COMP6150

Introduction to Database Design and Management

Session 2, In person-scheduled-weekday, North Ryde 2024

School of Computing

Contents

General Information

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Credit points
10

Prerequisites

Corequisites

Co-badged status

Unit description

This unit introduces students to the principles and concepts of data storage, management and modelling, including the role of data and information in organisations. The unit will cover conceptual modelling techniques, converting conceptual data models into relational data models and verifying its structural characteristics with normalisation techniques, and implementing and utilising a relational database using a database-management system. Fundamental data modelling tools, techniques and query languages such as Structured Query Language (SQL) will be used. An introduction to the concepts and issues relating to data warehousing, governance, administration, security and privacy and alternative database structures such as distributed and object-oriented databases will be provided. Ethical and green approaches to the collection, backup, use and storage of data and the construction of systems are emphasised. The unit concentrates upon building a firm foundation in information representation, organisation and storage with particular emphasis upon the application of database systems.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

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

ULO1: Analyse data requirements and design and develop conceptual database models.

ULO2: Implement system models into databases, design and create simple databases for business information systems and write programs to produce interactive queries.

ULO3: Use data analysis and data modelling techniques and tools for introductory level database design and specification.

ULO4: Explain the role and nature of ethics and sustainability in the IT environment related to databases.

General Assessment Information

Assessments Information

Weekly Quizzes:

Every week, you will have to attempt the weekly quizzes, which will be based on the practical activities for the week.

Database Design Assignment:

This will be a group assignment, and it will be submitted on iLearn. Students will have to work in

groups to complete the assignment. If it is submitted late, a late penalty will apply to the entire group.

Practical SQL Test

This is a practical SQL test that will be held in the registered practicals.

Module Exams

These assessments will be held in your enrolled practicals on iLearn quizzes. They are closed-book tests.

Requirements to Pass

To pass this unit, you must:

- Achieve a total mark equal to or greater than 50%, and
- Undertake the hurdle activities and score at least 8 out of 10

Hurdle Assessments

Weekly Quizzes

The development of knowledge and skills to design and develop databases requires continual practice at authentic problems in a practical setting. This unit has weekly practical classes, and you must demonstrate your progress in developing knowledge and skills in a minimum of 8 weeks of practical material. There will be 13 weekly quizzes, each worth 1%. The best 10 out of 13 quizzes will be accounted towards your grade, and to pass the hurdle, you will need to score at least 8 out of 10. The overall score of the weekly quizzes will need to be a minimum of 8. This is a hurdle assessment meaning that failure to meet this requirement may result in a fail grade for the unit. Students are permitted up to three absences: additional absences will require approval of Special Consideration (see below). Additional attempts will be provided in Week 13 and Week 14 for all the quizzes.

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is 11:55 pm. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration.

Assessments where Late Submissions will be accepted In this unit, late submissions will be accepted as follows

- Database Design Assignment – YES, Standard Late Penalty applies.
- Practical SQL Test – NO, unless Special Consideration is Granted

- Weekly Quizzes - NO, unless Special Consideration is Granted
- Module Exams - NO, unless Special Consideration is Granted

Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment.

Written Assessments: If you experience circumstances or events that affect your ability to complete the written assessments in this unit on time, please submit a Special Consideration request through ask.mq.edu.au.

Quiz/Module Exams: If you miss the weekly practical class during the week of a quiz/exam due to serious, unavoidable and significant disruption, contact your convenor ASAP as you may be able to attend another class that week. If it is not possible to attend another class, please submit a Special Consideration request through ask.mq.edu.au.

Weekly Quizzes: To pass the unit, you need to demonstrate ongoing development of skills and application of knowledge in 8 out of 13 of the weekly practical classes. If you miss a weekly practical class due to a serious, unavoidable and significant disruption, contact your convenor ASAP, as you may be able to attend another class that week. If it is not possible to attend another class, you should still access the class material, review it on your own time, and attempt the quiz.

Note that a Special Consideration should only be applied if you miss more than three of the weekly quizzes.

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly Quizzes	10%	Yes	11:55 PM on 22/09/2024 (weeks 1-8) & 3/11/2024 (weeks 9-13)
Database Design Assignment	20%	No	22/09/2024 11:55 PM (End of the first week of the break)
Practical SQL Test	20%	No	In Week 11 (During the registered practical)
Module Exams	50%	No	In Weeks 3, 7, 13 (During the registered practical)

Weekly Quizzes

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 4 hours
Due: **11:55 PM on 22/09/2024 (weeks 1-8) & 3/11/2024 (weeks 9-13)**

Weighting: **10%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Students must complete weekly quizzes during the semester.

