SCSSE

School of Computer Science and Software Engineering
Faculty of Informatics

MCS9235 Databases
Subject Outline
Spring Session 2009

Head of School –Professor Willy Susilo, Student Resource Centre, Tel: (02) 4221 3606

GENERAL INFORMATION

Subject Coordinator	Dr Janusz Getta
Telephone Number:	02 4221 4339
Email:	jrg@uow.edu.au
Location:	3.2210

Dr Getta's consultation times during session:

Day	Time
Tuesday	15.30 – 17.30
Wednesday	9.30 – 11.30

Lecturer	Miss Gene Awyzio
Telephone Number:	02 4221 4090
Email:	gene@uow.edu.au
Location:	3.106

Miss Awyzio's consultation times during session:

Day	Time
Monday	13.30 – 15.30
Tuesday	10.30 – 12.30

Subject Organisation

Session:	Spring Session, Wollongong Campus
Credit Points	6 credit points
Contact hours per week:	3 hours lectures, 2 hours Computer lab
Lecture Times & Location:	Lecture A 8:30– 10:30 Mon, 20-LT3 Lecture B 8:30-9:30 Wed, 20.LT1
Tutorial Day, Time and Location can be found at:	http://www.uow.edu.au/student/timetables/index.html

Students should check the subject's web site regularly as important information, including details of unavoidable changes in assessment requirements will be posted from time to time via e-Learning space http://www.uow.edu.au/student/. Any information posted to the web site is deemed to have been notified to all students.

Subject Description

This subject investigates three major areas of modern database systems:
1. Design of relational databases
2. Programming of relational databases
3. Concurrency control and data recovery in database systems Topics will include: Introduction to conceptual database modelling; Principles of relational database model; Structured Query Language (SQL) and its procedural extensions (PL/SQL, Embedded SQL, JDBC); Database server programming; Normalisation of relational databases; and Transaction management and recovery in database systems.

Subject Objectives

A student who successfully completes this subject should be able to:
(i) explain the principles of relational database model,
(ii) design and implement a simple relational database,
(iii) use a number of software tools to implement database applications,
(iv) program a relational database server,
(v) normalise a relational database,
(vi) explain the principles of distributed databases and design a distributed database,
(v) explain the principles of transaction management and database recovery mechanisms

Graduate Qualities

This subject will continue to the following graduate qualities:
Informed
Independent Learners
Problem Solvers
Innovation & Design

Further information can be found at:
http://www.uow.edu.au/informatics/scsse/current/SubjectInformation/UOW049401.html

Attendance Requirements:

It is the responsibility of students to attend all lectures/tutorials/labs/seminars/practical work for subjects for which you are enrolled. It should be noted that the amount of time spent on each 6 credit point subject should be at least 12 hours per week, which includes lectures/tutorials/labs etc.

Satisfactory attendance is deemed by the University, to be attendance at approximately 80% of the allocated contact hours.

Method of Presentation:

In order to maximize learning outcomes, it is strongly recommended that students attend all lectures.

Lecture Schedule:

A proposed Lecture schedule for the subject is as follows:

Week	Topic	Reading
1	**Course information:** Database Management Systems (DBMS) what is it and why do we need it? **Database design:** conceptual modeling.	Textbook chapters: 1, 2, 12, 3, and 4 Lecture slides: 01, 02, and 03 Homework: 01, 02
2	**Database design:** conceptual modeling (cont.) relational database model, logical modeling.	Textbook chapters: 12, 5, and 7 Lecture slides: 04, 05, and 06 Homework: 03 Laboratory: 02
3	**SQL:** Data definition statements, data entry statements, data manipulation statements.	Textbook chapter: 8 Lecture slides: 07, 08, 09, 11, 12, and 13 Homework: 04 Laboratory: 03
4	**SQL:** Queries	Textbook chapter: 8 Lecture slides: 14, 15, 16, 17, and 18 Homework: 05 Laboratory: 04
5	**SQL:** Queries [cont.], relational views,	Textbook chapters: 8 Lecture slides: 19, 20, 21, and 22 Homework: 06 Laboratory: 05
6	**Indexing:** Data definition statements **System Catalog:** Database repositories	Textbook chapter: 14 Lecture slides: 04, 05, and 06 Homework: review before a practical test Laboratory: 06
7	**PL/SQL:** data structures, control structures	Lecture slides: 25 Homework: 08 Laboratories: practical test
8	**PL/SQL:** programming with cursors **Embedded SQL**: SQL+ C/C++	Textbook chapter: 9 Lecture slides: 26 and 27 Homework: 09 Laboratory: 08
9	**JDBC**: SQL + Java **Database applications:** simple HTML interfaces, PSP applications	Textbook chapters: 9 Lecture slides: 28 and 29 Homework: 10 Laboratory: 09
10	**Database design:** anomalies, functional dependencies, normal forms	Textbook chapters: 10 and 11 Lecture slides: 30 and 31 Homework: 11 Laboratory: 10
11	**Database design:** database design based on data dependencies	Textbook chapters: 10 and 11 Lecture slides: 32, 33, and 34 Homework: 12 Laboratory: 11
12	**Concurrency control in database systems:** database transactions, serializability	Textbook chapters: 17 and 18 Lecture slides: 35 and 36 Homework: a review before a practical test Laboratory: 12
13	**Concurrency control in database systems (cont.), database recovery:** 2 phase locking protocol, optimistic protocols, isolation levels, database recovery protocols **Summary**	Textbook chapters: 18 and 19 Lecture slides: 37 and 38 Homework: a review before a practical test Laboratory: practical test

Changes to the above schedule will be posted via e-Learning space http://www.uow.edu.au/student/. Any information posted to the web site is deemed to have been notified to all students.

Subject Materials:

Any readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings

Textbook(s):

- Elmasri R. and Navathe S. B., Fundamentals *of Database Systems*, 5th ed., The Person Education Inc, 2004

Other Resources:

- Garcia-Molina H., Ullman J. D., and Widom J. D., *Database Systems:Tthe Complete Book*. Prentice Hall International Limited, 2002
- Ramakrishnan R. and Gehrke J., *Database Management Systems*, 3rd ed. Mc Graw-Hill, 2003
- Silberschatz A., Korth H. F. and Sudarshan S., *Database System Concepts*, 4th ed., McGraw-Hill , 2002

SQL textbooks (in the increasing order of complexity and sophistication):

- Earp R. and Bagui S., *Learning SQL A Step-by-Step Guide Using Oracle*, Addison-Wesley, 2003.
- Shah N., *Database Systems Using Oracle A Simplified Guide to SQL and PL/SQL*, 2nd ed. Pearson Education International, 2005.
- Mishra S. and Beaulieu A., *Mastering Oracle SQL*, O'Reilly, 2002.
- Cumming A. and Russel G., *SQL Hack Tips &Tools for Digging into Your Data*, O'Reilly, 2007
- Tropashko V., *SQL design Patterns Expert Guide to SQL Programming*, Rampant TechPress, 2006

Oracle DBMS documentation library is available from UOW laboratories at
`https://sai.uow.edu.au/oradocs/`
Oracle DBMS documentation library is also available from any location at:
`http://www.oracle.com/pls/db102/homepage`

Oracle DBMS textbooks available on Safari Bookshelf (O'Reilly Network), access through a link to Proquest Safari website

All other materials are available on e-Learning.

Assessment:

This subject has the following assessment components.

