UNIVERSITY OF CANBERRA

Database Design

Unit code and version	5915.6
Unit offering option	205766
Study level	Level 1 - Undergraduate Introductory Unit
Credit points	3
Faculty	Faculty of Science and Technology
Discipline	Academic Program Area - Technology
Unit offering details	Semester 1, 2022 , ON-CAMPUS , UC - Canberra, Bruce
Unit convener name and contact details	Associate Professor Masoud Mohammadian 6C40(Building 6 Level C, Office 40) Phone No: 6201 2917 Email: masoud.mohammadian@canberra.edu.au Unit Moderator: Associate Professor Abu Barkat Ullah Email: Abu.barkatullah@canberra.edu.au
Administrative contact details	Student Central Building 1, Level B Email: Student.Centre@canberra.edu.au Telephone number: 1300 301 727

Academic content

Unit description

This subject introduces a practical approach to the development and design of database systems. The emphasis is placed on relational database management systems, their development and implementation in a modern organisational environment. The use of modern query languages for relational databases is discussed and experienced. Conceptual, logical and physical database design issues are also covered. Other topics include client server database computing and database administration issues.

Learning outcomes

1. students will be able to list, describe, and illustrate the steps in a database system development life cycle.
2. illustrate the inputs and outputs in that process, with an emphasis on data modelling
3. Students will acquire data analysis skills
4. develop an appropriate set of data models for relational database implementation
5. The students will also be able to demonstrate the use of the SQL language in a database server environment.

Graduate attributes

1. UC graduates are professional
    - communicate effectively
    - work collaboratively as part of a team, negotiate, and resolve conflict
    - display initiative and drive, and use their organisation skills to plan and manage their workload
    - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
    - employ up-to-date and relevant knowledge and skills

Skills development

As students of the University of Canberra, you will develop your critical thinking skills, your ability to solve complex problems, your ability to work with others, your confidence to learn independently, your written communication skills, your spoken communication skills and a number of work-related knowledge and skills.

ACS Accreditation

This unit is part of courses accredited by the Australian Computer Society.

It meets the following skill categories

Skills Framework for the Information Age (SFIA) v8

This unit aligns with the following SFIA professional skills:

Technical specialism TECH

Database/repository design DBDS

Systems design DESN

Data management DATM

SFIA skills are defined by levels of responsibility, based on autonomy, influence, complexity, business skills

and knowledge. Although this unit may cover knowledge and skills at higher levels, it is

expected that graduates of undergraduate degrees will be capable of operating at level 2 overall

This unit meets the following SFIA skills specification:

Database/repository design DBDS

Systems design DESN

Data management DATM

Seoul Accord

The UC generic skills address graduate attributes 1, 6, 7, 9, and 10 of the

Seoul Accord. The remaining graduate skilss that are addressed in this unit are:

2. Knowledge for Solving Computing Problems

3. Problem Analysis

5. Modern tool usage

EA Accreditation

This unit is part of courses accredited by Engineers Australia (EA)

This unit assesses and exposes students to the following Professional Engineering Stage 1.

1.1 Comprehensive, theory based understanding - Indictors Assessed: a

1.2 Conceptual understanding - Indicators Assessed: a

Timetable of activities

Week	Lecture Topics	Tutorial	Other Activities		
Week 1	Introduction to Database Systems and Database Management Systems	There are no tutorial or laboratory sessions in Week 1.	None		
Week 2	Database Environment	Tutorial: Database Systems Concepts	None.		
Week 3	Relational Models Entity Relationship Diagram (ERD)	Tutorial: Database Concepts and Introduction MS Access (Creating Tables)	Assignment 1 out Online quiz 1		