NB. Since this is a hurdle assessment, in order to pass the unit you will be required to pass this assessment.

On successful completion you will be able to:

- Analyse data requirements and design and develop conceptual database models.
- Implement system models into databases, design and create simple databases for business information systems and write programs to produce interactive queries.
- Use data analysis and data modelling techniques and tools for introductory level database design and specification.
- Explain the role and nature of ethics and sustainability in the IT environment related to databases.

Database Design Assignment

Assessment Type [1]: Design Task
Indicative Time on Task [2]: 27 hours
Due: **22/09/2024 11:55 PM (End of the first week of the break)**
Weighting: **20%**

This is a group assignment. It involves designing a database using a top-down approach. You will be assessed based on the development of an entity-relationship diagram, logical transformation for a given problem description, creation of the database, and writing some basic queries.

On successful completion you will be able to:

- Analyse data requirements and design and develop conceptual database models.
- Implement system models into databases, design and create simple databases for business information systems and write programs to produce interactive queries.
- Use data analysis and data modelling techniques and tools for introductory level database design and specification.

Practical SQL Test

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 27 hours
Due: **In Week 11 (During the registered practical)**
Weighting: **20%**

This assessment is an individual practical test. This assessment will involve executing database queries to demonstrate the knowledge of SQL. You will be assessed based on the successful execution of SQL queries for given problem statements.

On successful completion you will be able to:
- Implement system models into databases, design and create simple databases for business information systems and write programs to produce interactive queries.

Module Exams

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 20 hours
Due: **In Weeks 3, 7, 13 (During the registered practical)**
Weighting: **50%**

These closed-book tests will test your knowledge on the development of a conceptual model, logical transformation, and the normalisation of tables, SQL and advanced database concepts

On successful completion you will be able to:
- Analyse data requirements and design and develop conceptual database models.
- Implement system models into databases, design and create simple databases for business information systems and write programs to produce interactive queries.
- Use data analysis and data modelling techniques and tools for introductory level database design and specification.
- Explain the role and nature of ethics and sustainability in the IT environment related to databases.

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[1] If you need help with your assignment, please contact:
- the academic teaching staff in your unit for guidance in understanding or completing this

type of assessment

- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Classes

Each week, you should attend

- a two-hour lecture and
- a two-hour practical/workshop/SGTA class (they all mean the same thing)

For details of days, times and rooms, consult the timetables webpage.

Week 1 Classes

Note that Lectures and Practical classes commence in Week 1.

You should have selected a practical class during enrolment. **You should attend the practical class in which you are enrolled**. You won't always get the class of your choice. Check availabilities via **eStudent** regularly. If ALL practical classes are full, only then, contact the convenor.

Methods of Communication

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

Texts and Materials

Lecture notes are available each week, but they are intended as an outline of the lecture only and are not a substitute for your own notes or reading of any textbook or other additional material.

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

In the table below, for each week, the lecturer and the topics to be covered are listed below. Online resources will be provided on iLearn

Week	Topic
1	Introduction to the Unit and Conceptual Data Modelling
2	Conceptual Data Modelling
3	Conceptual Data Modelling + Logical Modelling
4	Logical Modelling
5	Revision + Physical Modelling + SQL concepts - 1
6	SQL concepts - 2
7	SQL concepts - 3
8	SQL concepts - 4
9	Normalisation
10	Database Application Development
11	Industry Panel Discussion (TBC)
12	Data Warehousing, Data Quality, Big Data & Green IT

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.e du.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing an d maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://stu dents.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the Service Connect Portal, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

This unit is being offered for the first time

Computing Drop-in Centre

COMP1350 is supported by the Computing Drop-in Centre (CDC) that operates daily on weekdays from,

- 10:00 to 12:00
- 13:00 to 15:00
- 16:00 to 18:00

The web page at https://students.mq.edu.au/study/faculties/science-and-engineering/drop-in-centre contains further information including,

- location,
- the service agreement about what the centre can and cannot help you with,
- week in which the service begins,
- other units supported by the centre,
- roster (as not all time slots will have staff supporting every unit)

Unit information based on version 2024.03 of the Handbook