**UNSW Course Outline**

# INFS2822 Programming for Data Analytics - 2024

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## General Course Information

**Course Code :**  INFS2822
**Year :**  2024
**Term :**  Term 3
**Teaching Period :**  T3
**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 :**  Undergraduate
**Units of Credit :**  6

Useful Links

[Handbook](#) [Class Timetable](#)

## Course Details & Outcomes

### Course Description

This is an intermediate (Level 2) Information Systems (IS) course. It introduces students to important concepts, techniques, and technology solutions relevant to programming for data analytics. This encompasses both programming solutions for the purpose of conducting data

analytics as well as programming supported by analytics systems (e.g. data-informed / data-driven application development). Course content is presented through three learning modules. These include Python syntax, business data processing, and managerial issues.

In Module 1, students systematically study Python syntax. In Module 2, students learn how to analyse business data using Python. This module teaches from the basics of data analytics to exploring many different types of business data. Students learn how to prepare data for analytics, perform simple statistical analysis, create meaningful data visualisations, and predict future trends from data. In Module 3, the course introduces students to emerging technologies as well as the social, legal, and ethical issues relevant to the technologies discussed in this course. Throughout the course, students are introduced to a number of Python libraries for data analytics.

# Course Aims

This course covers material that is significant to the discipline of Information Systems. This course develops students' ability to work individually in solving problems through the application of programming concepts to design. Overall, this course aims to provide students with various concepts and skills that are essential in careers such as project managers, business analysts, systems analysts, designers and developers.

# Relationship to Other Courses

This course is essential to the discipline of Information Systems, equipping students with the ability to apply programming concepts to solve problems independently. It aims to develop key skills and knowledge that are critical for careers such as project managers, business analysts, systems analysts, designers, and developers.

This course requires students to have already completed COMM1190 or INFS1603 or (COMM1822 or COMM2822).

# Course Learning Outcomes

| Course Learning Outcomes | Program learning outcomes |
|---|---|
| CLO1 : Develop ability to interpret and write Python code for the management, manipulation and processing of data. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication |
| CLO2 : Describe and apply programming technologies for generating insights from business data. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication |
| CLO3 : Demonstrate ability to effectively perform data analysis as part of a team using real-world data. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication |
| CLO4 : Demonstrate knowledge and implementation of ethical, legal, and social considerations related to business data processing, as well as insights into various technologies and techniques. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication<br>• PLO4 : Teamwork<br>• PLO5 : Responsible Business Practice<br>• PLO6 : Global and Cultural Competence<br>• PLO7 : Leadership Development |
| CLO5 : Synthesise data analysis results and communicate the findings effectively. | • PLO2 : Problem Solving<br>• PLO4 : Teamwork |

| Course Learning Outcomes | Assessment Item |
|---|---|
| CLO1 : Develop ability to interpret and write Python code for the management, manipulation and processing of data. | • Tutorial Exercise<br>• Group Assignment<br>• Final Exam |
| CLO2 : Describe and apply programming technologies for generating insights from business data. | • Tutorial Exercise<br>• Group Assignment<br>• Final Exam |
| CLO3 : Demonstrate ability to effectively perform data analysis as part of a team using real-world data. | • Group Assignment |
| CLO4 : Demonstrate knowledge and implementation of ethical, legal, and social considerations related to business data processing, as well as insights into various technologies and techniques. | • Tutorial Exercise<br>• Final Exam<br>• Group Assignment |
| CLO5 : Synthesise data analysis results and communicate the findings effectively. | • Tutorial Exercise<br>• Final Exam<br>• Group Assignment |

# Learning and Teaching Technologies

Moodle - Learning Management System | EdStem | Zoom

# Learning and Teaching in this course

Each lecture will introduce and outline the key concepts and methods covered in the course. Each week, the lecturer will start by reviewing and clarifying previously discussed materials before introducing a new topic. Relevant study materials will be highlighted, and students will be given programming exercises to complete before the next week's lecture and lab.

# Assessments

## Assessment Structure

| Assessment Item | Weight | Relevant Dates | Program learning outcomes |
|---|---|---|---|
| Tutorial Exercise Assessment Format: Individual | 20% | Start Date: Please refer to Moodle for more information. Due Date: Please refer to Moodle for more information. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication<br>• PLO6 : Global and Cultural Competence |
| Group Assignment Assessment Format: Group | 30% | Start Date: Please refer to Moodle for more information. Due Date: Please refer to Moodle for more information. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication<br>• PLO4 : Teamwork<br>• PLO5 : Responsible Business Practice<br>• PLO6 : Global and Cultural Competence<br>• PLO7 : Leadership Development |
| Final Exam Assessment Format: Individual | 50% | Start Date: University exams period. Due Date: University exams period. | • PLO1 : Business Knowledge<br>• PLO2 : Problem Solving<br>• PLO3 : Business Communication<br>• PLO5 : Responsible Business Practice<br>• PLO6 : Global and Cultural Competence |

## Assessment Details

### Tutorial Exercise

#### Assessment Overview

Tutorial Exercise is a weekly activity to work with technical aspects of the course including coding⬚ irPython, etc. They are assessed on the basis of students' efforts.

