School of Science, Computing and Emerging Technologies

Unit Outline

COS80023

Big Data

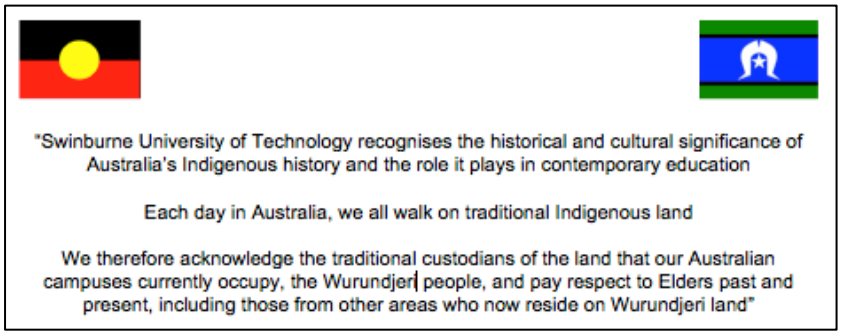
Semester 2 2025

Please read this Unit Outline carefully. It includes:

PART A Unit summary

PART B Your Unit in more detail

PART C Further information



PART A: Unit Summary

Unit Code(s)		COS80023
Unit Title		Big Data
Duration		One Semester or Equivalent
Total Contact Hours		48 hours
Requisites:		
	Pre-requisites	Postgraduate: Admission to MA-ITPC1 Master of Information Technology (Professional Computing) or INF60009 Database Analysis and Design or COS60009 Data Management for the Big Data Age and COS60006 Introduction to Programming or COS60010 Technology Inquiry Project or TNE60003 Introduction to Network Programming Undergraduate: COS10009 Introduction to Programming and COS20015 Fundamentals of Data Management or INF10002 Database Analysis and Design or INF10025 Data Management and Analytics
	Co-requisites	none
	Concurrent pre-requisites	none
	Anti-requisites	none
	Assumed knowledge	none

Credit Points	12.5
Campus/Location	Hawthorn
Mode of Delivery	Blended
Assessment Summary	Portfolio 100%

Aims

This unit enables students to understand the nature of Big Data, and to evaluate and apply solutions to the problems of storing, integrating and analysing heterogeneous data sets with varying degrees of structure from diverse sources using the appropriate tools in order to extract meaningful information.

Unit Learning Outcomes

Students who successfully complete this unit can:

1. Discuss the challenges and opportunities of Big Data including but not limited to computation, privacy and security in the context of its potential for organisations.
2. Propose efficient solutions to address complex problems for the storage and management of large data sets considering issues such as privacy and security of the data stored.
3. Use efficient tools to query diverse forms of data storage, such as NoSQL data sources.
4. Compare and apply technologies and algorithms to extract and integrate information from data sets with varying degrees of structure taking into consideration such as privacy and security.
5. Appraise the quality and fitness for purpose of the information extracted, using suitable statistical methods.

Graduate Attributes

The Swinburne Graduate Attributes describe the capability of our graduates to use knowledge, skills and behaviours to contribute to society meaningfully and positively. They include professional, self-directed learning and future-ready skills.

This unit contributes to the development of the following Swinburne Graduate Attributes:

- GA1 Communication - Verbal communication:
- GA2 Communication - Communicating using different media:
- GA5 Digital literacies– Information literacy:
- GA6 Digital Literacies– Technical literacy:

Other graduate attributes may be practised in the unit but are not formally taught as part of the unit content, nor incorporated within formal assessment.

Content

- Big Data, its nature, challenges and opportunities including but not limited to computation, privacy and security
- Storage and management technologies as well as challenges such as privacy and security
- Query tools

- Tools and techniques for extraction of information from structured and unstructured data
- Integration of data/information from diverse sources considering the security and privacy of data
- Statistical methods for information extraction and quality evaluation

PART B: Your Unit in more detail

Unit Improvements

Feedback provided by previous students through the Student Survey has resulted in improvements that have been made to this unit. Recent improvements include:

- Hurdle test was removed
- D/HD Project changed to group project
- Narrowed project topic and added approval process

Unit Teaching Staff

Name	Role	Room	Email / Teams	Consultation Times
Irene Moser	Unit Convenor	EN504	imoser@swin.edu.au	Appointment
Afzaal Hassan	Tutor	-	afzaalhassan@swin.eed.au	Appointment
Ahmed Shahid	Tutor	-	ashahid@swin.edu.au	Appointment

Learning and Teaching Structure

Category	Activity	Total Hours	Hours per Week	Teaching Period Weeks
Online	Lecture recording	12 hours	1 hours	Weeks 1 to 12
Live Online	Lecture	12 hours	1 hour	Weeks 1 to 12
In person	Class	24 hours	2 hours	Every week

Week by Week Schedule

[This section is designed to be sufficiently generic to accommodate traditional, blended and online classes. You can modify for your unit.]

Week	Week Beginning	Teaching and Learning Activity	Student Task or Assessment
1	4 August	Unit structure and expectations Big Data – Opportunities and Challenges	Start Pass Task 1
2	11 August	Big Data Storage Introduction to Azure	Complete Task 1 (marked '1' on Canvas) Start Pass Task 2
3	28 August	Big Data Processing and ETL	Complete Task 2 (marked '1' on Canvas) Start Pass Task 3
4	25 August	Big Data Parallelisation and Distribution	Complete Task 3 (marked '1' on Canvas)

			Start Pass Task 4
5	1 Sept	Big Data Information Retrieval	Complete Task 4 (marked '1' on Canvas) Start Pass Task 5
6	8 Sept	Industry speaker	Complete Task 5 (marked '1' on Canvas) Start Credit Task 6*
	15 Sept	Mid-semester bread	
7	22 Sept	Big Data Machine Learning	Complete Task 6 (marked '1' on Canvas)* Start Pass Task 7
8	29 Sept	Big Data Classifiers	Complete Task 7 (marked '1' on Canvas) Start Pass Task 8
9	6 Oct	Big Data – Natural Language Processing	Complete Task 8 (marked '1' on Canvas) Start Pass Task 9
10	13 Oct	Big Data – Advanced topics and D/HD topics	Complete Task 9 (marked '1' on Canvas) Start Credit Task 10* Submit a proposal for D/HD work*
11	20 Oct	D/HD project consultation	Complete Task 10 (marked '1' on Canvas)* Work on D/HD project*
12	27 Oct	D/HD project consultation	Work on D/HD project* Complete learning summary report if you have not done this earlier

(*optional)

Assessment

a) Assessment overview

[List assessment tasks. These must be consistent with the accredited Unit Details in Atlas]

Tasks and Details	Individual or Group	Weighting	Mapped Unit Learning Outcomes	Mapped Graduate Attributes	Assessment Due Date
1. Portfolio for Pass and Credit level	Individual	100%	1, 2, 3, 4, 5	1,2,5,6	Weekly due dates
2. Portfolio for Distinction and High Distinction level	Group	100%	1, 2, 3, 4, 5	1,2,5,6	7 November 2025

Assessment Requirements	Details
b) Use of generative AI (genAI) in this unit	The valid use of genAI in this unit is as follows: • The Pass and Credit tasks in this unit should be completed entirely without genAI assistance. • D/HD Project: genAI may be used for selecting models, creating results, and generating code. You must be able to explain all lines of your code, their purpose and the part they play in achieving the result. Any use of genAI must be acknowledged, with prompts and outputs included in an appendix.
c) Hurdle requirements	Completing all Pass tasks (having them all marked '1' on Canvas) and submitting the learning summary report is the minimum pass requirement. No hurdle.
d) Final assessment period	If the unit you are enrolled in has a final assessment (including invigilated exams), you will be expected to be available for the entire final assessment period including any Special Exam period. If you are preparing a D/HD report, you have to be available for the interview, to be held after the end of semester.
e) Submission requirements	Pass and Credit task reports as well as the D/HD group report are submitted online through the Canvas assessment submission system which integrates with Turnitin . Please ensure you keep a copy of all assessments that are submitted. Submission All tasks, including the test, and the portfolio must be submitted to Canvas on time . The tasks and test have to be marked as correct ('1') on Canvas to count towards the portfolio . The tutor will not mark a task as correct without discussing it at least once with the student.
f) Extensions and late submissions	Tasks will be marked during the tutorial sessions in the week they are due. If a task is submitted later than a week after the tutorial it is due, this may affect the mark for the portfolio. Late Submissions - If Pass tasks are submitted after the due date, the student will still be given a possibility of explaining their work and having it marked if they present (not submit) it before the end of week 12. However, a student can only expect to receive help with a task and opportunities to fix their solutions until the due date.

