UNSW Course Outline

INFS5710 Information Technology Infrastructure for Business Analytics - 2024

Published on the 14 May 2024

General Course Information

Course Code : INFS5710
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : UNSW Business School
Academic Unit : School of Information Systems and Technology Management
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Performing business analytics functions on huge volumes of data generated from various day-to-

day operations requires a solid understanding of how data captured at the operational level can be re-structured and used at the enterprise level to gain maximum effective results.

This course will provide you with data management knowledge in both operational and analytical database systems and infrastructure aspects, including theoretical foundations as well as meaningful hands-on experience. Examples include: standard relational database issues; analytical database topics; requirements imposed by the move to big data; business analytics infrastructure and tools used with big data.

SAS software tools will be used for the skills components of the course: “SAS SQL 1: Essentials” and “Introduction to SAS and Hadoop”

Course Aims

This subject will provide you with the knowledge and skills to design, build and maintain data bases for analytics projects within an ethical framework for data privacy and management.

Relationship to Other Courses

This course covers material that is significant to the discipline of Information Systems. The course aims to give students the background of, and a process for, selecting and managing data and database solutions for business analytics. Furthermore, the course aims to develop students' conceptual and logical database design skills. Students learn how to collect, store, process, and analyse big data using tools and techniques such as SAS. Students will practice self-directed work in groups that will help them develop interpersonal communication, teamwork, project management, and quality assurance skills.

Course Learning Outcomes

Course Learning Outcomes	Program learning outcomes
CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
CLO3 : Design and assess the value of relational and non-relational database infrastructure.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
CLO4 : Evaluate and propose relevant and feasible database infrastructure solutions for specific business analytic problems.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork
CLO5 : Build and utilise database solutions to support big data analytics.	• PLO2 : Problem Solving • PLO4 : Teamwork

Course Learning Outcomes	Assessment Item
CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.	• Preparation and Participation • Individual Assignments • Team Projects • Final Exam
CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.	• Preparation and Participation • Individual Assignments • Team Projects • Final Exam
CLO3 : Design and assess the value of relational and non-relational database infrastructure.	• Preparation and Participation • Individual Assignments • Team Projects • Final Exam
CLO4 : Evaluate and propose relevant and feasible database infrastructure solutions for specific business analytic problems.	• Individual Assignments • Team Projects • Final Exam
CLO5 : Build and utilise database solutions to support big data analytics.	• Team Projects

Learning and Teaching Technologies

Moodle - Learning Management System | SAS Enterprise Guide

Learning and Teaching in this course

Database and database systems are an essential component of information systems. In all businesses activities, one often interacts with databases directly or indirectly. The proliferation of social media has necessitated widespread use of big data storages and analytics. Given these characteristics, the learning experience offered by this course will consist of lectures and laboratory sessions. A variety of activities are expected: project, programming, homework problems, and the lecture by a guest speaker from industry. Homework assignments familiarise you with the basic concepts and help you to develop critical thinking and analytical skills. Through the guest lecture, students can learn real world settings in managing big data storage. By working on the projects, students experience database design and learn how to access databases using programs for big data analytics.

Other Professional Outcomes

Students who complete the Business Analytics specialisation are eligible for SAS Certification as a Business Analyst by SAS. They must complete the following courses: INFS5700; **INFS5710 (this course)**; INFS5720 and INFS5730.

SAS Certification credentials are globally recognised as the premier means to validate SAS knowledge. With an SAS Certification credential, students will set themselves apart from others and prove that they have the SAS knowledge to make a difference within an organisation.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Preparation and Participation Assessment Format: Individual	10%	Start Date: Weekly Due Date: Weekly	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork
Individual Assignments Assessment Format: Individual	15%	Start Date: See Course Schedule Due Date: See Course Schedule	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
Team Projects Assessment Format: Group	25%	Start Date: see Course Schedule Due Date: Week 10 (see Course Schedule)	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork
Final Exam Assessment Format: Individual	50%	Start Date: TBA Due Date: TBA	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication

Assessment Details

Preparation and Participation

Assessment Overview

The assignment is designed to help the students to learn and practise SQL skills in the labs and reinforce concepts covered during lectures.

SAS and other related software, or MyAccess should be installed before coming to class.

Students acquire SQL skills using SAS Enterprise Guide in their lab sessions. Each session will encompass various problems/exercises corresponding to a specific topic (see Course Schedule). During Week 2 to 9, assessment will include active participation and possibly short quizzes during lab sessions.

Active participation encompasses multiple activities such as proposing solutions for exercises, collaborating in designated groups, energetically engaging in lab discussions, and asking and

answering questions.

- 10% is distributed evenly across Week 2 to 9 inclusive.

Course Learning Outcomes

- CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.
- CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.
- CLO3 : Design and assess the value of relational and non-relational database infrastructure.

Assessment Length

N/A

Assignment submission Turnitin type

This is not a Turnitin assignment

Individual Assignments

Assessment Overview

The individual assignment is designed to help the students' learning by practicing the skills covered in the labs and help students to prepare for a project involving big data.

Course Learning Outcomes

- CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.
- CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.
- CLO3 : Design and assess the value of relational and non-relational database infrastructure.
- CLO4 : Evaluate and propose relevant and feasible database infrastructure solutions for specific business analytic problems.

Detailed Assessment Description

The individual assignment serves as a valuable learning tool, evaluating students' skills and comprehension of concepts taught in the labs. This preparation equips them with the ability to design databases and proficiently utilise SQL, which is crucial for their future careers.

There are three individual assignments, each contributing 5% to your overall grade. Details will be released in the beginning of the term.

Assignment submission Turnitin type

Not Applicable

Team Projects

Assessment Overview

There is one major group project. The project requires you to retrieve data from big data sets provided, perform data analytics and translate your analysis to business insights.

Course Learning Outcomes

- CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.
- CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.
- CLO3 : Design and assess the value of relational and non-relational database infrastructure.
- CLO4 : Evaluate and propose relevant and feasible database infrastructure solutions for specific business analytic problems.
- CLO5 : Build and utilise database solutions to support big data analytics.

Detailed Assessment Description

There is one major ***team project*** or we simply called it a ***group assignment***. The project requires you to retrieve data from big data sets, perform data analytics and translate your analysis to business insights.

Assessment information

All submissions are due on Monday in Week 10 (see Course Schedule).

All presentations will be conducted during Tut-Lab classes in Week 10.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Final Exam

Assessment Overview

A final written examination will take place during the University Exam Period.

Course Learning Outcomes

- CLO1 : Analyse advanced issues in (both relational and non-relational) database design and management.
- CLO2 : Apply conceptual database modelling techniques (e.g., ER modelling) and normalisation techniques.
- CLO3 : Design and assess the value of relational and non-relational database infrastructure.
- CLO4 : Evaluate and propose relevant and feasible database infrastructure solutions for specific business analytic problems.

Detailed Assessment Description

A final written examination will take place during the University Exam Period.

Assignment submission Turnitin type

This is not a Turnitin assignment

General Assessment Information

As a student at UNSW you are expected to display academic integrity in your work and interactions. Where a student breaches the UNSW Student Code with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the Working with Academic Integrity module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

You are expected to complete all assessment tasks for your courses in the School of Information Systems and Technology Management. Classes are highly practical and relevant to your assessments, so you are expected to attend at least 80% of all scheduled classes.

Where group assignments are used, team members are expected to work in a harmonious and professional fashion, which includes adequate management of non-performing members. You should inform your tutor as soon as possible if you experience problems within a project team. You may be required to evaluate the contribution of each team member (including yourself) in group work and marks for individual students may be adjusted based on peer assessment.

Grading Basis

Standard

Requirements to pass course

In order to pass this course, you must:

- achieve a composite mark of at least 50 out of 100;
- meet any additional requirements described in the Assessment Summary section.

You are expected to attempt all assessment requirements in the course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Lecture	Introduction to Database Systems
	Tut-Lab	Introduction to SAS and SAS Environment
Week 2 : 3 June - 9 June	Lecture	Data Concepts
	Tut-Lab	SQL Basic Queries
	Assessment	Assignment 1 handed out (on Sunday 9 June)
Week 3 : 10 June - 16 June	Lecture	No lecture (Public holiday) - Self-reading materials to be provided.
	Tut-Lab	SQL Displaying Queries
Week 4 : 17 June - 23 June	Lecture	Advanced Data Modeling
	Tut-Lab	SQL Joins
	Assessment	Assignment 1 due (Friday)
Week 5 : 24 June - 30 June	Lecture	Normalisation
	Tut-Lab	Review & Exercise Quiz as Assignment 2
	Assessment	Assignment 2 assessed in your tutorial session using a quiz Group project handed out
Week 6 : 1 July - 7 July	Lecture	Business Intelligence and Data Warehousing
	Tut-Lab	Subquery Data cleaning SAS Enterprise Guide Feature
	Assessment	Assignment 3 handed out (Monday)
Week 7 : 8 July - 14 July	Lecture	Business Inteligence and Data Warehousing in Real World (Guest Lecture)
	Tut-Lab	Data cleaning SAS Enterprise Guide Feature Subqueries
Week 8 : 15 July - 21 July	Lecture	Distributed Database Management
	Tut-Lab	Set Operators
	Tut-Lab	Assignment 3 due (Monday)
Week 9 : 22 July - 28 July	Lecture	Big Data (MapReduce and NoSQL)
	Tut-Lab	Review Project Q&A
Week 10 : 29 July - 4 August	Lecture	Guest lecture (TBA) and Course Review
	Tut-Lab	Group Project Presentation
	Assessment	Group Project due (Monday)

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Note: for more information on the UNSW academic calendar and key dates including study period, exam, supplementary exam and result release, please visit: https://student.unsw.edu.au/new-calendar-dates.

Course Resources

Prescribed Resources

The required textbook for this course is:

- Carlos Coronel and Steven Morris, (2023), **Database Systems: Design, Implementation, & Management** [14e]. Cengage Learning, Independence, KY, USA. (ISBN-13: 9780357673034)

Note: eBook version of the textbook is also available from the UNSW Bookshop (see *https://www.bookshop.unsw.edu.au*).

Recommended Resources

Students will use SAS Enterprise Guide in this course. The recommended system requirements for this course are:

- Computer system: Microsoft Windows computer system currently supported by Microsoft that runs an x86_64-compatible processor.
- At least 8GB of RAM and at least 30GB of the device storage.
- Administrator access, to be able to install required course software without permission errors.
- If you do not have a Microsoft Windows computer system but you have an alternative such as Apple MacOS computer system currently supported by Apple, you can install MyAccess (myAccess | AAA | (unsw.edu.au)). The other option is to use one of the PCs in the Business School.

Additional information regarding course resources will be provided.

Student Support and Resources:

The University and the Business School provide a wide range of support services and resources for students, including:

Business School Learning Support Tools

Business School provides support a wide range of free resources and services to help students in-class and out-of-class, as well as online. These include:

- Academic Communication Essentials – A range of academic communication workshops, modules and resources to assist you in developing your academic communication skills.
- Learning consultations – Meet learning consultants who have expertise in business studies, literacy, numeracy and statistics, writing, referencing, and researching at university level.
- Educational Resource Access Scheme – To support the inclusion and success of students from equity groups enrolled at UNSW Sydney in first year undergraduate Business programs.

The Nucleus - Business School Student Services team

The Nucleus Student Services team provides advice and direction on all aspects of enrolment and graduation. Level 2, Main Library, Kensington 02 8936 7005 / https://nucleus.unsw.edu.au/en/contact-us

Business School Equity, Diversity and Inclusion

The Business School Equity, Diversity and Inclusion Committee strives to ensure that every student is empowered to have equal access to education. The Business School provides a vibrant, safe, and equitable environment for education, research, and engagement that embraces diversity and treats all people with dignity and respect. BUSEDI@unsw.edu.au

UNSW Academic Skills

Resources and support – including workshops, individual consultations and a range of online resources – to help you develop and refine your academic skills. See their website for details.
academicskills@unsw.edu.au

Student Support Advisors

Student Support Advisors work with all students to promote the development of skills needed to succeed at university, whilst also providing personal support throughout the process.
John Goodsell Building, Ground Floor.
advisors@unsw.edu.au
02 9385 4734

International Student Support

The International Student Experience Unit (ISEU) is the first point of contact for international students. ISEU staff are always here to help with personalised advice and information about all aspects of university life and life in Australia.
Advisors can support you with your student visa, health and wellbeing, making friends, accommodation and academic performance.
International.student@unsw.edu.au
02 9385 4734

Equitable Learning Services

Equitable Learning Services (formerly Disability Support Services) is a free and confidential service that provides practical support to ensure that your health condition doesn't adversely affect your studies. Register with the service to receive educational adjustments.
Ground Floor, John Goodsell Building.

els@unsw.edu.au
02 9385 4734

UNSW Counselling and Psychological Services

Provides support and services if you need help with your personal life, getting your academic life back on track or just want to know how to stay safe, including free, confidential counselling.
Level 2, East Wing, Quadrangle Building.
counselling@unsw.edu.au
02 9385 5418

Library services and facilities for students

The UNSW Library offers a range of collections, services and facilities both on-campus and online.
Main Library, F21.
02 9065 9444

Moodle eLearning Support

Moodle is the University's learning management system. You should ensure that you log into Moodle regularly.
externalteltsupport@unsw.edu.au
02 9385 3331

UNSW IT

UNSW IT provides support and services for students such as password access, email services, wireless services and technical support.
UNSW Library Annexe (Ground floor).
02 9385 1333

Course Evaluation and Development

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the myExperience survey, which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

In this course, we will seek your feedback through end-of-term myExperience responses.

Feedback will also be encouraged throughout the term via collaborative platforms and in-class discussions. This feedback will be taken into consideration and applied where appropriate.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Chung-Li Tseng		Quad 2087	+61 2 9385-9704	TBA	No	Yes
Head tutor	Wenjie Huang					No	No
Tutor	Hijab Alavi					No	No
	James Cheng					No	No
	Samuel Chen					No	No
	Yihuan Liao					No	No
	Chengbin Feng					No	No
	Bushra Naeem					No	No

Other Useful Information

Academic Information

COURSE POLICIES AND SUPPORT

The Business School expects that you are familiar with the contents of this course outline and the UNSW and Business School learning expectations, rules, policies and support services as listed below:

- Program Learning Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Protocol for Viewing Final Exam Scripts
- Student Learning Support Services

Further information is provided on the key policies and support page.

Students may not circulate or post online any course materials such as handouts, exams, syllabi or similar resources from their courses without the written permission of their instructor.

STUDENT LEARNING OUTCOMES

The Course Learning Outcomes (CLOs) – under the Outcomes tab – are what you should be

able to demonstrate by the end of this course, if you participate fully in learning activities and successfully complete the assessment items.

CLOs also contribute to your achievement of the Program Learning Outcomes (PLOs), which are developed across the duration of a program. PLOs are, in turn, directly linked to UNSW graduate capabilities. More information on Coursework PLOs is available on the key policies and support page. For PG Research PLOs, including MPDBS, please refer to the UNSW HDR Learning Outcomes.

