COIT20247 *Database Design and Development*
Term 2 - 2023

Profile information current as at 26/04/2024 03:08 pm

All details in this unit profile for COIT20247 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview
In this unit, you will learn how to model, design, and build relational databases and manipulate them using Structured Query Language (SQL) in a modern database management system (DBMS) such as MySQL Server. You will build a practical database that typically meets the requirement of a large-scale commercial-level DBMS. In this unit, you will also learn the features of the latest developments including data integrity, security, distributed system databases, data warehousing, and concurrency control in multi-user database systems.

Details
Career Level: *Postgraduate*
Unit Level: *Level 8*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Antirequisite: COIS20026
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2023

- Brisbane
- Melbourne
- Online
- Rockhampton
- Sydney

Attendance Requirements
All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website
This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**
Weighting: 25%
2. **Practical and Written Assessment**
Weighting: 35%
3. **Online Test**
Weighting: 40%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Student Unit Teaching Evaluations

Feedback
Provide more MySQL demonstrations.

Recommendation
Incorporate instructional videos on Moodle that demonstrate the installation and use of MySQL.

Feedback from Student Unit Teaching Evaluations

Feedback
Requirements of the assessment 2 were complicated.

Recommendation
Include videos to explain the assessment requirements and include a weekly discussion during lectures.

Feedback from Teaching Team

Feedback
Some students were not able to explain their assignment contributions.

Recommendation
Include an in-class oral presentation and demo of Assignment 2 as part of the assignment components.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Explain the purpose of and technical foundations related to database technology
2. Utilise the processes undertaken during the identification of functional dependencies and normalisation
3. Design and develop a database application using a Relational Database Management System (DBMS)
4. Identify issues related to data integrity, security, and concurrency control in a multi-user database environment
5. Explain the fundamental concepts of distributed databases and data warehousing
6. Evaluate and execute administration decisions for DBMS support and maintenance.

The Australian Computer Society (ACS) recognises the Skills Framework for the Information Age (SFIA). SFIA is adopted by organisations, governments, and individuals in many countries and provides a widely used and consistent definition of ICT skills. SFIA is increasingly being used when developing job descriptions and role profiles. ACS members can use the tool MySFIA to build a skills profile.
This unit contributes to the following workplace skills as defined by SFIA 7 (the SFIA code is included)

- Data Modelling and Design (DTAN)
- Systems Design (DESN)
- Database Design (DBDS)
- Testing (TEST)
- Release and Deployment (RELM)
- Applications Support (ASUP)
- Systems Integration (SINT)
- Database Administration (DBAD)

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level | • Introductory Level | • Intermediate Level | • Graduate Level | ∘ Professional Level | ∘ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Written Assessment - 25%	•	•				
2 - Practical and Written Assessment - 35%			•			•
3 - Online Test - 40%	•	•	•	•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Knowledge	∘	∘	∘	∘	∘	
2 - Communication	∘	∘	∘	∘	∘	∘
3 - Cognitive, technical and creative skills	∘	∘	∘	∘	∘	∘
4 - Research						
5 - Self-management						∘
6 - Ethical and Professional Responsibility						
7 - Leadership						
8 - Aboriginal and Torres Strait Islander Cultures						

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes							
	1	2	3	4	5	6	7	8
1 - Written Assessment - 25%	∘	∘	∘					
2 - Practical and Written Assessment - 35%	∘	∘	∘		∘			
3 - Online Test - 40%	∘	∘	∘					

Textbooks and Resources

Textbooks

COIT20247

Prescribed

Modern Database Management
13th (GLOBAL Edition) (2019)
Authors: Hoffer J.,Venkataraman R. & Topi H.
Pearson
Harlow , Essex , England
ISBN: 9781292263359
Binding: Paperback

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- MySQL Workbench 6.3 CE (https://dev.mysql.com/downloads/file/?id=474210)
- MySQL Database Server 8.0.21 or later (https://dev.mysql.com/downloads/mysql)

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Michael Li Unit Coordinator
m.li@cqu.edu.au

Schedule

Week 1 - 10 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction of databases	Textbook Chapter 1 & Week 1 online materials	

Week 2 - 17 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Entity-Relationship model - Basic	Textbook Chapters 1, 2 & Week 2 online materials	

Week 3 - 24 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Entity-Relationship model - Enhanced	Textbook Chapters 2, 3 & Week 3 online materials	

Week 4 - 31 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic

The relational model and logical design	Textbook Chapter 4 & Week 4 online materials	

Week 5 - 07 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Database design and normalization	Textbook Chapter 4 & Week 5 online materials	**Assignment 1** Due: Week 5 Friday (11 Aug 2023) 11:59 pm AEST

Vacation Week - 14 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Create and use databases with MySQL	Lecture Notes & Week 6 online materials	

Week 7 - 28 Aug 2023

Module/Topic	Chapter	Events and Submissions/Topic
Structured Query Language (1)	Textbook Chapter 6 & Week 7 online materials	

Week 8 - 04 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Structured Query Language (2)	Textbook Chapter 7 & Week 8 online materials	

Week 9 - 11 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Advanced SQL and transaction management	Lecture Notes, Textbook Chapter 7 & Week 9 online materials	