g) Referencing	To avoid breaching academic integrity, you are required to provide references whenever you include information from other sources in your work and acknowledge when you have used Artificial Intelligence (AI) tools (such as ChatGPT). Further details regarding academic integrity are available in Section C of this document. Referencing conventions required for this unit are: Harvard Style Referencing Helpful information on referencing can be found at http://www.swinburne.edu.au/library/referencing/
h) Groupwork guidelines	A group assignment is the collective responsibility of the entire group, and if one member is temporarily unable to contribute, the group should be able to reallocate responsibilities to keep to schedule. In the event of longer-term illness or other serious problems involving a member of group, it is the responsibility of the other members to notify immediately the Unit Convenor or relevant tutor. Group project reports must use the template provided, signed by all members of the group. Missing signatures are interpreted as lack of contribution by the team member. All group members must be satisfied that the work has been correctly submitted. Any penalties for late submission will generally apply to all group members, not just the person who submitted.

Required Textbook(s)

No required textbooks.

Recommended Reading Materials

Swinburne Library has a large collection of resources. Listed below are some references that will provide valuable supplementary information to this unit. It is also recommended that you explore other sources to broaden your understanding.

PART C: FURTHER INFORMATION

For further information on any of these topics, refer to Swinburne's Student webpage http://www.swinburne.edu.au/student/

Student behaviour and wellbeing

All students are expected to: act with integrity, honesty and fairness; be inclusive, ethical and respectful of others; and appropriately use University resources, information, equipment and facilities. All students are expected to contribute to creating a work and study environment that is safe and free from bullying, violence, discrimination, sexual harassment, vilification and other forms of unacceptable behaviour.

The Student Charter describes what students can reasonably expect from Swinburne in order to enjoy a quality learning experience. The Charter also sets out what is expected of students with regards to your studies and the way you conduct yourself towards other people and property.

You are expected to familiarise yourself with University regulations and policies and are obliged to abide by these, including the Student Academic Misconduct Regulations, Student General Misconduct Regulations and the People, Culture and Integrity Policy. Any student found to be in breach of these may be subject to disciplinary processes.

Examples of expected behaviours are:

- conducting yourself in teaching areas in a manner that is professional and not disruptive to others
- following specific safety procedures in Swinburne laboratories, such as wearing appropriate footwear and safety equipment, not acting in a manner which is dangerous or disruptive (e.g. playing computer games), and not bringing in food or drink
- following emergency and evacuation procedures and following instructions given by staff/wardens in an emergency response.

Canvas

You should regularly log on to the Swinburne learning management system, Canvas. You can access Canvas via the Student login webpage or https://swinburne.instructure.com/ Canvas is updated regularly with important unit information and communications.

Communication

All communication will be via your Swinburne email address. If you access your email through a provider other than Swinburne, then it is your responsibility to ensure that your Swinburne email is redirected to your private email address.

Academic Integrity

Academic integrity is about taking responsibility for your learning and submitting work that is honestly your own. It means acknowledging the ideas, contributions and work of others; referencing your sources and acknowledging the use of generative artificial intelligence;

contributing fairly to group work; and completing tasks, tests and exams without cheating. Artificial intelligence tools should only be used where approved by the Unit Convenor.

Swinburne University uses the Turnitin system, which helps to identify inadequate citations, poor paraphrasing and unoriginal work in assignments that are submitted via Canvas. Your Unit Convenor will provide further details.