Academic Honesty and Plagarism

As a student at UNSW you are expected to display academic integrity in your work and interactions. Where a student breaches the UNSW Student Code with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the Working with Academic Integrity module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

Submission of Assessment Tasks

SPECIAL CONSIDERATION

You can apply for special consideration when illness or other circumstances beyond your control interfere with your performance in a specific assessment task or tasks, including online exams. Students studying remotely who have exams scheduled between 10pm and 7am local time, are also able to apply for special consideration to sit a supplementary exam at a time outside of these hours.

Special consideration is primarily intended to provide you with an extra opportunity to demonstrate the level of performance of which you are capable. To apply, and for further information, see Special Consideration on the UNSW Current Students page.

Special consideration applications will be assessed centrally by the Case Review Team, who will update the online application with the outcome and add any relevant comments. The change to

the status of the application immediately sends an email to the student and to the assessor with the outcome of the application.

Please note the following:

1. Applications can only be made through Online Services in myUNSW (see the UNSW Current Students page). Applications will not be accepted by teaching staff. The lecturer-in-charge/ course coordinator will be automatically notified when your application is processed.
2. Applying for special consideration does not automatically mean that you will be granted a supplementary exam or other concession.
3. If you experience illness or misadventure in the lead up to an exam or assessment, you must submit an application for special consideration, either prior to the examination taking place, or prior to the assessment submission deadline, except where illness or misadventure prevent you from doing so.
4. If your circumstances stop you from applying before your exam or assessment due date, you must apply within 3 working days of the assessment or the period covered by your supporting documentation.
5. Under the UNSW Fit To Sit/Submit rule, if you sit the exam/submit an assignment, you are declaring yourself well enough to do so and are cannot subsequently apply for special consideration.
6. If you become unwell on the day of – or during – an exam, you must stop working on your exam, advise your course coordinator or tutor and provide a medical certificate dated within 24 hours of the exam, with your special consideration application. For online exams, you must contact your course coordinator or tutor immediately via email, Moodle or chat and advise them you are unwell and submit screenshots of your conversation along with your medical certificate and application.
7. Special consideration requests do not allow the awarding of additional marks to students.

Further information on Business School policy and procedure can be found under “Special Consideration” on the key policies and support page.

LATE SUBMISSION PENALTIES

For assessments other than examinations, late submission will incur a penalty of 5% per day or part thereof (including weekends) from the due date and time. An assessment will not be accepted after 5 days (120 hours) of the original deadline unless special consideration has been approved. An assignment is considered late if the requested format, such as hard copy or electronic copy, has not been submitted on time or where the ‘wrong’ assignment has been submitted.

For assessments which account for 10% or less of the overall course grade, and where answers

are immediately discussed or debriefed, the LIC may stipulate a different penalty. Details of such late penalties will be available on the course Moodle page.

FEEDBACK ON YOUR ASSESSMENT TASK PERFORMANCE

Feedback on student performance from formative and summative assessment tasks will be provided to students in a timely manner. Assessment tasks completed within the teaching period of a course, other than a final assessment, will be assessed and students provided with feedback, with or without a provisional result, within 10 working days of submission, under normal circumstances. Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

Faculty-specific Information

PROTOCOL FOR VIEWING FINAL EXAM SCRIPTS

UNSW students have the right to view their final exam scripts, subject to a small number of very specific exemptions. The UNSW Business School has set a protocol under which students may view their final exam script. Individual schools within the Faculty may also set up additional local processes for viewing final exam scripts, so it is important that you check with your School.

If you are completing courses from the following schools, please note the additional school-specific information:

- Students in the **School of Accounting, Auditing & Taxation** who wish to view their final examination script should also refer to this page.
- Students in the **School of Banking & Finance** should also refer to this page.
- Students in the **School of Information Systems & Technology Management** should also refer to this page.

COURSE EVALUATION AND DEVELOPMENT

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the myExperience survey, which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

QUALITY ASSURANCE

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

TEACHING TIMES AND LOCATIONS

Please note that teaching times and locations are subject to change. Students are strongly advised to refer to the Class Timetable website for the most up-to-date teaching times and locations.