# Course Outline

# COMP9311
# Introduction to Database Systems
## Teaching Period 1 2010

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## Course Staff

**Contact Details**

| Staff Name | Role | Email | Phone |
|---|---|---|---|
| Wenjie Zhang | Lecturer | zhangw at cse.unsw.edu.au | |
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**Consultations**

| Staff Name | Day/Time | Location |
|---|---|---|

## Course Details

| | |
|---|---|
| **Course Code:** | COMP9311 |
| **Course Title:** | Introduction to Database Systems |
| **Units of Credit:** | 6 |
| **Course WebSite:** | http://www.cse.unsw.edu.au/~cs9311/ |
| **Handbook Entry:** | http://www.handbook.unsw.edu.au/postgraduate/courses/2010/COMP9311.html |

## Course Aims

This course aims to introduce the concepts, theories, and algorithmic issues important to database management systems. The course will also introduce the most recent development in various areas of data management topics, practice, and applications. This course is one of the prerequisite to advanced database courses. Other advanced database courses include: COMP9315 (DBMS Implementation), COMP9314 (Next Generation Database Systems), COMP9317 (XML and Databases), COMP9321 (E-Commerce Systems Implementation Infrastructure), etc.

## Student Learning Outcomes

After completing this course, students will:

- understand the whole process and various aspects of database management systems.
- understand the data models and query processing mechanisms used in relational databases.
- understand the importance of database design theories.
- have a basic understanding of query processing and optimization within relational database management systems.
- develop solutions for real data management problems using existing relational database management systems. and data mining technologies.
- appreciate the past, present and future of data management

This course contributes to the development of the graduate attributes 1-6. For example, bonus questions will be

given in the assignment in order to encourage independent learning and critical thinking.

## Assumed Knowledge

Before commencing this course, students should:

- experience with procedural programming, and an understanding of a range of in-memory searching data structures (e.g., binary search trees, and hash-tables).

## Teaching Rationale

The learning foci in this course are primarily lectures (theoretical knowledge) and projects (practical knowledge). The course will have an emphasis on problem solving for real applications. Students will learn the main contents of the course through lectures. Lab tutorials are available to assist students to obtain in-depth understanding of course materials and develop problem solving skills by working on projects.

## Teaching Strategies

- Lectures: the main way to introduce concepts, show examples
- Lab Work: work on projects. Tutors are available in labs.
- Assignments: solve significant problems

## Assessment

- 3 Assignments: each 10 points. ASS1 will be on data modeling. ASS2 on Relational Algebra and Normal Forms. ASS3 on DBMS.
- 2 Projects: each 35 points. Proj1 on SQL and Proj2 on PL/SQL.
- Final exam: 100 points.
- **Final Mark** : 2 * (ass1 + ass2 + ass3 + proj1 + proj2) * FinalExam / (ass1 + ass2 + ass3 + proj1 + proj2 + FinalExam)

## Academic Honesty and Plagiarism

**Plagiarism** is defined as "using the words or ideas of others and presenting them as your own". UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Learning Centre: Plagiarism and Academic Integrity
- MyUNSW: Plagiarism and Academic Misconduct
- CSE: Addendum to UNSW Plagiarism Guidelines
- CSE: Yellow Form (whose terms you have agreed to)

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism.

## Course Schedule

- **W1** : Subject Introduction, Conceptual DB Design
- **W2** : 1) Relational Data Model, 2) ER --> Relational Data Model, 3) Relational Algebra
- **W3** : Introduction to Oracle SQL.
- **W4** : SQL
- **W5** : PL/SQL
- **W6** : Relational Database Design Fundamental I: Functional Dependencies & Normal Forms
- **W7** : Relational Database Design Fundemental II: Design Algorithms
- **W8** : Database System Access and Storage I: Disk, Buffer, and File Management.
- **W9** : Database System Access and Storage II: Indexing Techniques.
- **W10** : Transaction Management
- **W11** : Transaction Management - Part II
- **W12** : Revision

## Resources for Students

**Texts book** :

- Fundamentals of Database Systems, by Elmasri and Navathe

**Reference books**

- Oracle Programming: A Primer, by Sunderraman

- A First Course in Database Systems, by Ullman and Widom
- Database Management Systems, by Ramakrishan
- Oracle PL/SQL, by Feuerstein
- The Theory of Relational Databases, by Maier

## Course Evaluation and Development

This course is evaluated each session using the CATEI system.

In the previous offering of this courses, students noted that more examples during lectures will be improve the quality of the course.

Based on their comments, we will add more examples accordingly.