Week 10 - 18 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Cloud-based databases	**Lecture Notes & Week 10** online materials	**Assignment 2** Due: Week 10 Friday (22 Sept 2023) 11:59 am AEST

Week 11 - 25 Sep 2023

Module/Topic	Chapter	Events and Submissions/Topic
Database administration	Textbook Chapter 12 & Week 11 online materials	

Week 12 - 02 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
Database advanced topics	Textbook Chapters 9,11, Lecture Notes & Week 12 online materials	

Review/Exam Week - 09 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Online Test. **Online Test** Due: Review/Exam Week Thursday (12 Oct 2023) 11:45 pm AEST

Exam Week - 16 Oct 2023

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

Unit Coordinator:
Dr. Michael Li
School of Engineering & Technology
CQUniversity Rockhampton, Bruce HigHway, QLD4701
P +61 7 49306337 | X 56337 | E m.li@cqu.edu.au

Assessment Tasks

1 Assignment 1

Assessment Type
Written Assessment

Task Description
The purpose of this assignment is to assess your competency in data modelling using Entity-Relationship principles for the given business case study and optionally transforming the Entity-Relationship model to 3NF Relations. A case study will be available in the unit website for which you need to develop an appropriate Entity Relationship Diagram (ERD) and then optionally convert your ERD into 3rd Normal Form Relations. The detailed assignment specification including the case study will be available from the unit Moodle site.

Assessment Due Date
Week 5 Friday (11 Aug 2023) 11:59 pm AEST
Your assignment must be submitted in Moodle in the format specified in the assignment. See Moodle unit website for details.

Return Date to Students
Week 7 Friday (1 Sept 2023)
We aim to return marks and feedback to you by this date.

Weighting
25%

Assessment Criteria
The detailed marking criteria will be provided along with the assignment specification. Your assignment solution will be assessed mainly on the following:

- identifying suitable entities, identifiers & attributes, relationships, and cardinalities
- using appropriate symbols to represent the entities, relationships, and cardinalities
- specifying relevant assumptions and business rules
- converting the ERD into 3NF relations (optional)

Penalties related to late submission and plagiarism will be applied as per University policy.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Explain the purpose of and technical foundations related to database technology
- Utilise the processes undertaken during the identification of functional dependencies and normalisation

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills

2 Assignment 2

Assessment Type
Practical and Written Assessment

Task Description
The purpose of this assignment is to assess your competency in designing and implementing a relational database and your ability to solve simple or complex business logic/needs through the creation of SQL queries. During week 7, a model solution for Assignment 1 will be released in the unit Moodle site. Your task for this assignment is to perform logical design, physical design and implement a database based on the Assignment 1 model solution (released) including the creation of SQL queries, and report objects.
Implementing the aforementioned database in MySQL:
This may require you to either undertake a demonstration (for on-campus students) or make an email submission (for distance students) as per the assignment specification.
The detailed assignment specification and submission details will be available on the unit Moodle site.

Assessment Due Date
Week 10 Friday (22 Sept 2023) 11:59 am AEST
Your assignment must be submitted in Moodle in the format specified in the assignment. See Moodle unit website for details.

Return Date to Students
Week 12 Friday (6 Oct 2023)
We aim to return marks and feedback to you by this date.

Weighting
35%

Assessment Criteria
The detailed marking criteria will be provided along with the assignment specifications.
In addition to evaluating your ability to perform the logical design, your assignment solution will be assessed mainly on your ability to create a relational database that contains the following:

- appropriate tables containing relevant attributes with suitable properties
- suitable relationships among the tables
- SQL statements relevant to the given business requests
- report object relevant to the given business requests

Penalties related to late submission and plagiarism will be applied as per University policy.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Design and develop a database application using a Relational Database Management System (DBMS)
- Evaluate and execute administration decisions for DBMS support and maintenance.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management

3 Online Test

Assessment Type
Online Test

Task Description
The Online Test will have questions designed to test the topics covered in weeks 1-12 inclusive. You need to answer a number of questions in accordance with the given E-R diagram(s), convert/map E-R diagram(s) into a set of relations, answer a number of questions about normalization of the given relation(s), writing SQL query statements to answer the information requests in accordance with the provided tables, and answer a few database theoretical questions.

Assessment Due Date
Review/Exam Week Thursday (12 Oct 2023) 11:45 pm AEST
The exact date and time of the Online Test will be announced via unit Moodle website.

Return Date to Students

Overall results including the result of the Online Test will become available on Certification Date (see Academic

Calendar).

Weighting
40%

Minimum mark or grade
16 marks out of 40 marks

Assessment Criteria

- Demonstrate deeper understanding on database design and implementation
- Correct use of SQL syntax to answer the information requests
- Demonstrate your understanding on multiuser database administration and database security features etc
- Demonstrate your understanding on a distributed database, cloud-based database architecture and applications
- Demonstrate your understanding on the concepts of data warehouse

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Explain the purpose of and technical foundations related to database technology
- Utilise the processes undertaken during the identification of functional dependencies and normalisation
- Design and develop a database application using a Relational Database Management System (DBMS)
- Identify issues related to data integrity, security, and concurrency control in a multi-user database environment
- Explain the fundamental concepts of distributed databases and data warehousing

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem