

# COSC265 Relational Database Systems – Course Outline

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## Introduction

The course deals with data models and database systems and has been designed to enable you to understand the theoretical basis of databases and be able to apply that knowledge in developing and using relational databases. The lectures are organized around the database design lifecycle, while in the labs students go through the process of developing small databases from given requirements. Students who achieve a good grade in the course should be able to:

- Understand the role of database systems in software applications
- Understand the database design lifecycle
- Design conceptual database schemas starting from requirements
- Use SQL to implement, query, populate, update and manage databases
- Normalize relational databases
- Design physical schemas to achieve good performance
- Understand and use a DBMS.

## Lectures, Labs and Lecturers

There will be three lectures per week (times to be announced), which will be given by Prof Tanja Mitrovic (email [tanja@cosc.canterbury.ac.nz](mailto:tanja@cosc.canterbury.ac.nz)) and Dr Miguel Morales ([miguel.morales@canterbury.ac.nz](mailto:miguel.morales@canterbury.ac.nz)). Labs will be held in CSSE labs in the Jack Erskine building.

Please consult the UC website for the latest information about the times and locations of COSC265 lectures, labs and tutorials (the CSSE Department is not responsible for scheduling these). Also, most information for the course will be made available via LEARN or on the CSSE and CIS web pages.

## Assessment

Type	Worth	Date
Assignment part 1	8%	11.8.2022, 5pm
Assignment part 2	16%	26.8.2022, 5pm
Quizzes	6%	TBA
Lab Test	20%	6 October, 7-9pm
Final exam (closed book, 2 hours)	50%	TBA

No assignments will be accepted after the drop dead date (i.e. a week after the assignment is due). The penalty for the late submission of an assignment will be an *absolute* deduction of 15% of the maximum possible mark.

In order to pass a course you must meet two requirements:

- a) The university has adopted a common scale for converting marks to grades. According to this scale, an average mark of 50% is sufficient to pass the course (i.e. to achieve a C-), with an average mark of 55% a C grade is achieved and so forth. We apply this conversion scale to the average marks students achieve over all assessment items.
  - b) You must achieve an average mark of at least 45% on the lab test and exam.
- Marks are sometimes scaled to achieve consistency between courses from year to year.

### Required text

Fundamentals of Database Systems (7<sup>th</sup> edition), Ramez Elmasri & Shamkant Navathe, Addison-Wesley, 2017. Previous editions of the same textbook are also suitable.  
The COSC265 lecture notes and all additional material will be available via Learn.

### Important documents

COSC265 handouts will be available in Learn. Notices about this course will be posted to the course forum in the Learn system (learn.canterbury.ac.nz). CSSE students will also be made members of a class called "CSSE Notices", where general notices will be posted that apply to all classes (such as information about building access or job opportunities).

There are several important documents available online about departmental regulations, policies and guidelines at the following site. We expect all students to be familiar with these.  
<http://www.cosc.canterbury.ac.nz/policy/>

### Tentative lecture/lab outline

The course is composed by 32 lectures; it means that there will be some free lecture slots across the semester.

Week	Lecture topic	Lab/Tutorial
1	Database systems, database design lifecycle	No labs
2	Conceptual database design	Tutorial 1
3	Relational data model	EER-Tutor
4	Relational algebra, SQL DDL	Tutorial 2
5	SQL Queries	Lab 1: DDL
6	SQL Queries and DML	Lab 2: Basic DML
Break		
7	SQL triggers	SQL-Tutor
8	Data normalization	Lab 3: Advanced DML
9	Physical level	Lab 4: Constraints, triggers
10	Catalog, Transaction Processing	Lab Test
11	Query optimization	Tutorial 3: Normalization
12	Course review	Tutorial 4