FIT9003
Database systems design

Unit Guide

Semester 2, 2013

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.

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FIT9003 Database systems design - Semester 2, 2013

This unit is designed to introduce students to the fundamental concepts necessary for the analysis, design, use and implementation of business information systems using relational database management systems. The main topics covered include requirements elicitation, systems analysis and design informed by a lifecycle based methodology, motivation for the database approach to managing information, conceptual modelling, coverage of logical process and data models (hierarchical, network and relational data models), and the use of SQL and other facilities provided by database management systems.

Mode of Delivery

- Caulfield (Day)
- Gippsland (Off-campus)
- Sunway (Evening)

Contact Hours

2 hrs lectures/wk, 2 hrs studios/wk

Workload requirements

For on-campus students, workload commitments per week are:

- two-hour lecture and
- two-hour studio (requiring advance preparation)
- 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, including time for online discussion groups.

Off-campus students should plan to spend an equivalent amount of time per week as part of their workload, and should seek advice from the lecturer when needed.

Off-campus students will not be expected to attend lectures or studio sessions, but lectures will be recorded and made available via both a unit Podcast (available through Moodle and at http://podcast.infotech.monash.edu.au/fit9003) as well as the Library’s Monash University Lectures Online (MULO) service. All studio exercises and solutions will be posted to the unit's Moodle site (see below for access details), and some of the studio sessions themselves will be recorded and made available through the podcast.

Students are encouraged to post their studio solutions to the Moodle discussion forums for feedback.

Unit Relationships
Prohibitions

CSE9002, BUS3112, BUS4112, IMS9001, IMS9003, GCO9804, BUS9003, BUS5071, FIT1004, FIT2010, FIT9012, FIT9019

Chief Examiner

Dr Rob Meredith

Campus Lecturer

Caulfield

Ms Sindy Madrid

Consultation hours: By appointment

Gippsland

Dr Rob Meredith

Consultation hours: By appointment

Sunway

Dr Jasmine Lee Hee Jeong

Tutors

Caulfield

Ms Sindy Madrid

Mr Andrei Florescu

Mr Mark Creado
Academic Overview

Learning Outcomes

At the completion of this unit, students will have:

- A knowledge and understanding of:
  - the purpose of requirements specification, of functional modelling of processes and data, and of the database concept;
  - the relational database model;
  - how to allow them to apply integrity constraints and business rules to a system design and implementation based around an enterprise level database management system.

Developed attitudes that enable them to:

- understand business information systems as the implementation of company policies and objectives;
- respect the points of view of both technical and business actors in the system development process.

Developed the skills to:

- undertake the functional modelling of processes and data for a business problem;
- design and implement a database;
- implement integrity constraints and business rules in a database;
- write queries in SQL to maintain and use a relational database.

Demonstrated the communication skills necessary to:

- communicate requirements for business functionality in terms of data required, management of that data and its processing;
- work co-operatively in a professional systems development team.
**Unit Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Please register for a studio session (on-campus students only) and familiarise yourself with the Moodle site and podcast</td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Introduction to Systems and Databases</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ER Modelling Basics</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conceptual, logical and physical models</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Advanced modelling techniques and the data dictionary</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The Consulting Process</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Normalisation 1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Normalisation 2</td>
<td>Assignment 1a due</td>
</tr>
<tr>
<td>8</td>
<td>Introduction to SQL</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Advanced SQL and middleware</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Implementation</td>
<td>Assignment 1b due</td>
</tr>
<tr>
<td>11</td>
<td>Alternative Modelling Techniques</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Design</td>
<td>Assignment 2 due</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

**Assessment Summary**

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

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1a - Draft Conceptual Database Design</td>
<td>10%</td>
<td>Week 7</td>
</tr>
<tr>
<td>Assignment 1b - Database Design</td>
<td>30%</td>
<td>Week 10</td>
</tr>
<tr>
<td>Assignment 2 - Structured Query Language (SQL)</td>
<td>10%</td>
<td>Week 12</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Teaching Approach

- Lecture and tutorials or problem classes
  Lectures will be used to present theory and outline concepts that will be put to use in practice during the studio sessions.

- Studio teaching
  Studio teaching is a facilitated active, participatory, peer learning approach. Studios will allow students to discuss concepts and practice techniques covered in the lectures and assessed in the assignment work.

