



MONASH University
Information Technology

FIT1004
Data management

Unit Guide

Semester 2, 2011

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: 22 Aug 2011

Table of Contents

| | |
|--|-----------|
| <u>FIT1004 Data management - Semester 2, 2011</u> | 1 |
| <u>Mode of Delivery</u> | 1 |
| <u>Contact Hours</u> | 1 |
| <u>Workload</u> | 1 |
| <u>Unit Relationships</u> | 1 |
| <u>Prohibitions</u> | 1 |
| <u>Chief Examiner</u> | 2 |
| <u>Campus Lecturer</u> | 2 |
| <u>Berwick</u> | 2 |
| <u>Caulfield</u> | 2 |
| <u>Clayton</u> | 2 |
| <u>Gippsland</u> | 2 |
| <u>South Africa</u> | 2 |
| <u>Sunway</u> | 2 |
| | |
| <u>Academic Overview</u> | 3 |
| <u>Learning Objectives</u> | 3 |
| <u>Graduate Attributes</u> | 3 |
| <u>Assessment Summary</u> | 3 |
| <u>Teaching Approach</u> | 4 |
| <u>Feedback</u> | 4 |
| <u>Our feedback to You</u> | 4 |
| <u>Your feedback to Us</u> | 4 |
| <u>Previous Student Evaluations of this unit</u> | 4 |
| <u>Required Resources</u> | 4 |
| <u>Recommended Resources</u> | 5 |
| | |
| <u>Unit Schedule</u> | 6 |
| | |
| <u>Assessment Requirements</u> | 7 |
| <u>Assessment Policy</u> | 7 |
| <u>Assessment Tasks</u> | 7 |
| <u>Participation</u> | 7 |
| <u>Examinations</u> | 9 |
| <u>Examination 1</u> | 9 |
| <u>Assignment submission</u> | 9 |
| <u>Extensions and penalties</u> | 9 |
| <u>Returning assignments</u> | 9 |
| <u>Resubmission of assignments</u> | 9 |
| <u>Referencing requirements</u> | 9 |
| | |
| <u>Other Information</u> | 10 |
| <u>Policies</u> | 10 |
| <u>Student services</u> | 10 |

FIT1004 Data management - Semester 2, 2011

This unit will provide an introduction to the concepts of database design and usage and the related issues of data management. Students will develop skills in planning, designing, and implementing a data model using an enterprise-scale relational database system (Oracle). Methods and techniques will also be presented to populate, retrieve, update and implement integrity features on data in the implemented database system.

Manipulation of a database necessarily raises issues of data collection/creation and management, data rights (ownership, copyright, access, privacy etc) and data curation, which this unit will also address.

Mode of Delivery

- Berwick (Day)
- Caulfield (Day)
- Clayton (Day)
- Gippsland (Day)
- Gippsland (Off-campus)
- Sunway (Day)
- South Africa (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

Students will be expected to spend a total of **12 hours per week** during semester on this unit as follows:

For on campus students:

- two hours of lectures,
- two hours of laboratory/tutorial (requiring advance preparation), and
- eight hours of self directed study - this will include reading and computer based activities.

Off-campus students generally do not attend lecture and tutorial sessions, however, you should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit Relationships

Prohibitions

BUS3112, CPE2005, CSE2132, CSE2138, CSE2316, CSE3180, CSE3316, FIT2010, GCO2815, IMS1907, IMS2112, MMS2801

Chief Examiner

Mr Lindsay Smith

Campus Lecturer

Berwick

Lindsay Smith

Caulfield

David Dowe

Clayton

David Green

Gippsland

Kai Ming Ting

South Africa

Tarirai Chani

Sunway

Elsa Phung Yet Chin

Academic Overview

Learning Objectives

At the completion of this unit students will have:

A knowledge and understanding of:

- the major objectives of database technology;
- the relational model for databases and competing models;
- the phases of the database development life cycle and their correspondence to the phases of the system development lifecycle;
- the issues related to data creation and management, data rights and data curation;
- the techniques and tools to design and implement a database suitable for an information system;
- a database retrieval and manipulation language;
- methods to put in place physical structures to permit efficient operation of a database;
- the role of a database administrator.

