UNSW Course Outline

INFS4777 Web3 and Blockchain Applications - 2024

Published on the 28 Jan 2024

General Course Information

Course Code : INFS4777
Year : 2024
Term : Term 1
Teaching Period : T1
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

Blockchain is a decentralised ledger technology based on cryptographic properties that is regulated through a consensus mechanism without an intervention of a trusted intermediary. Although functionally identical to a distributed ledger, the integrity of transactions in the

Blockchain is protected through the involvement of network actors in maintaining, updating, and validating all transactions in the network through consensus. By design, a blockchain is virtually immutable and resists data modification. Despite originating as the foundational architecture for transferring value across space and time, the application of blockchain technology has since progressed beyond its original purpose and is now in its 3rd generation.

The blockchain popularised by the applications of cryptocurrencies has the potential to redesign many fundamental aspects of our society. Artifacts like decentralised immutable identities, the ability to conduct transactions and businesses without heavy reliance on trusted third parties, significantly reduces the transactional risk involved in such interactions. It could serve as the foundational infrastructure upon which a new society and economy could be designed. The course aims to introduce students to the world of blockchain innovations with a heavy focus on those that will manifest in the web3 environment such as the metaverse, AI-enabled commerce, self- sovereignty-based governance, and decentralized autonomous organizations (DAOs).

Course Aims

The aim of this course is to provide students with an in-depth understanding of the relevance of blockchain technology, cryptocurrencies, and the latest innovations in web 3.0 to the discipline of information systems. Students will learn about the underlying principles of blockchain technology and its potential applications in the design and implementation of information systems. The course will cover the history and evolution of cryptocurrencies, including Bitcoin and Ethereum, and explore their use in facilitating secure and efficient transactions within information systems. Students will also gain an understanding of the latest web 3.0 innovations, such as decentralized finance (DeFi), non-fungible tokens (NFTs), and decentralized autonomous organizations (DAOs), and their potential applications in the development of information systems. Throughout the course, students will develop the skills needed to critically evaluate the potential benefits and risks of these emerging technologies and assess their impact on information systems design and implementation. By the end of the course, students will have a comprehensive understanding of how blockchain technology, cryptocurrencies, and web 3.0 innovations can be leveraged to design and implement effective information systems.

Relationship to Other Courses

The aim of this course is to provide an introduction to the fundamentals of Blockchain using predominantly cryptocurrencies as illustration of the killer-app use case of the Blockchain technology. The course will cover topic areas such as general cybersecurity frameworks, fundamentals of bitcoin and Blockchain, consensus mechanisms on Blockchain, different

categories of cryptocurrencies, Non-Fungible Tokens (NFTs), and Decentralized Finance (DeFi). INFS4777 seeks to encourage students to apply essential elements of cryptocurrencies and Blockchain and their impact on conventional cybersecurity considerations , macro economic events, financial events, macro social events, and political events.

Course Learning Outcomes

Course Learning Outcomes	Program learning outcomes
CLO1 : Describe characteristics and components of the Blockchain technology, and the manifestation of cryptocurrency use cases in society and economy.	• PLO1 : Business Knowledge • PLO3 : Business Communication • PLO6 : Global and Cultural Competence
CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO5 : Responsible Business Practice • PLO6 : Global and Cultural Competence
CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.	• PLO1 : Business Knowledge • PLO5 : Responsible Business Practice • PLO6 : Global and Cultural Competence
CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.	• PLO1 : Business Knowledge • PLO3 : Business Communication • PLO5 : Responsible Business Practice • PLO6 : Global and Cultural Competence
CLO5 : Evaluate the range of cultural, security, privacy and ethical issues that could be addressed through the Blockchain technology.	• PLO1 : Business Knowledge • PLO5 : Responsible Business Practice
CLO6 : Communicate an argument effectively in oral and written form.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice • PLO7 : Leadership Development

Course Learning Outcomes	Assessment Item
CLO1 : Describe characteristics and components of the Blockchain technology, and the manifestation of cryptocurrency use cases in society and economy.	• Presentation of Case Analysis • Blockchain Application Analysis – Group Report • Final Exam
CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.	• Tutorial Activities • Presentation of Case Analysis • Blockchain Application Analysis – Group Report • Final Exam
CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.	• Tutorial Activities • Presentation of Case Analysis • Blockchain Application Analysis – Group Report • Final Exam
CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.	• Tutorial Activities • Presentation of Case Analysis • Blockchain Application Analysis – Group Report • Final Exam
CLO5 : Evaluate the range of cultural, security, privacy and ethical issues that could be addressed through the Blockchain technology.	• Tutorial Activities • Blockchain Application Analysis – Group Report • Final Exam
CLO6 : Communicate an argument effectively in oral and written form.	• Tutorial Activities • Presentation of Case Analysis • Blockchain Application Analysis – Group Report • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams | Echo 360

Learning and Teaching in this course

As an undergraduate, the focus is on your self-directed search for knowledge. Textbooks, multimedia interactive materials, notes, and other resources are all provided as a service to assist you in this endeavour.

It is recognised that students are individuals who bring a diverse range of experiences, interests and abilities and that these aspects will influence your own learning. The responsibility for learning lies with you - the student. It is your choice as to how much work you do in this course, whether it be preparation for your off campus learning; completion of deliverables; study for exams; or seeking assistance to extend and clarify your understanding. You must choose the

approach which best suits your learning style and goals in this course. The fundamental approach to learning in this course can be summarised as follows:

- Understand rather than memorise.
- Take responsibility for your own learning.
- Explore and test ideas, don't limit yourself to textbook situations.
- Work collaboratively with others.
- Above all, enjoy the experience.

Other Professional Outcomes

Not Applicable.

Additional Course Information

Not Applicable.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Tutorial Activities Assessment Format: Individual	25%	Start Date: Every week Due Date: Every week	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO6 : Global and Cultural Competence
Presentation of Case Analysis Assessment Format: Group	10%	Start Date: To be announced Due Date: Week 8: 01 April - 07 April, Week 9: 08 April - 14 April	• PLO1 : Business Knowledge • PLO3 : Business Communication • PLO4 : Teamwork • PLO6 : Global and Cultural Competence
Blockchain Application Analysis – Group Report Assessment Format: Group	20%	Start Date: To be announced Due Date: Week 9: 08 April - 14 April	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO4 : Teamwork • PLO5 : Responsible Business Practice • PLO3 : Business Communication
Final Exam Assessment Format: Individual	45%		• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice • PLO6 : Global and Cultural Competence

Assessment Details

Tutorial Activities

Assessment Overview

In summary, this component of the course grade constitutes the following:

- Participation on Moodle in posting their burning questions about the lecture content, and/or attempt the discussion questions, and/or share external content they found to be relevant (with explanation of its connection) to the lectures.

- Participation can also come in the form of peer assistance. In other words, students can offer their own take to burning questions or doubts (with clear justification) about course content posted by fellow students.
For this component, we are interested in the frequency, intensity, and thoughtfulness of participation. A student who is consistent, diligent, and thoughtful in participating either in live webinars and/or in online forums is considered the bare minimum for this component. Proactively carrying out external research and highlighting external materials that are relevant (with explanation of why and how they are relevant) to the course content is also appreciated.

Course Learning Outcomes

- CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.
- CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.
- CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.
- CLO5 : Evaluate the range of cultural, security, privacy and ethical issues that could be addressed through the Blockchain technology.
- CLO6 : Communicate an argument effectively in oral and written form.

Detailed Assessment Description

In summary, this component of the course grade constitutes the following:
- Participation on Moodle in posting their burning questions about the lecture content, and/or attempt the discussion questions, and/or share external content they found to be relevant (with explanation of its connection) to the lectures.
- Participation can also come in the form of peer assistance. In other words, students can offer their own take to burning questions or doubts (with clear justification) about course content posted by fellow students.
For this component, we are interested in the frequency, intensity, and thoughtfulness of participation. A student who is consistent, diligent, and thoughtful in participating either in live webinars and/or in online forums is considered the bare minimum for this component. Proactively carrying out external research and highlighting external materials that are relevant (with explanation of why and how they are relevant) to the course content is also appreciated.

Assessment Length

TBA

Submission notes

NA

Assessment information

Due weekly at the end of each online forum.

Assignment submission Turnitin type

Not Applicable

Presentation of Case Analysis

Assessment Overview

Each group will need to give a presentation of the case analysis they have conducted on a cryptocurrency project. The presentation will be evaluated based on the clarity, organization, engagement, and the ability of the presenting group to handle questions from the audience.

Course Learning Outcomes

- CLO1 : Describe characteristics and components of the Blockchain technology, and the manifestation of cryptocurrency use cases in society and economy.
- CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.
- CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.
- CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.
- CLO6 : Communicate an argument effectively in oral and written form.

Detailed Assessment Description

Each group will need to give a presentation of the case analysis they have conducted on a cryptocurrency project. The presentation will be evaluated based on the clarity, organization, engagement, and the ability of the presenting group to handle questions from the audience.

Submission notes

To be announced

Assessment information

Submission deadline will be decided.

Assignment submission Turnitin type

This is not a Turnitin assignment

Blockchain Application Analysis – Group Report

Assessment Overview

This is a group assignment. It involves writing a report to analyse a cryptocurrency project in its

competitive environment, competitive strategy, business model, and its potential cybersecurity risks and defences.

Course Learning Outcomes

- CLO1 : Describe characteristics and components of the Blockchain technology, and the manifestation of cryptocurrency use cases in society and economy.
- CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.
- CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.
- CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.
- CLO5 : Evaluate the range of cultural, security, privacy and ethical issues that could be addressed through the Blockchain technology.
- CLO6 : Communicate an argument effectively in oral and written form.

