INFS2608
ENTERPRISE DATABASE MANAGEMENT

INFS3608
DATA & INFORMATION MANAGEMENT

Course Outline
Semester 1, 2013

Part A: Course-Specific Information

Please consult **Part B for key information on ASB policies (including those on plagiarism and special consideration), student responsibilities and student support services.
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PART A: COURSE-SPECIFIC INFORMATION

1 STAFF CONTACT DETAILS

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
<th>Email:</th>
<th>Telephone</th>
<th>Consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIC</td>
<td>Guo, Zixiu</td>
<td>QUAD 2108</td>
<td><a href="mailto:z.guo@unsw.edu.au">z.guo@unsw.edu.au</a></td>
<td>9385 7174</td>
</tr>
<tr>
<td>Oracle Lab Tutor</td>
<td>Pang, Vincent</td>
<td>QUAD 2107</td>
<td><a href="mailto:Vincent.pang@unsw.edu.au">Vincent.pang@unsw.edu.au</a></td>
<td></td>
</tr>
</tbody>
</table>

2 COURSE DETAILS

2.1 Teaching Times and Locations

At the time of publication of this course outline the teaching times and locations are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Day</th>
<th>Time</th>
<th>Location</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>Tuesday</td>
<td>14-16</td>
<td>Macauley Theatre (Quad 1027) (K-E15-1027)</td>
<td>Week 1 – Week 12</td>
</tr>
<tr>
<td>Labs</td>
<td>Tuesday</td>
<td>T16A: 16-17</td>
<td>QUAD Lab 4</td>
<td>Week 2 – Week 13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T17A: 17-18</td>
<td>QUAD Lab 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>T18A: 18-19</td>
<td>QUAD Lab 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>T19A: 19-20</td>
<td>QUAD Lab 5</td>
<td></td>
</tr>
</tbody>
</table>

The timetable is subject to change. The current timetable is available on the school website: http://www.timetable.unsw.edu.au/current/INFS2608.html or http://www.timetable.unsw.edu.au/current/INFS3608.html

2.2 Units of Credit

The course is worth 6 units of credit. Both INFS2608 and INFS3608 are co-taught in parallel.

2.3 Summary of Course

This course provides students with an in-depth understanding of database application design and database management for large and small businesses; practical experience using formal database design methodologies in systems development; and an understanding of the technological issues of database systems in a modern IT infrastructure. The main topics include advanced SQL, database design issues, transaction management issues, concurrency control, database performance tuning and query optimisation, database administration and security, contemporary database applications, such as, the Internet database environment, and Business Intelligence.
2.4 Course Aims and Relationship to Other Courses

The aims of this course are to gain understanding of various advanced topics pertinent to database management systems (DBMS) and study how they are being applied in the business world. It will explain the advanced concepts used to design, implement and administer DBMS, contain a strong element of practical database design with appropriate commercial software, and explore the future development and application of database systems. The course will refine your communication skills and group work skills, and assist in your research skills.

INFS2608/INFS3608 is an advanced course in the area of database, which deals with both the theoretical and practical aspects of database topics. This course is suggested for students who have completed INFS1603 Business Data Management or equivalent database course, and are interested in issues of advanced database management systems.

2.5 Student Learning Outcomes

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items.

By the end of this course, you should be able to:

1. Analyse advanced issues in relational database design and management,
2. Investigate emerging technologies and recent trends in database design,
3. Design, implement, and test a substantial business database application for a given DBMS environment,
4. Communicate and discuss database systems and research issues with a professional approach in a written documentation, and
5. Illustrate an ability to work independently and in a group.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate students in the ASB. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree (e.g. ‘be an effective team player’). You demonstrate this by achieving specific Program Learning Outcomes – what you are able to DO by the end of your degree (e.g. ‘participate collaboratively and responsibly in teams’).

### ASB Undergraduate Program Learning Goals and Outcomes

1. Knowledge: Our graduates will have in-depth disciplinary knowledge applicable in local and global contexts.
   You should be able to select and apply disciplinary knowledge to business situations in a local and global environment.

2. Critical thinking and problem solving: Our graduates will be critical thinkers and effective problem solvers.
   You should be able to identify and research issues in business situations, analyse the issues, and propose appropriate and well-justified solutions.

3. Communication: Our graduates will be effective professional communicators.
   You should be able to:
   a. Prepare written documents that are clear and concise, using appropriate style and presentation for the intended audience, purpose and context, and
   b. Prepare and deliver oral presentations that are clear, focused, well-structured, and delivered in a professional manner.
4. Teamwork: Our graduates will be effective team participants.
You should be able to participate collaboratively and responsibly in teams, and reflect on your own teamwork, and on the team’s processes and ability to achieve outcomes.

5. Ethical, social and environmental responsibility: Our graduates will have a sound awareness of the ethical, social, cultural and environmental implications of business practice.
You should be able to:
   a. Identify and assess ethical, environmental and/or sustainability considerations in business decision-making and practice, and
   b. Identify social and cultural implications of business situations.

For more information on the Undergraduate Program Learning Goals and Outcomes, see Part B of the course outline.

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in tutorials and other activities):

<table>
<thead>
<tr>
<th>Program Learning Goals and Outcomes</th>
<th>Course Learning Outcomes</th>
<th>Course Assessment Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>This course helps you to achieve the following learning goals for all ASB undergraduate students:</td>
<td>On successful completion of the course, you should be able to:</td>
<td>This learning outcome will be assessed in the following items:</td>
</tr>
<tr>
<td>1 Knowledge</td>
<td>• Analyse more advanced issues in relational database design and management,</td>
<td>• Lab</td>
</tr>
<tr>
<td></td>
<td>• Investigate emerging technologies and recent trends in database design,</td>
<td>• Group Assignments</td>
</tr>
<tr>
<td></td>
<td>• Design, implement, and test a substantial business database application for a given DBMS environment</td>
<td>• Exam</td>
</tr>
<tr>
<td>2 Critical thinking and problem solving</td>
<td>• Analyse more advanced issues in relational database design and management,</td>
<td>• Group Assignments</td>
</tr>
<tr>
<td></td>
<td>• Investigate emerging technologies and recent trends in database design,</td>
<td>• Exam</td>
</tr>
<tr>
<td></td>
<td>• Design, implement, and test a substantial business database application for a given DBMS environment</td>
<td></td>
</tr>
<tr>
<td>3a Written communication</td>
<td>• Design, implement, and test a substantial business database application for a given DBMS environment,</td>
<td>• Group Assignments</td>
</tr>
<tr>
<td></td>
<td>• Communicate and discuss database systems and research issues with a professional approach in a written documentation</td>
<td></td>
</tr>
</tbody>
</table>
3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course
At university, the focus is on your self-directed search for knowledge. Lectures, laboratories, textbooks, examinations and other resources are all provided to help you learn. You are therefore required to attend all lectures, complete all lab exercises, and read all required readings in order to fully grasp and appreciate the concepts of Database Management Systems.

It is up to you to choose how much work you do in each part of the course: preparing for lectures; completing assignments; studying for examinations; and seeking assistance or extra work to extend and clarify your understanding. You must choose an approach that best suits your learning style and goals in this course. The lecturer will facilitate your learning by providing the guidance as to what you need to study. The lecturer will also assist you with problems you may encounter. Remember, however, it is your responsibility to make a concerted and timely effort to study this course. If you make this effort you will find the material interesting, the course worthwhile and the interaction with your fellow students stimulating. You should also do well.

3.2 Learning Activities and Teaching Strategies
The course involves three key components in your learning – the lecture, the laboratory and your private study.

Each lecture will provide a short overview of the topic at hand and will focus on explaining the difficult concepts and issues. The role of the lecture is to help you understand the context of the topic as well as walk you through the difficult points.

The laboratories are intended to provide you an opportunity to gain basic hands-on experience and practical proficiency using the Oracle database package. You are required to work individually. A laboratory handout will be made available in the LAB section of the website. The routines and exercises set for completion in the laboratories will give you the opportunity to experience the management of a commercial database and how to design a
web application that interacts with the database. The laboratory section is compulsory and is being assessed individually. The laboratory section is designed for you to gain practical experience of managing and interacting with database and is an essential entry step to enable you to successfully complete your project implementation. It is your responsibility to grasp further skills of this package in order to achieve high performance of your database design. An Oracle Lab instructor is available during each lab section.

A major aim of tertiary institutions is the development of self-management skills. Thus, your self-directed private study is the most important component of this course. To assist your study each week has a ‘weekly study guide’. These guides are posted on the course website and set out the learning objectives for the week, the required readings, self assessment exercises, lecture topics and other relevant items. In addition, private study also includes reading more widely. The relevant material can be sourced from books, journals and the Internet and will enable you to acquire a better understanding of the course. The readings, self assessment exercises and your own topic summaries form the basis of an excellent private study regime. Keeping up to date is very important and each week builds on the prior weeks so it is important that you get your study regime organised quickly.

3.3 Forming a Group
You are required to form a group of 4 members to complete your group assignments. The groups have to be formed at the end of WEEK TWO. Try to create a good mix of people based on background and experiences. Your group must be self-managing. Each group needs to have a leader. Turn in a group list that includes all members’ name, student ID, email address, and indicating the leader. You are required to keep your group meeting minutes for peer evaluation and project management purpose. The groups have to be formed within the same tutorial classes.

3.4 Peer Evaluation
All members of the group are expected to participate equally in all group activities. To ensure this a peer evaluation form will be distributed near the end of each group assignment. Each student will be asked to rate the effort of each of the other group members in completing the assignments. These quantitative rating results will be used in the determination of the final mark of each student in a group. If there are arguments about the contribution evaluation, an open discussion between students about relative contribution will be held with lecturer’s presence. In order to encourage your participation, questions derived from your group assignment may be assessed in the final examination.

4 ASSESSMENT

4.1 Formal Requirements
To receive a pass grade in this course, you must meet ALL of the following criteria:
- Attain an overall mark of at least 50%.
- Attend at least 80% of all scheduled classes.
- Attain a satisfactory performance in each component of the course. A mark of 45 percent or higher is normally regarded as satisfactory.
- Attain a mark of at least 45% in the final exam
In the case of peer assessed group work, the mark assigned to each member of the group may be scaled based on peer assessment of each member's contribution to the task. The School reserves the right to scale final marks to a mean of 60%.

It should be noted that group members are expected to work in a harmonious and professional fashion which includes adequate management of non-performing members.

### 4.2 Assessment Details

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Mode</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Lab</td>
<td>10%</td>
<td>Individual</td>
<td>To be marked at the end of Lab week 2-Lab week 7</td>
</tr>
<tr>
<td>Database System Project (Phases 1 &amp; 2)</td>
<td>10%</td>
<td>Group</td>
<td>Phase 1: 5pm 28th of March, in week 4 Phase 2: 5pm 26th April, in week 7</td>
</tr>
<tr>
<td>Database System Project (Phases 3 &amp; 4)</td>
<td>25%</td>
<td>Group</td>
<td>Phase 3: 10am 27th May, in week 12 Phase 4: 28th May and 4th of June lecture and lab sections.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>55%</td>
<td>Individual</td>
<td>Exam period</td>
</tr>
</tbody>
</table>

**Oracle Lab**
A set of laboratories are provided to get you started. There are a total of 11 lab sections. The first six labs (Lab week 2 to Lab week 7) are set to complete a set of lab exercises individually and a total of 10% of your overall marks is allocated to them. You are required to complete each of these seven lab sections in due week and your tutor will check your work at the end of each lab. Lab week 8 to Lab week 10 are set for you to complete your database project.

Your Oracle Lab Instructor is responsible for all laboratory sections and your database design project. Students with problems regarding the laboratory and database design project should always refer to their lab instructor first.

**Database System Project**
An important experiential component of the course is the completion of the database system design project. This assignment provides an opportunity for you to work in a group on a practical database design and implementation project using the Oracle environment. This assignment also helps improve your critical thinking, problem solving, communication, teamwork and leadership, and professional skills. The project is divided into four phases. Phases 1 & 2 require the development of a project proposal based on a domain assigned by the LIC, and a conceptual, logical and physical design of the system. Phases 1 & 2 together are worth 10% of your overall marks. Phase 3 consists of an implemented web application that interacts with the database in an Oracle environment. System documentation is required for your designed system. The fourth phase requires a 30 minute presentation of your project.
Phases 3 & 4 together are worth 25% of your overall marks. The detailed description of the project and marking criteria is available on the course website.

Peer evaluation procedure is applied to this assignment.

**ORACLE Application Express: Developing Web Applications (APEX)**
You will use the ORACLE APEX (www.apex.oracle.com) as the platform to implement your projects. The main emphasis in class is teaching database concepts with some hands-on instructions. It is your responsibility to learn, on your own, some of the details of the Oracle implementation. Learning to learn is the greatest skill for an IS professional! Frustration is part of the course. Your ability to comprehend and solve complex problems is what makes you successful. At the end of the semester you should be thoroughly competent (or at least reasonably good) with database concepts and implementation.

**Final Examination**
A final examination worth 55% of the overall marks will be run during the examination period. The final examination will cover ALL TOPICS in this course. Further details of this exam will be provided in lecture revision section.

The aim of the final examination is to enable you to demonstrate to the examiner that you have achieved all the learning outcomes for this course and that you have achieved a level of competency regarding advanced database topics, as well as the capacity to use the competency to apply it analytically and critically in an organisational environment.