Developed attitudes that enable them to:

- appreciate the privacy issues relating to storage of data in a database;
- practice ethical behaviour when developing, implementing and using a database.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

Assessment Summary

Examination (3 hours): 50%; In-semester assessment: 50%

| Assessment Task | Value | Due Date |
|--|--------------|-------------------------------|
| Assignment 1: Data Collection and Markup | 5% | 3PM Friday 12th August 2011 |
| Assignment 2: Database Design | 20% | 3PM Friday 9th September 2011 |
| Assignment 3: Database Implementation | 25% | 3PM Friday 21st October 2011 |

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning, where you are required to prepare for and participate in all activities in order for you to achieve a successful outcome in this unit.

Feedback

Our feedback to You

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Quiz results
- Solutions to tutes, labs and assignments

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

Required Resources

Off Campus Students will require a copy of SQL Developer and Power*Architect please see the links below in Recommended Resources. Both items of software are readily available and free of charge (it is suggested you obtain a copy from the Moodle unit web site).

TEXTBOOK

Rob, P., Morris, S. and Coronel, C., *Database Systems* 9th Edn., Cengage Learning, 2010

This text is 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.

The text is also available as an eBook from Cengage Learning. The URL to the eBook version of the text is:

<http://www.cengagebrain.com.au/shop/en/AU/storefront/australia?cmd=CLHeaderSearch&fieldValue=9780538469>

The Cengage ebook format can be read on a range of devices, markup (notes and highlighting) is possible on a Windows PC or Apple Mac.

Recommended Resources

This unit will make use of the Oracle 11G database running on the Monash ITS server zebra.its.monash.edu.au. All students will have an account on this server which will suffice for all database work this semester.

Although it is **not required**, if students wish to run a database server at home they can download Oracle XE from the unit Moodle site or directly from the Oracle technet site:

- <http://www.oracle.com/technology/software/products/database/xe/index.html>

Please note:

1. for technet, registration (free) is required, and
2. this is a large download (around 200Mb) and **should not be attempted** without first consulting your campus lecturer.

The client software for accessing Oracle (SQLDeveloper) will be available in the labs. It will also be available via a download from the Moodle site for installation at home and use by Off Campus students. SQLDeveloper is also available, after registration (free), from the technet site:

- <http://www.oracle.com/technology/software/products/sql/index.html>

For database Design we will be making use of the community edition of Power*Architect (version 1.06) developed by SQLPower:

- <http://code.google.com/p/power-architect/>

Power*Architect will also be available in the labs, for download from the Moodle site and can be downloaded directly from the link above.

Unit Schedule

| Week | Activities | Assessment |
|------|--|---|
| 0 | Please check the Moodle 2 site: http://moodle.vle.monash.edu/ | No formal assessment is undertaken in week 0 |
| 1 | Introduction to Database Systems | |
| 2 | Data Collection/Creation and Management | |
| 3 | Conceptual Database Design | Assignment 1 Due - Data Collection and Markup - 3PM Friday 12th August 2011 |
| 4 | Logical and Physical Database Design | |
| 5 | Normalisation | |
| 6 | Database Design Case Study | |
| 7 | Structured Query Language (SQL): DML | Assignment 2 Due - Database Design - 3PM Friday 9th September 2011 |
| 8 | Structured Query Language (SQL): DML Continued | |
| 9 | Structured Query Language (SQL): DDL and DCL; Triggers and Functions | |
| 10 | Transaction Management | |
| 11 | Web Database Systems | |
| 12 | Database Administration/Data Rights and Curation | Assignment 3 Due - Database Implementation - 3PM Friday 21st October 2011 |
| | SWOT VAC | No formal assessment is undertaken in SWOT VAC |
| | Examination period | LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html |

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

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

Assessment Tasks

Participation

• Assessment task 1

Title:

Assignment 1: Data Collection and Markup

Description:

This task, which will be carried out partially during the week 2 lab, will involve the collection of a set of data on a specified topic. The collected data will be required to be marked up using an appropriate document standard. This task is a individual assessment task - each student will collect and markup their own data.

Weighting:

5%

Criteria for assessment:

Task criteria:

1. Correct data researched and collected, including acknowledgement of sources
2. Appropriate markup used to record the data

Due date:

3PM Friday 12th August 2011

• Assessment task 2

Title:

Assignment 2: Database Design

Description:

Students will be supplied with a case study and asked to model this using Entity Relationship modelling. You will test your design by implementing your final logical ERD in Oracle via a set of 'create table' statements. This task is a group assignment in which students will work in groups of two.