ASSESSMENT ITEMS & FORMAT	% OF FINAL MARK	GROUP/ INDIVIDUAL	DUE DATE
Assignment 1 The tasks of this assignment include: conceptual modeling and application of CASE system to logical database design	5%	INDIVIDUAL	**Released:** Monday, 27 July, 2009, week 1 **Deadline:** Monday, 7.30pm, 17 August, 2009, week 4 **Submission format:** Electronic through WebCT
Assignment 2 Conceptual modeling and application of CASE system to logical database design implementation of relational database, normalization of relational database, data definition statements of SQL, data manipulation statements of SQL, `SELECT` statement, Embedded SQL, JDBC, PL/SQL, stored functions and procedures, PSP programming of database applications **Submission format:** Electronic through WebCT	15%	GROUP	**Released:** Monday, 24 August, 2009, week 5 **Deadline:** Friday, 7.30pm, 30 October, 2009, week 13 **Submission format:** Electronic through WebCT
Practical test 1 The tasks of this assignment include: conceptual modeling and application of CASE system to logical database design, data definition statements of SQL, data manipulation statements of SQL, SELECT statement of SQL, indexing, access to system catalog. Practical test 1 covers the laboratory classes 1, 2, 3, 4, 5, and 6	10%	INDIVIDUAL	**During the laboratory classes in week 7** **Submission format:** Electronic through WebCT
Practical test 2 Embedded SQL (SQL + C/C++), SQL), JDBC, PL/SQ, stored procedures and functions, PSP programming of database applications implementation of simple HTML based database application, Java stored methods, PL/SQL + C/C++, PLSQL + Java, Java stored methods. Practical test 1 covers the laboratory classes 8, 9, 10, 11, and 12	10%	INDIVIDUAL	**During the laboratory classes in week 13** **Submission format:** Electronic through WebCT
Final Examination	60%	INDIVIDUAL	Examination Period

Notes on Assessment:

All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded for that assignment.

Electronic Submission of Assessment Items:

Unless otherwise notified by the subject coordinator, all written assignments must be submitted electronically.

Submission of assessment items via email will not be accepted.

Other Procedures for the submission of assessment items:

All assignments will be returned within 2 weeks of their submission.

Electronic release of Assessment Items

Specifications of all assignments will be released in electronic format **ONLY**. There will be **NO** printed hardcopies distributed during lecture or lab classes. The students will collect the electronic copies of specifications on E-Learning.

Remarks on Assessment

(a) As assignments are to assess a student's understanding of course material, each assignment must be solved using only material covered up to that point in the course (unless otherwise stated in the question).

(b) Students who copy an assignment will receive no marks for that assignment. This also covers assignments which may be the product of community effort by several students. Working together is acceptable, but the final assignment must be the work of the individual student, as assessment is a measure of your ability.

(c) Programs that do not compile due to the syntax errors will receive no marks, and may still be commented upon. Proper documentation and program style are needed in the assignments to receive the full marks.

(d) The specifications of assignments and sample solutions will be available on E-Learning.

(e) Students should check the web page regularly for changes and updates to subject information together with assessment marks.

Procedures for the return of assessment items:

The enquiries about the assignment marks can only be made to the tutors during laboratory class times or to the lecturer during the lecturer's office hours. The enquiries about the assignment marks can only be made in a period of time of maximum 2 weeks after the evaluation of an assignment is published. After 2 week of "enquiry period", no more marks will be changed. The assignment marks will be available on SOLS on the assignment return day.

Penalties for late submission of assessment items:

Penalties apply to all late work, except if student academic consideration has been granted. Late submissions will attract a penalty of 20% of the assessment mark.

This amount is per day including weekends.

Tutorial/Lab Closure Policy

If for any reason, the number of students in a tutorial or lab falls below a sustainable enrolment level, as determined by the Head of School, tutorials/labs offered for that subject may be collapsed or deleted.
You will have to attend the new tutorials/lab if this closure affects the one you are attending.

We will endeavour to make this decision no later than Week 4 of session.

Supplementary Exams

Supplementary Exams will be dealt with in accordance with student academic consideration policy (http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf) 9.2 Timing of Supplementary Exams.

While the School normally grants supplementary exams when the student does not sit the standard exam for an acceptable reason, each case will be assessed on its own merit and there is no guarantee a supplementary exam will be granted. If a supplementary exam is granted, you will normally be notified via SOLS Mail the time and date of this supplementary exam. You must follow the instructions given in the email message.

To be eligible for a Pass in this subject after a supplementary examination is taken, a student must achieve a mark of at least 50% in the supplementary examination. Students who fail to achieve this minimum mark in the supplementary examination and who would have otherwise passed will be given a TF (Technical Fail) for his subject.

Please note that if this is your last session and you are granted a supplementary exam, be aware that your results will not be processed in time to meet the graduation deadline.

Student Academic Consideration Policy

The School recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for student academic consideration in order to complete all assessable work.

The University applies strict criteria to the granting of student academic consideration. Before applying for student academic consideration, students should carefully read the University's policy which can be found at: http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf.

Plagiarism

When you submit an assessment task, you are declaring the following

1. It is your own work and you did not collaborate with or copy from others.
2. You have read and understand your responsibilities under the University of Wollongong's policy on plagiarism.
3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end ot the assignment.

Students must remember that:

Plagiarism will not be tolerated.

Students are responsible for submitting original work for asssessment, without plagiarising or cheating, abiding by the University's policies on Plargiarism as set out in the University Handbook under University Policy Directory and in Faculty handbooks and subject guides. Plagiarism has led to the expulsion from the University.

Student Academic Grievance Policy

The School aims to provide a fair, equitable and productive learning environment for all its students. The Student Academic Grievance Policy seeks to support the achievement of this goal by providing a transparent and consistent process for resolving student academic grievances.

Any student who has a grievance over a result should obtain a Faculty of Informatics Appeal Against Decision or Action Affecting Academic Experience form from the Informatics Student Enquiry Centre. (http://www.uow.edu.au/content/groups/public/@web/@inf/@faculty/documents/doc/uow017433.pdf) The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the grievance has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may consult the Dean of Students. However, the Dean of Students can have no input into the academic judgment of the lecturer and can only review the grievance to ensure proper procedure has been followed.

Relevant University Policies, procedures and students services:

For more information students must refer to the Faculty handbook, online references or consult the UOW policy in full at http://www.uow.edu.au/handbook/courserules/studacgrievpol.html which contains a range of policies on educational issues and student matters.

This outline should be read in conjunction with the following documents:

Code of Practice - Teaching and Assessment http://www.uow.edu.au/handbook/codesofprac/teaching_code.pdf	Code of Practice - Students http://www.uow.edu.au/handbook/codesofprac/cop_students.html
Code of Practice-Honours http://www.uow.edu.au/handbook/CodeofPractice-Honours.pdf	Acknowledgement Practice **Plagiarism will not be tolerated:** http://www.uow.edu.au/handbook/courserules/plagiarism.html
Key Dates http://www.uow.edu.au/student/dates.html	Student Academic Consideration Policy: http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf
Course Progress Requirements: http://www.uow.edu.au/student/mrp/index.html	Graduate Qualities Policy: http://www.uow.edu.au/about/teaching/qualities/index.html#_The_new_UOW
Academic Grievance Policy (Coursework and honours students) http://www.uow.edu.au/handbook/courserules/studacgrievpol.html	Non-Discriminatory Language Practice and Presentation http://staff.uow.edu.au/eed/nondiscrimlanguage.html
Occupational Health and Safety http://staff.uow.edu.au/ohs/commitment/ohspolicy/index.html	Ownership of Work & Intellectual Property Policy: http://www.uow.edu.au/handbook/generalcourserules/UOW028651.html
Human Research Ethics Committee: http://www.uow.edu.au/research/rso/ethics/human/	Rules for student conduct: http://www.uow.edu.au/handbook/generalrules/StudentConductRules.pdf
Independent Learners' Introductory Program http://www.uow.edu.au/student/attributes/ilip/	Informatics Faculty Librarian, Ms Annette Meldrum, phone: 4221 4637, email: ameldrum@uow.edu.au
Student Support Services: http://www.uow.edu.au/student/services/ Informatics Faculty SEDLO (**Student Equity and Diversity Liaison Officers)** Virginie Schmelitschek, phone 4221 3833, virginie@uow.edu.au	SCSSE Internet Access & Student Resource Centre http://www.uow.edu.au/informatics/common/uow024466.html
SCSSE Computer Usage Rules http://www.uow.edu.au/informatics/common/uow024457.html	SCSSE Subject Outlines http://www.uow.edu.au/informatics/scsse/current