Detailed Assessment Description

This is a group assignment. It involves writing a report to analyse a cryptocurrency project in its competitive environment, competitive strategy, business model, and its potential cybersecurity risks and defences.

Assessment Length

TBA

Assessment information

Due in Week 09

Assignment submission Turnitin type

This is not a Turnitin assignment

Final Exam

Assessment Overview

The final examination will be held during the formal end-of-session examination period. Unless you are advised otherwise, the final examination will cover all materials in INFS4777. The aim of the final examination is to enable you to demonstrate that you have attained all the Learning Outcomes for this Course. Further details of the exam will be provided in lecture in the final week.

The exam will be conducted on Inspera, an online assessment platform. Further instructions on how to prepare for this exam will be provided to you during the term.

Course Learning Outcomes

- CLO1 : Describe characteristics and components of the Blockchain technology, and the manifestation of cryptocurrency use cases in society and economy.
- CLO2 : Explain how organisations could use the Blockchain technology to aid in integrating with the web3 environment.
- CLO3 : Explore different characteristics of entities that will constitute a web3 social and economic environment.
- CLO4 : Describe decentralised consensus mechanisms, their benefits and limitations.
- CLO5 : Evaluate the range of cultural, security, privacy and ethical issues that could be addressed through the Blockchain technology.
- CLO6 : Communicate an argument effectively in oral and written form.

Detailed Assessment Description

The final examination will be held during the formal end-of-session examination period. Unless you are advised otherwise, the final examination will cover all materials in INFS4777. The aim of the final examination is to enable you to demonstrate that you have attained all the Learning Outcomes for this Course. Further details of the exam will be provided in lecture in the final week.

Assessment information

During the formal end-of-session examination period

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

To be announced

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	• Course Introduction and Delivery Mechanism • Learning Materials provided on Moodle
Week 2 : 19 February - 25 February	Lecture	• History of Bitcoin and How It Introduces the World to Blockchain Technology • Learning Materials provided on Moodle
	Tutorial	• Online Tutorial Forum
Week 3 : 26 February - 3 March	Lecture	• Basics of Blockchain Transactions • Learning Materials provided on Moodle
	Tutorial	• Online Tutorial Forum
Week 4 : 4 March - 10 March	Lecture	• Consensus Mechanisms in a Blockchain • Learning Materials provided on Moodle
	Tutorial	• Online Tutorial Forum
Week 5 : 11 March - 17 March	Lecture	• Cryptocurrencies and What are They Good for? Different Types of Crypto Projects, Non-Fungible Tokens (NFTs), and Decentralized Finance (Defi) • Learning Materials provided on Moodle
	Tutorial	• Online Tutorial Forum
Week 6 : 18 March - 24 March	Lecture	• Flex Week
Week 7 : 25 March - 31 March	Lecture	• History of the Design of Money and its Function in Society • Social, Political, and Economic Impact of Blockchain Technology. • Learning Materials provided on Moodle
	Tutorial	• Online Tutorial Forum
Week 8 : 1 April - 7 April	Lecture	• Group Presentations of Blockchain Use Cases Part 1 • Learning Materials provided on Moodle • Presentation Due
	Tutorial	• Online Tutorial Forum
Week 9 : 8 April - 14 April	Lecture	• Group Presentations of Blockchain Use Cases Part 2 • Learning Materials provided on Moodle • Presentation Due • Group Report Due
	Tutorial	• Online Tutorial Forum
Week 10 : 15 April - 21 April	Lecture	• Review and Exam Preparation

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings. However it should be noted that there will always be a probability that technical problems could occur

during lectures rendering recordings to be unavailable. Therefore, relying solely on lecture recordings for your lecture consumption comes with its own risks.

General Schedule Information

Course schedule is subject to change.

Course Resources

Prescribed Resources

The is no prescribed textbook for the course. Additional readings/articles may be set. These materials will be provided on the course website, it is your responsibility to acquire a copy of the readings/articles and read them prior to class. The readings for the basis of class activities are considered examinable.

The website for this course is on Moodle.

Recommended Resources

Self-directed research and readings

Additional Costs

Not Applicable.

Course Evaluation and Development

Gathering, analyzing, and acting upon student feedback is crucial for improving the quality of the course and the overall student learning experience. Based on past feedback, we found that students felt the pace of the course was too fast. To address this, we adjusted the course schedule to allow more time for complex topics and incorporated more in-class activities that reinforce learning. Similarly, feedback indicated that students wanted more real-world examples and application-based learning. Hence, we added more real world examples to the curriculum. The process of gathering, analyzing, and acting on feedback is continuous and essential for improving the course and the overall student learning experience.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Eric Lim		Quad 2084	+61 2 9065 1670	TBA	No	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 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.