Exercises will be conducted in both lectures and studio sessions to allow students to practice the techniques taught.
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

• Assessment task 1

  Title: Assignment 1a - Draft Conceptual Database Design
  Description: This is the first submission for Assignment 1 where you will develop a complete specification for a database system. In this first part, you will develop a conceptual entity relationship diagram. You may also complete as much of the deliverable for Assignment 1b as you like for feedback from your tutor. The purpose of this assignment is to get feedback and refine your design before final submission in Assignment 1b.
  Weighting: 10%
  Criteria for assessment:
  1. Quality of the introductory narrative overview
  2. Quality of design solution, in particular level of support for business requirements outlined in the case, and elegance of solution
  3. Quality and professionalism of presentation, including layout, structure and grammar
  4. Correctness of notation
  Due date: Week 7

• Assessment task 2

  Title: Assignment 1b - Database Design
  Description: You will submit your final database design including a revised conceptual model, normalised model, logical model, normalisation, logical model, data dictionary and assertions checklist.
  Weighting: 30%
  Criteria for assessment:
  1. Quality of the introductory narrative overview
  2. Quality of design solution, in particular level of support for business requirements outlined in the case, and elegance of solution
Assessment Requirements

3. Quality and professionalism of presentation, including layout, structure and grammar
4. Correctness of notation
5. Correctness of the normalisation process
6. Correctness and completeness of the data dictionary entries and assertion check-list

Due date:
Week 10

• Assessment task 3

Title:
Assignment 2 - Structured Query Language (SQL)
Description:
You will write a number of SQL queries and commands.
Weighting:
10%
Criteria for assessment:
Each SQL command will be assessed as to whether the output of the command achieves the task required or answers the business question asked.
Due date:
Week 12

Examinations

• Examination 1

Weighting:
50%
Length:
3 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

Learning resources

Reading list
Readings are set each week and outlined on the unit's Moodle site. It is important for all students to stay up to date with the weekly readings throughout the semester.

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

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
• Solutions to tutes, labs and assignments
• Other: Online discussion forums with comments

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.monash.edu.au/exams/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

Assignments may not be resubmitted.

Referencing requirements

The nature of the assignment work in this unit means that there will be little need for citation and referencing. However, any material that is submitted as part of your assignment submission that is not your own must be cited appropriately.

See the Library website for information on citation technique: http://guides.lib.monash.edu/content.php?pid=88267&sid=656564

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). Please note that it is your responsibility to retain copies of your assessments.

Online submission

Except for off-campus students, all students should submit assignments in hard copy as directed in the assignment specifications distributed in class. Off-campus students should follow the directions for online submission also contained in the assignment specifications.
Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

You will need a software drawing package such as Microsoft Visio (Windows), a copy of which can be obtained from the Faculty's IT service desk. Equivalent software is also acceptable.

You will need access to a computer running Windows to install a copy of Microsoft SQL Server Management Studio Express Edition (version 2005 or later, also available from the Faculty's IT service desk). Software for Macintosh computers can be obtained and has been used successfully by students in the past, but no direct support for this software will be provided by teaching staff.

For work on the SQL tutorials and Assignment 2 from off-campus, you will need to install the Monash VPN software (details on the Moodle site). This software is compatible with both Windows and Macintosh computers.

To watch the podcasts you will need podcast software such as iTunes to download and play episodes. Alternatively, episodes can be manually downloaded with a web browser and watched using either iTunes or other video software such as VLC freely available from: http://www.videolan.org/

Information about how to obtain the relevant database software from Microsoft to allow connection to Monash's database server will also be provided via Moodle. You will need to install the Microsoft VPN software if you want to access the database server from off-campus (again, instructions will be provided on Moodle).

You will also need a web browser and Microsoft Word. These are available for use in the University computer labs.

Prescribed text(s)

Limited copies of prescribed texts are available for you to borrow in the library.


Recommended text(s)


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: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Academic integrity; http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.html
- Special Consideration; http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html
- 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/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/
- Graduate Attributes Policy http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

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 http://www.monash.edu.au/students. For Sunway see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.
Disability Liaison Unit

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://www.monash.edu/equity-diversity/disability/index.html
Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway
Email: dlu@monash.edu
Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

www.monash.edu.au/about/monash-directions and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Based on previous student feedback this unit is well structured and no changes have been made for this semester.

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