Division of Information and Communication Sciences
Department of Computing

COMP326 Information Systems Development
1999 - Semester 1

http://www.comp.mq.edu.au/courses/comp326

Lectures:

A/Prof. Leszek Maciaszek (Lecturer in Charge)
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phone: 9850-9519

A/Prof. C.N.G. (Kit) Dampney
room: E6A 320
email: cdampney@ics.mq.edu.au
phone: 9850-9520

Practicals (tutorials/workshops):

Ian Cowell email: icowell@ics.mq.edu.au
C.N.G. (Kit) Dampney email: cdampney@ics.mq.edu.au
Leszek Maciaszek email: leszek@ics.mq.edu.au
Abhaya Nayak email: abhaya@ics.mq.edu.au

Time and place:

Lectures:
Monday 10.05 am - 10.55 am E7B T5
Tuesday 10.05 am - 10.55 am E7B T3
Wednesday 10.05 am - 10.55 am E7B T4

Tutorials:
Wednesday (IC/LM) 2.05 pm - 3.55 pm E7B 100
Thursday (AN) 10.05 am - 11.55 am E6A 109
Friday (KD) 9.05 am - 10.55 am E6A 133
Friday (IC) 11.05 am - 12.55 pm E7B 100
Reading list:

Essential reading:


Lecture Notes on the COMP326 Web site.

Recommended references (important for students to read):


Unit objectives:

The purpose of this unit is to enable each student to accomplish the three major objectives:

- A sound, rigorous understanding of information systems analysis and design for the implementation of a client/server database system.
- An understanding of advanced topics in database technology, including support for objects, transaction management, distributed system architectures and new database applications (such as data warehouses and multimedia databases).
- A general understanding of data administration and information management.

Design is the essential element of this course. It links together the needs of the enterprise, the business reality, with the technology that provides functions that support those needs.

Database management systems provide the information technology base for the modern enterprise. Information systems specialists need to understand the range of issues from the nature of information, the techniques of information analysis, database application programming, to database technology.

Assessment:

Assignments and mid-semester test (30%):

- Assignment 1 (Part A & B) 10%
- Mid-semester test 10%
- Assignment 2 10%

Assignments need to be submitted in the COMP326 assignment boxes in building E6A ground floor. Late assignments will be discounted by 1 mark per day after the deadline.

Assignments should be well presented and be secured within a folder with your first name and surname (surname to be underlined or capitalised), student number, course number, course name and assignment number clearly labelled on the outside.

Final examination (70%)

Students must perform satisfactorily in the final examination as well as in the combined assignments/mid-test total in order to pass.

Software

The unit involves the use of a Relational Database Management System (ORACLE8) running on the UNIX operating system. It also involves the use of object-oriented CASE (Computer-Aided Software Engineering) tool (Rational Rose on Unix).
Withdrawal

The withdrawal dates for the first semester are:

_on or before 31 March:_
- **NE** - not effectively enrolled, no record on academic transcript, no HECS charge

_after 31 March:_
- **FW** - failure recorded, HECS paid
- **W** - withdrawal without penalty because of “unavoidable disruption”, W printed on the record, HECS paid

Code of Behaviour

The Code of Behaviour sets out our expectations concerning the use of the computing facilities. The University Council has approved a set of rules governing access to and the use of the University's computing facilities. Students who break them may be suspended from using the systems and, in serious cases, may be referred to the Discipline Committee of the University.

The rules set out the rights and, conversely, the responsibilities of all users of the facilities. In particular, they are based on the principle that the files in an account are the owner’s personal property and should be treated as such. Unauthorised use of someone else's account is a serious offence, whether it be copying their files (stealing), or changing them (damage), or merely gaining access to them (trespass). You will be expected to observe these rules and also any other regulations posted in the Department's laboratories.

Special considerations:

If illness or misadventure makes it impossible for you to sit the final examination, or interfere significantly with your performance in the exam, you are permitted to request “special consideration” (see the University Calendar).

To be eligible for such consideration, you are required to sit a special examination, and should note the following:

- If you are granted special consideration, we will require you to sit a special examination. We will not consider your performance in the final examination at all in assessing your final grade.
- You must ensure that you are readily available to be contacted, and must hold yourself available to sit for the special examination at short notice on the date and time we set.
- If you elect to be away from your contact address during the week of the special examination, and so cannot be contacted, or are unavailable to sit for the examination, your grade for this unit will be reported as FA.
- It is essential that you notify the Registrar in writing of your misadventure, accompanied by documentary evidence. If your application is the result of illness, your medical certificate should indicate the nature of the illness, and its effect on your ability to sit for or to perform in the examination.
- The purpose of any special examination is to resolve the temporary difficulty caused by your illness or misadventure, and is not to give you an advantage over other students by allowing you extra time to study. We will, therefore, hold the special examination as soon as possible, and in determining your grade, we will take into account the possibility of extra study time available to you.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Tutorials/Practicals</th>
<th>References</th>
<th>Asg/Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 1</td>
<td>Orientation - The Systems Development Life Cycle (SDLC). Overview of models and language through the SDLC - UML The Problem Domain: modelling conceptual entities (object types) and relationships - the entity relationship approach; [Classification and classification schemes.]</td>
<td>I Tutorial Entity relationship modelling - Exercise 1 - An E-R model using UML Class diagrams. II Practical assisted: UML sign on</td>
<td>Fowler (Ch. 1, 2, 4) Siberschatz ( Ch. 1, 2 - review from COMP224)</td>
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<td>2</td>
<td>Mar 8</td>
<td>User requirements analysis - Use Cases (scenarios) define events in the problem domain and model the interaction between the user and the system. Technology Architecture defines the form and function of a computer based system</td>
<td>I Tutorial: Entity relationship Modelling Continued - Exercise 1 In II Tutorial: Use Case (scenario) Analysis I - Exercise 2 User requirements model with a UML use case diagram.</td>
<td>Fowler (Ch.4, 3)</td>
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<td>3</td>
<td>Mar 15</td>
<td>Object Dependency - reconciling events and objects Specifying object behaviour with State Diagrams</td>
<td>I Tutorial: Use Case (scenario) Analysis Continued - Exercise 2 In II Tutorial Object behaaiors modelling with State Diagrams - Exercise 3 Out</td>
<td>Fowler (Ch. 3, 8)</td>
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<td>4</td>
<td>Mar 22</td>
<td>Specifying object behaviour with State Diagrams (Continued) Interaction Diagrams - specifying control flow sequences and collaboration between objects.</td>
<td>I Object behaaiors modelling with State Diagrams - Exercise 3 In II Tutorial Object control flow modelling with sequence diagrams - Exercise 4 Out</td>
<td>Fowler (Ch. 8, 6)</td>
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<td>5</td>
<td>Mar 29</td>
<td>Interaction Diagrams Continued - specifying collaboration and active classes. Intro to Component Diagrams - Packages [Advanced Object type and relationship concepts.]</td>
<td>I Tutorial Object control flow modelling with sequence diagrams - Exercise 4 In II Tutorial - Pulling it all together.</td>
<td>Fowler (Ch. 6, 7, [5])</td>
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<td>Break</td>
<td>Apr 5 - 11</td>
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<td>6</td>
<td>Apr 12</td>
<td>Database system architectures. MVC (model-view-controller) components (client/server program design). Mapping UML specifications to relational and object-relational database.</td>
<td>Using UML to model MVC components for client design. Using UML to model database structures for server design.</td>
<td>Silberschatz (Ch. 16); Lecture Notes; Silberschatz (Ch.6, 7, 8, 9 - review from COMP224)</td>
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<td>7</td>
<td>Apr 19</td>
<td>Mapping UML specifications to relational and object-relational database (Continued) User Interface design.</td>
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<td>Lecture Notes; Silberschatz (Ch.6, 7, 8, 9 - review from COMP224)</td>
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<td>Date</td>
<td>Topic</td>
<td>Reading Material</td>
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<td>8 Apr 26</td>
<td>Designing maintainable and scalable systems. Programming collaboration between client and server objects.</td>
<td>Programming objects in Oracle8</td>
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<td>(Leszek)</td>
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<td>Lecture Notes; Oracle8 documentation</td>
<td>Mid-semester test</td>
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<td>9 May 3</td>
<td>Transaction management for concurrency. Programming for multi-user access.</td>
<td>Concurrency control in Oracle8</td>
<td>Asg. 2 out</td>
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<td>(Leszek)</td>
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<td>Silberschatz (Ch.13-14); Oracle8 documentation</td>
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<td><strong>Break</strong></td>
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<td><strong>May 10 - 23</strong></td>
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<td>10 May 24</td>
<td>Transaction management for recovery.</td>
<td>Recovery in Oracle8</td>
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<td>(Leszek)</td>
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<td>Silberschatz (Ch.15); Oracle8 documentation</td>
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<td>11 May 31</td>
<td>Distributed databases. Advanced transaction processing.</td>
<td>Programming transactions in Oracle8</td>
<td>Asg. 2 in</td>
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<td>(Leszek)</td>
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<td>Silberschatz (Ch.18, 20); Oracle8 documentation</td>
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<td>12 June 7</td>
<td>Data Administration and Information Management for the Enterprise</td>
<td>Case study on information analysis or information management</td>
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<tr>
<td>(Kim)</td>
<td></td>
<td>Lecture Notes</td>
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<td>13 June 15</td>
<td>Review. Special topics. New database applications</td>
<td>No tutorials</td>
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<td>(Kim &amp;</td>
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<td>Leszek)</td>
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