



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>. Please consult the web for updates that may occur during the year.

Description: Database Systems

| Subject | Cat-nbr | Class | Term | Mode | Units | Campus |
|---------|---------|-------|---------|------|-------|-----------|
| CSC | 3400 | 86220 | 1, 2009 | ONC | 1.00 | Toowoomba |

| | |
|-----------------------------------|--------|
| Academic group: | FOSCI |
| Academic org: | FOS003 |
| Student contribution band: | 2 |
| ASCED code: | 020303 |

STAFFING

Examiner: Stijn Dekeyser
Moderator: David Lai

OTHER REQUISITES

Recommended Pre-requisite: MAT1101 and CSC2401 and CSC2407 and CSC2408 or Students must be enrolled in one of the following Programs: MCOP or MPIT or MSBN.

RATIONALE

A key component of information systems is its database management system. These are widely used in scientific, business, government, and industrial organisations. It is important for a computing professional to understand the basic concepts of database systems, to be proficient in a database query languages, and to know the design principles of database systems. It is also important to be able to integrate a database in the context of data-driven web application.

SYNOPSIS

This course covers the fundamental issues of the relational model, relational languages, database design and query processing. It starts with a structured overview of database systems, their history and application. The relational model is then covered in detail. Relational languages such as the relational algebra and calculus are discussed before introducing the SQL language. Then we cover the Entity-Relationship model and discuss how ER diagrams are translated to the relational model. Topics on database design principles in this course further include functional dependencies and normalization. Students will gain a good understanding of database design theory and principles and be able to develop database systems and application programs on a DBMS.

OBJECTIVES

On completion of this course the student should be able to:

1. demonstrate an in-depth understanding of the relational model; (assignment 1, exam)
2. correctly construct relational algebra and relational calculus expressions; (assignment 1, exam)

3. reformulate an English language query statement in the relational algebra, relational calculus, and SQL formalisms; (assignment 1, assignment 2, exam)
4. create, modify, query, and update a relational database using SQL; (tutorials, exam, assignment 2)
5. design an Entity-Relationship diagram on the basis of a description of database requirements; (assignment 3, exam)
6. translate an ER-diagram into a relational schema; (assignment 3, exam)
7. normalise relations using functional dependencies. (assignment 3, exam)

TOPICS

| | Description | Weighting (%) |
|----|-------------------------------------|---------------|
| 1. | The relational model | 10.00 |
| 2. | The relational algebra and calculus | 25.00 |
| 3. | The SQL language | 20.00 |
| 4. | The Entity-Relationship model | 20.00 |
| 5. | Relational database design | 25.00 |

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Connolly, T & Begg, C 2005, *Database systems, a practical approach to design, implementation and management*, 4th edn, Addison-Wesley, Harlow.

(ISBN 0-201-70857-4, <http://www.booksites.net/connbegg/>)

Introductory Book 2008, *Course CSC3400 Database Systems*, USQ Distance and e-Learning Centre, Toowoomba.

Study Book 2008, *Course CSC3400 Database Systems*, USQ Distance and e-Learning Centre, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Date, CJ 2004, *An introduction to database systems*, 8th edn, Pearson/Addison-Wesley, Boston, Vol 1.

Elmasri, R & Navathe, SB 2004, *Fundamentals of database systems*, 4th edn, Pearson/Addison-Wesley, New York.

Ramkrishnan, R & Gehrke, J 2003, *Database management systems*, 3rd edn, McGraw-Hill, Boston.

Silberschatz, A, Korth, HF & Sudarshan, S 2005, *Database system concepts*, 5th edn, McGraw-Hill, Boston.

STUDENT WORKLOAD REQUIREMENTS

| ACTIVITY | HOURS |
|---------------------------------|--------|
| Examinations | 2.00 |
| Laboratory or Practical Classes | 10.00 |
| Lectures | 39.00 |
| Private Study | 115.00 |

ASSESSMENT DETAILS

| Description | Marks out of | Wtg (%) | Due date |
|----------------------------|--------------|---------|------------------------|
| ASSIGNMENT 1 | 20.00 | 10.00 | 03 Apr 2009 |
| ASSIGNMENT 2 | 20.00 | 10.00 | 27 Apr 2009 |
| ASSIGNMENT 3 | 20.00 | 10.00 | 27 May 2009 |
| 2HR RESTRICTED EXAMINATION | 100.00 | 70.00 | END S1 (see note 1) |

NOTES

1. Examination dates will be available during the semester.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them (including course Web pages) to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:
To satisfactorily complete an assessment item a student must achieve at least 50% of the marks or a grade of at least C-. Students do not have to satisfactorily complete each assessment item to be awarded a passing grade in this course. Refer to Statement 4 below for the requirements to receive a passing grade in this course.
- 3 Penalties for late submission of required work:
If students submit assignments after the due date without (prior) approval of the examiner then a penalty of 5% of the total marks gained by the student for the assignment may apply for each working day late up to ten working days at which time a mark of zero may be recorded. No assignments will be accepted after model answers have been posted.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course.
- 5 Method used to combine assessment results to attain final grade:

The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

- 6 Examination information:
Candidates are allowed access only to specific materials during a Restricted Examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination);
- 7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the next examination period.
- 8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

ASSESSMENT NOTES

- 9 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.
- 10 Students may be required to provide a copy of assignments submitted for assessment purposes. Such copies should be despatched to the USQ within 24 hours of receipt of a request to do so.
- 11 Assignments should be submitted electronically, through the course website.

OTHER REQUIREMENTS

- 1 Students will require access to e-mail and internet access to USQConnect and the Course Web site, and are expected to check these resources frequently.
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