05/10	Semi-structured Database Design and Storage		
11	17/05/10	Semi-structured database design and storage		Assignment due, Week 11, Friday 21-May-2010, 3pm
12	24/05/10	Semi-structured database design and storage		

13	31/05/10	Revision		
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\*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

## Unit Resources

### Prescribed text(s) and readings

- Object-Oriented Oracle, Rahayu, Taniar, and Pardede, CyberTech, 2006
- Rob & Coronel, Database Systems Fundamentals of Database Systems,
- Elmasri and Navathe, 5th edition, Addison Wesley, 2007, Database System Concepts,
- Silberschatz, Korth, and Sudarshan, 5th edition, Mc-Graw Hill, 2006.

Text books are available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

### Recommended text(s) and readings

- Object-Oriented Oracle, Rahayu, Taniar, and Pardede, CyberTech, 2006
- Rob & Coronel, Database Systems Fundamentals of Database Systems,
- Elmasri and Navathe, 5th edition, Addison Wesley, 2007, Database System Concepts,
- Silberschatz, Korth, and Sudarshan, 5th edition, Mc-Graw Hill, 2006.

### Required software and/or hardware

You will need to access: Oracle DBMS.

On-campus students may use this software which is installed in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook.

### Equipment and consumables required or provided

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular Internet access. On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate time each week for use of a computer, including time for newsgroups/discussion groups.

### Study resources

Study resources we will provide for your study are:

Study resources we will provide for your study are:

- Weekly detailed lecture notes;
- Weekly tutorial or laboratory tasks and exercises with sample solutions provided two weeks later;
- Assignment specifications;
- A sample examination;
- This Unit Guide outlining the administrative information for the unit;
- The unit web site on MUSO, where resources outlined above will be made available.



## Assessment

### Overview

Examination (3 hours): 60%; In-semester assessment: 40%

### Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

The unit is assessed with one assignment (30%), one class test (10%), and a three-hour closed book examination (60%). In addition to meeting the requirements of the Faculty assessment policy detailed above, you must attempt the assignment, the class test, and the examination to pass the unit.

### Assignment tasks

#### Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:

<http://www.infotech.monash.edu.au/resources/student/forms/>

You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

**Assignment submission and return procedures, and assessment criteria will be specified with each assignment.**

#### • Assignment task 1

**Title:**

Assignment

**Description:**

Multidimensional and object-relational database design

**Weighting:**

30%

**Due date:**

Week 11, Friday 21-May-2010, 3pm

#### • Assignment task 2

**Title:**

Mid Term Test

**Description:**

**Weighting:**

10%

**Due date:**

Mid Term Test, Week 8, Thur 29-April-2010, 12pm

## **Examination**

- **Weighting:** 60%
- Length:** 3 hours
- Type (open/closed book):** Closed book

**See Appendix for End of semester special consideration / deferred exams process.**

## **Due dates and extensions**

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms: <http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>

## **Late assignment**

Assignments received after the due date will be subject to a penalty of 10% penalty for each day after the due date. Assignments received later than one week after the due date will not normally be accepted.

## **Return dates**

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

## Appendix

Please visit the following URL: <http://www.infotech.monash.edu.au/units/appendix.html> for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams