Description: Database Design

<table>
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<th>Subject</th>
<th>Cat-Nbr</th>
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<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<td>EXT</td>
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Academic Group: FOBUS
Academic Org: FOB005
HECS Band: 2
ASCED Code: 020303

STAFFING
Examiner: Debbie Crabb
Moderator: Glen Van Der Vyver

PRE-REQUISITES
Pre-requisite: CIS1000 Co-requisite: CIS2000

RATIONALE
An essential component of a successful information system is usually a well designed and efficient database. It is of crucial importance that information systems practitioners understand database design because databases are not only becoming pervasive but also inexorably larger and more complex. Working within the framework of the relational database model, there exists a set of tools and techniques for constructing data models and for transforming the models into a DBMS (Database Management System). These tools include entity relationship diagramming and normalisation. Implementation of the relational design will differ depending upon the DBMS selected but most implementations will utilise SQL (Structured Query Language) as the basic database manipulation language.

SYNOPSIS
This course introduces students to relational database theory, design and implementation. Practical methodologies for data analysis, data modelling and database design are examined, coupled with a detailed study of the relational database model. Students will build practical skills in ER diagramming, normalisation and physical database design. Upon completion of this course, students will have been exposed to a broad overview of database theory. Finally, students will be given a brief introduction to SQL and the relational algebra and provided with the opportunity to establish base level skills in Oracle or Access or Micro SQL.
OBJECTIVES

On successful completion of this course, the student will be able to:

- evaluate the role of database design and processing in a business information system;
- describe and evaluate the relational database model;
- apply data analysis and modelling techniques including ER diagramming and normalisation, and derive a relational database design;
- evaluate and apply basic SQL statements;
- demonstrate an ability to analyse and justify database design, with clear verbal and written statements of any assumptions about the data; and
- demonstrate an understanding of fundamental database theory, including topics such as physical database design, data and database administration, transaction management and client/server systems.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Database Theory</td>
<td>30.00</td>
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<tr>
<td>1.1. The Database Environment</td>
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<tr>
<td>1.2. Database Development Cycle</td>
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<td>1.3. Database Trends</td>
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<td>1.4. Topics in database theory</td>
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<td>2. Data Modelling</td>
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<tr>
<td>2.1. Data Model</td>
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<td>2.2. Data Analysis</td>
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<td>3. Database Design</td>
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<tr>
<td>3.1. Relational Model</td>
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<td>3.2. Normalisation</td>
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<td>3.3. Logical and Physical Database Design</td>
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</table>
4. Database Implementation

4.1. Relational Algebra

4.2. Introduction to SQL

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

Micro SQL for Windows - User Guide including software (Optional - See Introductory Book)


(This handbook is available on the USQ website at http://www.usq.edu.au/faculty/business/departments/infosys/isdhandbook.htm)


(revised edition)

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.


**STUDENT WORKLOAD REQUIREMENTS**

<table>
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<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Directed Study</td>
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<td>Private Study</td>
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**ASSESSMENT DETAILS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tr>
<td>ASSIGNMENT</td>
<td>100.00</td>
<td>20.00</td>
<td>Y</td>
<td>02 Jan 2004</td>
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<td>EXAM PART A (MULTI-CHOICE)</td>
<td>34.00</td>
<td>27.00</td>
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<td>EXAM PART B (WRITTEN)</td>
<td>66.00</td>
<td>53.00</td>
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<td>END S3</td>
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</table>

**NOTES:**
1. The examination is scheduled to be held in the end-of-semester examination period. Students will be advised of the official examination date for Exam (Parts A and B) after the timetable has been finalised.

**IMPORTANT ASSESSMENT INFORMATION**

1. Attendance requirements:
   If you are an International student in Australia it is a requirement of your student visa that you attend all classes at your campus. For all other students, there are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them 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 complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.

3. Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 5% of the total marks available for the assignment will apply for each working day late. The assignment is likely to be subject to processing delays.

4. Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade a student must submit all of the summative assessment items, achieve a total mark of at least 50% in Part A and
Part B of the examination, and at least 50% of the available weighted marks for the summative assessment items.

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 (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
This is a closed examination. Candidates are allowed to bring only writing and drawing instruments into the examination. The examination consists of two parts. Part A (1 hour) is worth 34 marks and Part B (2 hours) is worth 66 marks.

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/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook. Students should also read The Guide to Policies and Procedures of the Faculty which can be found at the URL: http://www.usq.edu.au/handbook/2003/business/polproc/index.htm or in the printed version of the current USQ Handbook.

ASSESSMENT NOTES

1 Assignments: (i) 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. (ii) Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner. (iii) The Examiner may grant an extension of the due date of an assignment in extenuating circumstances. Students may apply for an extension through the DEC before the due date or by including an application with the submitted assignment after the due date. Such applications should be in writing and include supporting documentary evidence. The authority for granting extensions rests with the relevant Examiner. (iv) The Examiner will normally only accept assessments that have been written, typed or printed on paper-based media. (v) Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the Examiner to negotiate such special arrangements. (vi) In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

2 Course Weightings: Course weightings of topics should not be interpreted as applying to the number of marks allocated to questions testing those topics in an examination paper.
3 Referencing in Assignments: Unless otherwise directed by the Examiner, all written and oral assignments submitted by students must conform to the guidelines laid out in the 'Communication skills handbook: How to succeed in written and oral communication' and 'Information systems developers handbook: A road map for students'. Any work not prepared in accordance with these guidelines may be subject to penalty or requirement for resubmission.

4 Make-up Work: Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded the temporary grade: IM (Incomplete - Make up). An IM grade will only be awarded when, in the opinion of the Examiner, a student will be able to achieve the remaining objectives of the course after a period of non-directed personal study.

5 Deferred Work: Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded: IDS (Incomplete - Deferred Examination); IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

6 Appeals: Any appeal against the award of a grade in the course will be conducted in accordance with University Regulations. These Regulations are published in the University Handbook.

OTHER REQUIREMENTS

1 E-mail and Internet Access: Students will require access to e-mail and Internet access to USQConnect for this course.