School of Information and Physical Sciences

COMP1140: Database and Information Management

Callaghan Semester 2 - 2023



OVERVIEW

Course Description	This course provides students with theoretical knowledge and practical skills in the use of databases and database management systems. The conceptual and logical design and implementation of relational databases are covered.	
Requisites	This course has similarities to INFT2040. If you have completed INFT2040 you cannot enrol in this course.	
Assumed Knowledge Contact Hours	Knowledge of and experience in programming. Callaghan Computer Lab * Face to Face On Campus 2 hour(s) per Week for 11 Weeks starting Week 3 Lecture Face to Face On Campus 2 hour(s) per Week for 12 Weeks starting Week 1	
Unit Weighting Workload	* This contact type has a compulsory requirement. 10 Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.	

www.newcastle.edu.au CRICOS Provider 00109J



CONTACTS

Course Coordinator

Callaghan A/Pr Suhuai Luo Suhuai.Luo@newcastle.edu.au (02) 4985 4508 Consultation: 12pm to 1pm Wednesday. Booking by email is needed.

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

School of Information and Physical Sciences SR233, Social Sciences Building Callaghan CESE-SIPS-Admin@newcastle.edu.au +61 2 4921 5513 9am-5pm (Mon-Fri)

SYLLABUS

Course Content	 Conceptual Modelling with ER Relational Model and ER to Relational Mapping Schema Refinement with Normalization based on Functional Dependencies Relational Algebra SQL Database Transactions and Concurrency Control Security, Authorisation and Access 	
Course Learning OutcomesOn successful completion of this course, students will be able to: 1. Design conceptual models encapsulating data requirements for bu organisational scenarios		
	2. Convert conceptual models to logical data models	
	3. Implement a database solution using contemporary database management systems (DBMS)	
	4. Develop expertise in database languages (e.g. SQL) including the ability to develop sophisticated queries to extract information from large datasets	
	5. Understand data security and data quality management	
Course Materials		
	Required Text:	
	Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation & Management, Addison Wesley, 6th Edition (Global), 2015, ISBN-10 1292061189, ISBN-13 97812920611840020	

Lecture Materials:

Please check the course Canvas site.



COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:

- Computer Lab There is a compulsory attendance requirement in this course. Attendance/participation will be recorded in the following components:
 - Lab (Method of recording: All students' attendance will be recorded using the myUON app.)

All students must attend at least 80% of the Labs. You can check in using the app or advise the academic staff member at the commencement of the session if you need them to check in on your behalf. All students' attendance will be recorded using the my UON app.

Course Assessment Requirements:

Assessment 5 - Formal Examination: Minimum Grade / Mark Requirement - Students must obtain a specified minimum grade / mark in this assessment item to pass the course. Students whose overall mark in the course is 50% or more, but who score less than 40% in the compulsory item and thus fail to demonstrate the required proficiency, will be awarded a Criterion Fail grade, which will show as FF on their formal transcript. However, students in this position who have scored at least 25% in the compulsory item will be allowed to undertake a supplementary 'capped' assessment in which they can score at most 50% of the possible mark for that item.

SCHEDULE

Week	Week Begins	Торіс	Learning Activity	Assessment Due
1	17 Jul	Introduction to Course,	Get familiar with course	
		DBMSs	structure and requirements	
2	24 Jul	Assignment Requirements, Tools for DBMS, Introduction to SQL	Learn and practice first step of database system design; practice on T-SQL and SQL Server	
3	31 Jul	Conceptual DB Design	Learn and practice second step of database system design; work on assignment 1	
4	7 Aug	Logical DB Design, EER/ Relational Mapping	Learn and practice third step of database system design; work on EER	
5	14 Aug	Normalisation	Practice on relation normalisation	Assignment 1 due at 11:59pm, Aug 20, Sunday
6	21 Aug	SQL (DDL + DML) with Data Management	Practice on T-SQL	
7	28 Aug	Advanced SQL and Relational Algebra	Continue practice on T-SQL	
8	4 Sep	Views, Transactions and Triggers	Study and practice several key techniques of database system	
9	11 Sep	SQL Review and Test;	Summary and test on SQL skill;	Assignment 2 due at 11:59pm, Sept 17, Sunday
10	18 Sep	Database Security & Data Access: Users, Roles, Privileges	Learn and practice other important aspects of system maintenance and the foundation of SQL programming	SQL test in the week, in your own lab;



Mid Term Break				
		Mid Terr	m Break	
11	9 Oct	Physical DB Design: Files, Indexes and Query Plans, system implementation	Learn and practice last step of database system design	
12	16 Oct	Course Summary	Course summary; assignment 3 assessment	
13	23 Oct	Review Week	No lecture, but you have to attend lab.	Assignment 3 due in your own lab
Examination Period				
Examination Period				

Note: The weekly topics and learning activities are provisional. Details might change according to circumstances.