Plagiarism, collusion, contract cheating, unauthorised file sharing, falsification, fabrication, manipulation or misrepresentation of information, reuse of previous work and non-compliance with instructions in an invigilated or non-invigilated assessment item are all breaches of academic integrity and treated as academic misconduct. Examples of breaches of academic integrity include, but are not limited to:

- submitting work as your own for assessment that has been fully or partially completed by a third party, either paid or unpaid
- using output from artificial intelligence tools (e.g. ChatGPT) in whole or part without acknowledgement and/or without the approval of the Unit Convenor
- using another person's work or ideas as though it is your own work, without appropriate attribution
- working closely with another student or group of students (either past or current), to submit for assessment, some or all of the other student or students' work as your own work
- sharing without permission of the Unit Convenor, Swinburne resources or other material related to assessment to an entity or document repository site
- creating, intentionally modifying or inventing information that is intended to be submitted as part of an assessment item
- using the whole or part of a computer program written by another person as your own without appropriate acknowledgement
- poorly paraphrasing somebody else's work
- using a musical composition or audio, visual, graphic and photographic work created by another person without acknowledgment
- enabling others to cheat, including letting another student copy your work or by giving access to a draft or completed assignment
- letting someone or something else impersonate you, or you impersonate someone else in an invigilated or non-invigilated assessment item
- accessing, obtaining and/or providing to others unauthorised materials relating to an invigilated or non-invigilated assessment item.

The penalties for academic misconduct can be severe, ranging from a zero grade for an assessment task through to exclusion from Swinburne. For further details, see https://www.swinburne.edu.au/student-login/academic-integrity/

Student support

Swinburne offers a range of services and resources to help you complete your studies successfully. Your Unit Convenor or studentHQ can provide information about the study support and other services available for Swinburne students. For further information, see the Current students web page.

Special consideration

If your studies have been adversely affected due to serious and unavoidable circumstances outside of your control (e.g. severe illness or unavoidable obligation), you may be able to apply for special consideration (SPC).

Applications for Special Consideration are submitted via the SPC online tool normally no later than 5.00pm on the third working day after the submission/sitting date for the relevant assessment component. See https://www.swinburne.edu.au/life-at-swinburne/student-support-services/special-consideration-assistance/

Note: Submitting fraudulent (fake or altered) medical certificates is considered misconduct and can lead to serious penalties from Swinburne. In addition, your doctor may report fraudulent medical certificates as a prosecutable offence under the Victorian Crimes Act.

AccessAbility Services

If you are a student with a disability, medical or mental health condition or you have significant carer responsibilities, you may require reasonable adjustments to fully access and participate in education. Swinburne's AccessAbility Services can develop an Education Access Plan (EAP) that includes the services and reasonable adjustments that you need.

It is recommended that you register with AccessAbility Services when you first commence your course but you can contact the service at any time during your studies to find out about reasonable adjustments. Contact Accessibility Services to discuss further.

Review of marks

An independent marker reviews all fail grades for major assessment tasks. In addition, a review of assessment is undertaken if your final result is between 45 and 49 or within 2 marks of any grade threshold.

You can ask the Unit Convenor to check the result for an assessment item or your final result. Your request must be made in writing within 10 working days of receiving the result. The Unit Convenor can discuss the marking criteria with you and check the aggregate marks of assessment components to identify if an error has been made. This is known as local resolution. If you are dissatisfied with the outcome of the local resolution, you can lodge a formal complaint.

Feedback, complaints and suggestions

In the first instance, discuss any issues with your Unit Convenor. If your concerns are not resolved or you would prefer not to deal with your Unit Convenor, then you can complete a feedback form. See https://www.swinburne.edu.au/corporate/feedback/

Advocacy

If you require assistance with any academic issues, University statutes, regulations, policies and procedures, you are advised to seek advice from an Independent Advocacy Officer at the Swinburne Student Association. Talking to an Advocacy Officer is free, independent and confidential. For more information and booking an appointment, please see https://www.swinburne.edu.au/current-students/student-services-support/advocacy/