Week 4	Entity Relationship Diagram (ERD)	Tutorial: Relational models and ERD	None		
Week 5	Normalisation	Tutorial: Data Modelling and Entity Relation Diagram (ERD) Exercises and MS Access (Creating Tables and Databases)	None		
Week 6	Data Modelling and Normalisation Structured Query Language (SQL)	Tutorial: Data Modelling and Normalisation and MS Access (Creating Forms and Tables)	Online quiz 2 Assignment 2 out Formation of Assignment 2 Groups		
Week 7	Structured Query Language (SQL) Database Development Life Cycle	Tutorial: Structured Query Language (SQL) and Normalisation Exercises and MS Access (Writing SQL Queries)	Assignment 1 due		
Week 8	Non-Teaching Period				
Week 9	Conceptual Database Design	Tutorial: SQL practice and SQL practice with MS Access (Forms and Queries)	None.		
Week 10	Logical Database Design	Tutorial: Conceptual Design and Database Implementation with MS Access (Switchboards)	None.		
Week 11	Physical Database Design	Tutorial: Logical Design and Database Implementation	None.		
Week 12	Database Development System Lifecycle	Tutorial: Physical Design and Database Implementation /MS Access	Assignment 2 due		

Week 13	Review	Tutorial: Database Development Lifecycle and SQL Review	None

Unit resources

Required texts

Connolly, T and Begg, C 2015, Database Systems: A practical approach to design, implementation and management, 6th edition, Boston, Pearson Education

The text book can be purchased at the University of Canberra bookshop School Locker.

Materials and equipment

No special requirements. Students may use Faculty's laboratory.

Unit website

Each unit you are enrolled in has an online teaching site in the learning management system UCLearn. You access UCLearn through MyUC.

The unit website is accessible at UC canvas. The unit convener will update the unit website as and when required. Students are required to regularly check the unit website for the latest information on the unit material and other information including announcements.

Additional information

Announcements made in the class andwebsite of this subject are deemed to be made to all students enrolled in the unit.

Assessment

Assessment item details

Assignment 1 (Individual)

Due date

Friday Week 7 of Semester 1 2022 at 11:55pm

Weighting

20%

Assessment details

Assignment 1

This assignment should be completed individually by each student. In this assignment, students will design a database model for an organisation based on the specification given in Assignment 1. It comprises a number of questions related to design of a data model including Entity-Relationship Diagrams (ERD), relations (tables) and primary/foreign keys and the normalisation of data for (relational) database systems.

Addresses learning outcomes

- 2. illustrate the inputs and outputs in that process, with an emphasis on data modelling
- 3. Students will acquire data analysis skills
- 4. develop an appropriate set of data models for relational database implementation

Related graduate attributes

1. UC graduates are professional
    - display initiative and drive, and use their organisation skills to plan and manage their workload
    - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
    - employ up-to-date and relevant knowledge and skills

Quiz: Online quiz 1 Online quiz 2

Due date

Online quiz 1 due date: Friday Week 3 of Semester 1 2022 at 11:55pm

Online quiz 2 due date: Friday Week 6 of Semester 1 2022 at 11:55pm

Weighting

quiz 1 - 2.5%

quiz 2 - 2.5%

Assessment details

There will be two online quiz exercises that will be completed in week 3 and week 6. The syllabus and other details of these exercises will be outlined during the lectures. The online quiz exercises will test your knowledge based on the materials covered in lecture and tutorials/laboratories. Students are required to answer online quizzes via the unit Canvas site of this subject.

Addresses learning outcomes

- 2. illustrate the inputs and outputs in that process, with an emphasis on data modelling
- 3. Students will acquire data analysis skills
- 4. develop an appropriate set of data models for relational database implementation

Related graduate attributes

1. UC graduates are professional
    - employ up-to-date and relevant knowledge and skills
    - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
    - display initiative and drive, and use their organisation skills to plan and manage their workload

Assignment 2 (Group Assignment)

Due date

Friday Week 12 of Semester 1 2022 at 11:55pm

Weighting

30%

Assessment details

Assignment 2

This assignment is a group assignment. Individual submissions for the second assignment are not acceptable unless authorised by the lecturer based on special circumstances. In this assignment, students will design and implement a database

system using a Database Management System (e.g. Microsoft Access). For this assignment, a group should consist of three to four students from the same tutorial group.

Addresses learning outcomes

- 1. students will be able to list, describe, and illustrate the steps in a database system development life cycle.
- 2. illustrate the inputs and outputs in that process, with an emphasis on data modelling
- 3. Students will acquire data analysis skills
- 4. develop an appropriate set of data models for relational database implementation
- 5. The students will also be able to demonstrate the use of the SQL language in a database server environment.

Related graduate attributes

1. UC graduates are professional
    - communicate effectively
    - work collaboratively as part of a team, negotiate, and resolve conflict
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    - use creativity, critical thinking, analysis and research skills to solve theoretical and real-world problems
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Take Home Assessment

Due date

12:30 PM Thursday 19th of May (Open Monday16th of May 12:30 PM).

Weighting

45%

Additional information

You must achieve at least 50% of the available marks in the Take Home Assessment to pass this unit.

Assessment details

The Take Home Assessment will be a 72 hours open book assessment and will be conducted according to the university examination timetable.

Addresses learning outcomes

- 1. students will be able to list, describe, and illustrate the steps in a database system development life cycle.
- 2. illustrate the inputs and outputs in that process, with an emphasis on data modelling
- 3. Students will acquire data analysis skills
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- 5. The students will also be able to demonstrate the use of the SQL language in a database server environment.

Related graduate attributes

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    - display initiative and drive, and use their organisation skills to plan and manage their workload
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    - employ up-to-date and relevant knowledge and skills

Submission of assessment items

Further information will be made available on the unit's Canvas website.

Extensions

Students can apply for an extension to the submission due date for an assessment item due to extenuating, evidenced circumstances (specific details are found in the Assessment Procedures). An extension must be applied for before the due date. Documentary evidence (e.g. medical certificate) will be expected for an extension to be granted, however this will not guarantee that the application will be successful. The Unit Convener or relevant Program Director/Course Convener will decide whether to grant an extension and the length of the extension.

An Assignment Extension form is available from the Student Forms page.

Late submissions

The following late submission period and penalty is applicable to any teaching period commencing after 1 April 2024.

To support the provision of timely feedback to students within the unit, late penalties will apply for summative assessments where late submission is permitted. Late submissions without an approved extension or reasonable adjustment will result in a penalty of a mark reduction of 10% of the maximum available marks for the assessment item per day (or part thereof) up to and including three calendar days. If a student submits more than three calendar days late without an approved extension or reasonable adjustment, the student will be allocated a mark of zero for that assessment, with no feedback provided.

Approval of extensions based on extenuating circumstances will be dependent upon the production of supporting documentation and at the discretion of the unit convener.

For teaching periods commencing prior to 1 April 2024, a late penalty of 5 % of the maximum available marks for the assessment item per day (or part thereof) was applied up to and including seven calendar days. An assignment submitted over 7 days late will not be accepted.

Special assessment requirements

To pass this unit, you will need to satisfy the following conditions:

a. You must achieve at least 50% as a combined total of the available marks of the two assignments and online quiz exercise; and

b. You must achieve at least 50% of the available marks in the Take Home Assessment .

Once these conditions have been satisfied, grades will be awarded as per the following

Grade Letter	Grade Weighted	Marks
High Distinction	HD	85% - 100%
Distinction	DI	75% - 84%
Credit	CR	65% - 74%
Pass	P	50% - 64%
Fail	NX	0% - 49%

If there is any doubt with regard to the requirements of any particular assignments or assessment procedure, the onus for clarifying the issue

rests with the student who should contact the lecturer about the matter. Tutors will also be happy to assist in this regard.

1. Students should keep a copy of all assessment items that are submitted.

2. The lecturer reserves the right to question students orally on their submitted work

3. The assessment criterion for answers to theoretical and technical questions is both correctness and appropriate style.

4. The tutors will provide feedback to the students on their assignments. Students are encouraged to seek individual feedback from the tutor/lecturer.

Referencing requirements:

All work quoted from other written sources should be appropriately referenced using the “author-date” (Harvard) style. This style is described in detail (including electronic sources) in the Citation Guide available at:

http://canberra.libguides.com/referencing

Supplementary assessment

Refer to the Assessment Policy and Assessment Procedures

Academic integrity

Students have a responsibility to uphold University standards on ethical scholarship. Good scholarship involves building on the work of others and use of others' work must be acknowledged with proper attribution made. Cheating, plagiarism, and falsification of data are dishonest practices that contravene academic values. Refer to the University's Student Charter for more information.

To enhance understanding of academic integrity, all students are expected to complete the Academic Integrity Module (AIM) at least once during their course of study. You can access this module within UCLearn (Canvas) through the 'Academic Integrity and Avoiding Plagiarism' link in the Study Help site.

Use of Text-Matching Software

The University of Canberra uses text-matching software to help students and staff reduce plagiarism and improve understanding of academic integrity. The software matches submitted text in student assignments against material from various sources: the internet, published books and journals, and previously submitted student texts.

Student responsibility

Learner engagement

An estimate of the required student workload for this subject is given below:

Lectures	12 weeks (2 hours per week)	24 hours
Tutorials/Laboratories	12 weeks (1 hours per week)	12 hours
Preparation (Lectures/tutorials/labs)	12 weeks (3 hours per week)	36 hours
Assignment 1		20 hours
Online exercises		13 hours
Assignment 2		20 hours
Self Study/Practice		25 hours

Total	150 hours

Inclusion and engagement

It is strongly recommended that students who need assistance in undertaking the unit because of disability or an ongoing health condition register with the Inclusion and Engagement Office as soon as possible so that reasonable adjustment arrangements can be made.

Participation requirements

Attendance at classes is not compulsory but you are strongly advised to attend all classes. Students should also be aware that the subject will be examined on material covered in classes, including lectures and tutorials and it is the individual student's responsibility to ensure that they are sufficiently familiar with this material. Attendance at classes is one of the best ways of ensuring this familiarity. While the lecture notes and course materials are available on the subject website, these are intended to be broad outlines of the lectures. Do not make the mistake of assuming that the materials perfectly substitute for class attendance.

Withdrawal

If you are planning to withdraw please discuss with your Unit Convener. UC College students must also seek advice from the College.

Required IT skills

There are no specific IT skills required for this unit.

This unit involves online meetings in real time using the Virtual Room in your UCLearn teaching site. The Virtual Room allows you to communicate in real time with your lecturer and other students. To participate verbally, rather than just typing, you will need a microphone. For best audio quality we recommend a microphone and speaker headset. For more information and to test your computer, go to the Virtual Room in your UCLearn site and 'Join Course Room'. This will trigger a tutorial to help familiarise you with the functionality of the virtual room.

In-unit costs

There are no additional costs associated with this unit apart from materials you choose to use in the preparation of assessment items.

Work integrated learning

None

Additional information

Announcements made in the class and canvas website of this subject are deemed to be made to all students enrolled in the unit.

Student feedback

All students enrolled in this unit will have opportunities to provide anonymous feedback on the unit through the InterFace Student Experience Questionnaire (ISEQ). The request for your feedback will be posted on your InterFace page at least twice during a teaching period. InterFace can be accessed through MyUC.

Changes to unit based on student feedback

Revision, update and improvement of lecture notes, tutorial and laboratory materials and assignments and take home assessment are undertaken based student feedback.

Authority of this unit outline

This unit outline must be read in conjunction with the University of Canberra's Policies and Procedures, including the Assessment Policy and associated Procedure. The Assessment Policy and Assessment Procedure include information on matters such as plagiarism, grade descriptors, moderation, feedback, and deferred exams.

Any change to the information contained in the Academic content and Assessment sections of this document, will only be made by the Unit Convener if the written agreement of the Program Director and a majority of students has been obtained; and if written advice of the change is then provided on the teaching site in UCLearn. If this is not possible, written advice of the change must be then forwarded to each student enrolled in the unit at their registered term address. Any individual student who believes themselves to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.

Authority Text

Main

> Exception – Potential changes to a unit's learning activities and assessment items (Approved Academic Board 2020)
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> In the event of Australian Government and/or ACT Government directive, such as those requiring physical distancing and restrictions on movement because of a pandemic, learning activities and/or assessment items in some units may change. These changes will not be updated in the published Unit Outline but will be communicated to students via the unit's UCLearn (Canvas) teaching site. The new learning activities and/or assessment items will continue to meet the unit's learning outcomes, as described in the Unit Outline.
>
> New learning activities and/or assessment items will be available on the unit's UCLearn (Canvas) teaching site. Please contact the Unit Convener with any questions.

University of Canberra, Bruce ACT 2617 Australia
+61 2 6201 5111
ABN 81 633 873 422
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UC acknowledges the Ngunnawal people, traditional custodians of the lands where Bruce campus is situated. We wish to acknowledge and respect their continuing culture and the contribution they make to the life of Canberra and the region. We also acknowledge all other First Nations Peoples on whose lands we gather.