ASSESSMENTS

This course has 5 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Assignment 1 Database Project - Description and EER model	week 5, due at 11:59pm, Aug 20, Sunday	Individual	15%	1
2	Assignment 2, Database Project - Logical Database Design	week 9, due at 11:59pm, Sept 17, Sunday	Individual	15%	2
3	Practical Test - Lab test on SQL	week 10, in your own lab;	Individual	15%	4
4	Assignment 3 - Database Project - Physical Database Design	week 13, due in your own lab	Individual	15%	3, 5
5	Final Examination*	In semester exam period.	Individual	40%	1, 2, 3, 4, 5

* This assessment has a compulsory requirement.

Late Submissions The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Assignment 1 Database Project - Description and EER model

Assessment Type	Project
Description	The stage of conceptual database design will be completed.
Weighting	15%
Due Date	week 5, due at 11:59pm, Aug 20, Sunday
Submission Method	Specific Location
	As advised on Assessment requirements Document
Assessment Criteria	As advised on Assessment requirements Document
Return Method	Specific Location
Feedback Provided	Returned Work

Assessment 2 - Assignment 2, Database Project - Logical Database Design

Assessment Type	Project
Description	The stage of logical database design will be completed.
Weighting	15%



Due Date	week 9, due at 11:59pm, Sept 17, Sunday
Submission Method	Specific Location
	As advised on Assessment requirements Document
Assessment Criteria	As advised on Assessment requirements Document
Return Method	Specific Location
Feedback Provided	Returned Work

Assessment 3 - Practical Test - Lab test on SQL

Assessment Type	Quiz
Description	Lab test on SQL
Weighting	15%
Due Date	week 10, in your own lab;
Submission Method	In Class
Assessment Criteria	As advised on Assessment requirements Document
Return Method	In Class
Feedback Provided	Returned Work

Assessment 4 - Assignment 3 - Database Project - Physical Database Design

Assessment Type	Project
Description	The stage of physical database design will be completed.
Weighting	15%
Due Date	week 13, due in your own lab
Submission Method	Specific Location
	As advised on Assessment requirements Document
Assessment Criteria	As advised on Assessment requirements Document
Return Method	Specific Location
Feedback Provided	Returned Work -

Assessment 5 - Final Examination

Assessment Type Description	Formal Examination Final formal exam
weighting	40%
Compulsory	Minimum Grade / Mark Requirement - Students must obtain a specified minimum grade /
Requirements	mark in this assessment item to pass the course
Due Date	In semester exam period.
Submission Method	Formal Exam
Assessment Criteria	
Return Method	Not Returned
Feedback Provided	No Feedback
Opportunity to	Students WILL be given the opportunity to reattempt this assessment.
Reattempt	Refer to Course Assessment Requirements for details.

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development



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	50-64	Pass (P)	 of skills*; and achievement of all learning outcomes. Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes 					
	0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.					
Attendance	 *Skills are those identified for the purposes of assessment task(s). Attendance/participation will be recorded in the following components: Computer Lab (Method of recording: All students' attendance will be recorded using the myUON app.) 							
Communication Methods	Communication methods used in this course include:							
Course Evaluation	Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.							
Oral Interviews (Vivas)	As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the <u>Oral Examination (viva)</u> <u>Procedure</u> . In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the <u>Student Conduct Rule</u> .							
Academic Misconduct	All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.							
Adverse Circumstances	 The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where: the assessment item is a major assessment item; or the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system; you are requesting a change of placement; or the course has a compulsory attendance requirement. Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at: https://policies.newcastle.edu.au/document/view-current.php?id=236 							
Important Policy Information	The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/no-room-for/policies-and-procedures that support a safe and respectful environment at the University.							



GRADUATE PROFILE STATEMENTS

The following table illustrates how this course contributes towards building the skills students will need to work in their profession.

Level of capability

- Level 1 indicates an introduction to a topic at a university level
- Levels 2 and 3 indicate progressive reinforcement of that topic
- Level 4 indicates skills commensurate with a graduate entry to professional practice
- Level 5 indicates highly specialist or professional ability

	University of Newcastle Bachelor of Computer Science Graduate Profile Statements	Taught	Practised	Assessed	Level of Capability
1	Knowledge of basic science and computer science fundamentals.	X	X	X	1
2	In depth technical competence in the discipline of computer science	X	X	X	1
3	An ability to carry out problem analysis, requirements capture, problem formulation and integrated software development for the solution of a problem.	X	x	x	1
4	Capacity to continue developing relevant knowledge, skills and expertise in computer science throughout their careers.	X	X	X	1
5	An ability to communicate effectively with other Computer Scientists, Software Engineers, other professional disciplines, managers and the community generally.				
6	Ability to undertake and co-ordinate large computer science projects and to identify problems, their formulation and solution.	X	X	X	1
7	Ability to function effectively as an individual, a team member in multidisciplinary and multicultural teams and as leader/manager with capacity to assist and encourage those under their direction.				
8	Understanding of social, cultural, global and business opportunities of the professional computer scientist; understanding the need for and principles of sustainability and adaptability	X	x		1
9	Understanding of professional and ethical responsibilities and a commitment to them.	X	X	X	1
10	Understanding of entrepreneurship; need of and process of innovation, as well as the need of and capacity for lifelong learning.	X	X	X	1

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

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