Weighting:

20%

Criteria for assessment:

Task criteria:

Assessment Requirements

1. Correct application of normalisation process with use of dependency diagrams at each normal form
2. Correct Logical ERD model created including - entities, PK's, attributes, relationships (connectivity and participation)
3. Generated Oracle schema file executes correctly against Oracle to produce valid database structure
4. Group presentation to marker

Group criteria:

- ◆ As a member of the group students will be required to participate fully and work with their partner in a positive manner; they will be required to make every effort to resolve any issues that arise within the group. If a matter cannot be resolved the tutor will be contacted immediately and informed of the issue/s;
- ◆ If a member of a team does not participate adequately, the tutor will be informed and will take appropriate action;
- ◆ Individual final grades will reflect the quality of a student's work and participation within the group. Students will be required to submit a peer review report on both group member's contribution and effort as part of their assignment submission.

Due date:

3PM Friday 9th September 2011

• Assessment task 3

Title:

Assignment 3: Database Implementation

Description:

Students will be supplied with a database design via a schema file and asked to create the database under Oracle. The created database will be populated with appropriate student generated data and then used to develop a set of SQL queries and triggers. This task is a group assignment in which students will work in the same group they worked in for assignment 2.

Weighting:

25%

Criteria for assessment:

Task criteria:

1. Student data must insert correctly and result in a consistent database state
2. SQL queries must execute correctly and produce correct visible output
3. Coded PL/SQL triggers must compile and meet the problem specifications
4. Design modifications must execute correctly and meet the problem specifications

Group criteria:

- ◆ As a member of the group students will be required to participate fully and work with their partner in a positive manner; they will be required to make every effort to resolve any issues that arise within the group. If a matter cannot be resolved the tutor will be contacted immediately and informed of the issue/s;
- ◆ If a member of a team does not participate adequately, the tutor will be informed and will take appropriate action;
- ◆ Individual final grades will reflect the quality of a student's work and participation within the group. Students will be required to submit a peer review report on both group member's contribution and effort as part of their assignment submission.

Due date:

Examinations

• Examination 1

Weighting:

50%

Length:

3 hours

Type (open/closed book):

closed book

Electronic devices allowed in the exam:

None

Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

<http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>.

Returning assignments

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

Resubmission of assignments

At the Chief Examiners discretion, students may be permitted to resubmit assignments where *serious* medical issues or problems have impacted a students work.

Referencing requirements

Students are required to use the APA style of referencing for this unit - details are available from:

- <http://www.lib.monash.edu.au/tutorials/citing/apa.html>
- <http://guides.lib.monash.edu/content.php?pid=88267&sid=656564>
- Chapter 10 of the Faculty of Business and Economics Q Manual (<http://www.buseco.monash.edu.au/publications/qmanual/qmanual.pdf>)

Other Information

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

<http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- Grading Scale
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>)
- Discipline: Student Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>)
- Academic Calendar and Semesters (<http://www.monash.edu.au/students/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);
and
- Academic and Administrative Complaints and Grievances Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)
- Codes of Practice for Teaching and Learning
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea>)

Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at www.monash.edu.au/students. The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://www.lib.monash.edu.au> or the library tab in my.monash portal for more information. Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis

- Website: <http://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html>;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

Getting the most from your studies in this unit:

Lecture: During the lecture, your lecturer will introduce key theoretical concepts and demonstrate various approaches to data management tasks. The time in lectures is quite brief, please ensure you gain the best advantage from this time by:

- Prior to the lecture

Other Information

- ◆ reading the study guide for the appropriate week, and
- ◆ downloading and reading the lecture slides,
- During the lecture
 - ◆ annotate a set of lecture slides as the lecture proceeds, and
 - ◆ **participate, question, seek clarification**
- After the lecture
 - ◆ read over your notes and make sure you understand the concepts
 - ◆ **seek help** if you are unsure

Laboratory/Tutorials: The labs consist of a set of graded exercises which allow you to put the theory presented in the lecture to work in creating, designing and using data and databases. The labs will also include issues that you will need to discuss with your fellow classmates and tutors. Before the lab you should carefully read through the lab activities. The teaching staff will presume that you have completed all the posted lab tasks each week and build subsequent activities on this assumption. For this reason it is very important that you complete all the posted tasks (**please note you will not be able to complete them in the allocated 2 hours, these will be completed in your self study 8 hours**). Given the cumulative nature of the learning, it is easy to fall behind if either you do not complete the required work or fail to understand key tasks/concepts. If you are having problems with lab exercises, please ensure you **speak to your tutor** and gain some assistance.

Off Campus students: Off campus students should pay particular attention to the Moodle OCL discussion forum for matters specifically related to them.