**4.3 Assessment Format and Assignment Submission Procedure**
Information about the format and marking criteria for all assessable work is contained in the requirements for each assignment, which is available on the course website. The cover page is required for all submissions. All group members are required to sign for the submission. An individual peer evaluation form is required for all group assignments.

Students are required to keep a copy for all assignments submitted and keep the marked assignments.

**4.4 Late Submission of Assignments**
The late submission of assignments carries a penalty of 10% of the maximum marks for that assignment per day of lateness (including weekends and public holidays), unless an extension of time has been granted. An extension of time to complete an assignment may be granted by the course LIC in case of misadventure or illness.

Applications for an extension of time should be made to the course LIC by email or in person before the due date. You will be required to substantiate your application with appropriate documentary evidence such as medical certificates, accident reports etc. Please note that work commitments and computer failures are usually consider insufficient grounds for an extension.
Quality Assurance
The ASB is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of ASB programs. All material used for such processes will be treated as confidential and will not be related to course grades.

5 COURSE RESOURCES
The website for this course is on UNSW Blackboard at: http://lms-blackboard.telt.unsw.edu.au/webapps/portal/frameset.jsp

The textbooks for this course are:

(If you have access to version 8, feel free to use it. I will provide updated information if necessary)

6 COURSE EVALUATION AND DEVELOPMENT
Each session feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process is one of the ways in which student evaluative feedback is gathered. Significant changes to courses and programs within the School are communicated to subsequent cohorts of students.

We value your feedback highly and make appropriate changes to course content, teaching style and type of assessment set. For example, based on the feedback received last year about our Oracle project, we have revised our marking guide to reflect the goals we aim to achieve in this course. Feel free to communicate your views to me at: z.guo@unsw.edu.au.
## COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic*</th>
<th>Laboratory</th>
<th>References</th>
<th>Other Activities/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 5 March</td>
<td>Introduction</td>
<td>No Lab</td>
<td>Handout</td>
<td></td>
</tr>
<tr>
<td>Week 2 12 March</td>
<td>Advanced SQL</td>
<td>Lab 1</td>
<td>Ch 8</td>
<td></td>
</tr>
<tr>
<td>Week 3 19 March</td>
<td>Database Design</td>
<td>Lab 2</td>
<td>Ch 9</td>
<td></td>
</tr>
<tr>
<td>Week 4 26 March</td>
<td>Database Administration</td>
<td>Lab 3</td>
<td>Ch 15</td>
<td>DB Project Phase one is due on 26th of March 5pm</td>
</tr>
</tbody>
</table>

### Mid-Session Break

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topic*</th>
<th>Laboratory</th>
<th>References</th>
<th>Other Activities/Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 5 9 April</td>
<td>Transaction Processing and Concurrency Control</td>
<td>Lab 4</td>
<td>Ch 10</td>
<td>DB Project Phase two is due on 27th of April at 5pm</td>
</tr>
<tr>
<td>Week 6 16 April</td>
<td>PL/SQL</td>
<td>Lab 5</td>
<td>Chap 8</td>
<td></td>
</tr>
<tr>
<td>Week 7 23 April</td>
<td>Database Backup and Recovery</td>
<td>Lab 6</td>
<td>Ch 10 and additional reference</td>
<td></td>
</tr>
<tr>
<td>Week 8 30 April</td>
<td>Database Performance Tuning and Query Optimisation</td>
<td>Lab 7 (DB development section)</td>
<td>Ch 11</td>
<td></td>
</tr>
<tr>
<td>Week 9 7 May</td>
<td>Security and Identity Management</td>
<td>Lab 8 (DB development section)</td>
<td>Handout</td>
<td></td>
</tr>
<tr>
<td>Week 10 14 May</td>
<td>Database Connectivity</td>
<td>Lab 9 (DB development section)</td>
<td>Chap14</td>
<td></td>
</tr>
<tr>
<td>Week 11 21 May</td>
<td>Business Intelligence and Data Warehouses</td>
<td>Lab 10 (DB development section)</td>
<td>Chap 13</td>
<td></td>
</tr>
<tr>
<td>Week 12 28 May</td>
<td>Revision and Exam Preparation and DB Presentation</td>
<td>DB Presentation</td>
<td></td>
<td>DB Project Phase Three is due at 10am 27th of May</td>
</tr>
<tr>
<td>Week 13 4 June</td>
<td>DB Presentation</td>
<td>DB Presentation</td>
<td></td>
<td></td>
</tr>
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</table>

*Lectures are subject to alteration and not all materials in chapters listed will be covered.