Assesses: PLO1, PLO2, PLO3, PLO6

## Course Learning Outcomes

- CLO1 : Develop ability to interpret and write Python code for the management, manipulation and processing of data.
- CLO2 : Describe and apply programming technologies for generating insights from business data.
- CLO4 : Demonstrate knowledge and implementation of ethical, legal, and social considerations related to business data processing, as well as insights into various technologies and techniques.
- CLO5 : Synthesise data analysis results and communicate the findings effectively.

## Detailed Assessment Description

Tutorial Exercise will be submitted using the online Learning Management System (LMS) called Edstem.org. Students will be provisioned with an Edstem.org login in Week 1.

## Assessment Length

TBA

## Submission notes

Please refer to Moodle for more information.

## Assignment submission Turnitin type

This is not a Turnitin assignment

## Generative AI Permission Level

### Assistance with Attribution

This assessment requires you to write/create a first iteration of your submission yourself. You are then permitted to use generative AI tools, software or services to improve your submission in the ways set out below.

Any output of generative AI tools, software or services that is used within your assessment must be attributed with full referencing.

If outputs of generative AI tools, software or services form part of your submission and are not appropriately attributed, your Convenor will determine whether the omission is significant. If so, you may be asked to explain your submission. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

For more information on Generative AI and permitted use please see here.

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where students use ChatGPT or

any Generative AI tool in their work, this must be appropriately cited according to discipline norms, e.g., right below the written paragraph that used Generative AI, or included in appendix.

# Group Assignment

### Assessment Overview

Successfully completing this group assignment requires students to effectively apply the knowledge learned from lectures and tutorials, perform independent research, and work effectively in a group to create practical, relevant and comprehensive solutions that demonstrate potentials to address the real-world problems. Details about the assignment will be released in Week 2.

Assesses: PLO1, PLO2, PLO3, PLO4, PLO5, PLO6, PLO7

### Course Learning Outcomes

- CLO1 : Develop ability to interpret and write Python code for the management, manipulation and processing of data.
- CLO2 : Describe and apply programming technologies for generating insights from business data.
- CLO3 : Demonstrate ability to effectively perform data analysis as part of a team using real-world data.
- CLO4 : Demonstrate knowledge and implementation of ethical, legal, and social considerations related to business data processing, as well as insights into various technologies and techniques.
- CLO5 : Synthesise data analysis results and communicate the findings effectively.

### Detailed Assessment Description

In this assessment task, you will take the role of a data analyst and prepare a technical report for an organisation to detail your analytics of a dataset of interest. The task is designed to test your programming skills and understanding of data analytics and overall problem-solving skills. You and your teammates will present your findings and analysis through a written report and a pitch. Details of the Group Assignment will be released on Moodle.

### Assessment Length

TBA

### Submission notes

Please refer to Moodle for more information.

### Assessment information

Students are expected to plan ahead and manage the workload even if a group member is

absent. Extensions will NOT be granted for the group assignment.

<u>Assignment submission Turnitin type</u>

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

<u>Generative AI Permission Level</u>

**Assistance with Attribution**

This assessment requires you to write/create a first iteration of your submission yourself. You are then permitted to use generative AI tools, software or services to improve your submission in the ways set out below.

Any output of generative AI tools, software or services that is used within your assessment must be attributed with full referencing.

If outputs of generative AI tools, software or services form part of your submission and are not appropriately attributed, your Convenor will determine whether the omission is significant. If so, you may be asked to explain your submission. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.

For more information on Generative AI and permitted use please see here.

As AI applications continue to develop, and technology rapidly progresses around us, we remain committed to our values around academic integrity at UNSW. Where students use ChatGPT or any Generative AI tool in their work, this must be appropriately cited according to discipline norms, e.g., right below the written paragraph that used Generative AI, or included in appendix.

# Final Exam

<u>Assessment Overview</u>

A formal examination will take place during the University Exam Period. The examination is worth 50% of the total marks for this course. You must plan to be available for the full examination period to attend the final exam. In addition, you should also ensure that you will be available for a supplementary examination in the event of illness or misadventure. All material covered in lectures, tutorials, exercises, and set readings is examinable. All exams are conducted in accordance with the UNSW Rules for the Conduct of Examinations and it is your responsibility to be familiar with these rules.

Assesses: PLO1, PLO2, PLO3, PLO5, PLO6

## Course Learning Outcomes

- CLO1 : Develop ability to interpret and write Python code for the management, manipulation and processing of data.
- CLO2 : Describe and apply programming technologies for generating insights from business data.
- CLO4 : Demonstrate knowledge and implementation of ethical, legal, and social considerations related to business data processing, as well as insights into various technologies and techniques.
- CLO5 : Synthesise data analysis results and communicate the findings effectively.

## Detailed Assessment Description

The Final Exam would cover all the concepts, contents, and materials in this course. Details will be available on Moodle.

## Assessment Length

TBA

## Submission notes

To be confirmed.

## Assignment submission Turnitin type

This is not a Turnitin assignment

## Generative AI Permission Level

**No Assistance**

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see here.

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

# Course Schedule

| Teaching Week/Module | Activity Type | Content |
|---|---|---|
| Week 1 : 9 September - 15 September | Lecture | Introduction + Python Fundamentals Part I |
| | Laboratory | Lab exercises based on lecture topics |
| Week 2 : 16 September - 22 September | Lecture | Python Fundamentals Part II |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 2 |
| Week 3 : 23 September - 29 September | Lecture | Python Fundamentals Part III |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 3 |
| Week 4 : 30 September - 6 October | Lecture | Python Fundamentals Part IV |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 4 |
| Week 5 : 7 October - 13 October | Lecture | Data Exploration and Manipulation |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 5 |
| Week 6 : 14 October - 20 October | Lecture | No Lecture in the Flexibility Week |
| | Laboratory | No Lab in the Flexibility Week |
| Week 7 : 21 October - 27 October | Lecture | Data Insights |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 7 |
| Week 8 : 28 October - 3 November | Lecture | File Operations |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 8 |
| Week 9 : 4 November - 10 November | Lecture | Advanced Topic 1 |
| | Laboratory | Lab exercises based on lecture topics |
| | Assessment | Assessment Due - Tutorial Exercise Week 9 |
| Week 10 : 11 November - 17 November | Lecture | Advanced Topic 2 + Course Review |
| | Laboratory | Project Presentation (Note: Attendance is mandatory.) |
| | Assessment | Assessment Due - Group Assignment: Written Report and Presentation |

# Attendance Requirements

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

# Course Resources

## Prescribed Resources

Students are advised that the recommended system requirements for this course are:

- Computer system: any Apple MacOS computer system currently supported by Apple; OR any Microsoft Windows computer system currently supported by Microsoft that runs an x86 or x64-compatible processor. Alternatives such as Apple iPad, Android Tablet, and Snapdragon devices (e.g., Microsoft Surface X tablet, Samsung Book S) are NOT fully supported by the teaching team

at this stage.

- 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 have any doubts or if you have a device that only partially fulfills the above requirements, please contact the lecturer.

Additional information regarding course resources will be provided on Moodle.

# Staff Details

| Position | Name | Email | Location | Phone | Availability | Equitable Learning Services Contact | Primary Contact |
|----------|------|-------|----------|-------|--------------|-------------------------------------|-----------------|
| Convenor | Kam-Fung (Henry) Cheung | | Level 2, West Wing, Quadrangle Building (E15) | +61 2 9348 1401 | Wednesdays 10:00 – 11:00 Sydney Time (email for appointments) | Yes | Yes |

# 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 Policies and Guidelines 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 Policies and Guidelines page. For PG Research PLOs, including MPDBS, please refer to 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 Code of Conduct with respect to academic integrity, the University may take disciplinary action. 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 Code of Conduct, 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

SHORT EXTENSIONS

Short Extension is a new process that allows you to apply for an extended deadline on your assessment without the need to provide supporting documentation, offering immediate approval during brief, life-disrupting events. Requests are automatically approved once submitted.

Short extensions are ONLY available for some assessments. Check your course outline or Moodle to see if this is offered for your assessments. Where a short extension exists, all students enrolled in that course in that term are eligible to apply. Further details are available the UNSW Current Students page.

## 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. Special consideration is primarily intended to provide you with an extra opportunity to demonstrate the level of performance of which you are capable.

Applications can only be made online and will NOT be accepted by teaching staff. 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. The majority of applications will be processed within 3-5 working days.

For further information, and to apply, see Special Consideration on the UNSW Current Students 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. In the case of an approved Equitable Learning Plan (ELP) provision, special consideration or short extension, the late penalty applies from the date of approved time extension. After five days from the extended deadline, the assessment cannot be submited.

An assessment is considered late if the requested format, such as hard copy or electronic copy, has not been submitted on time or where the 'wrong' assessment 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.