UNSW Course Outline

INFS3701 Enterprise Architecture for Scalable Cloud Solutions - 2024

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General Course Information

Course Code : INFS3701
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 a Level 3 Information Systems (IS) course that continues your study of IS by furthering your knowledge and skills in relation to IS networking infrastructure, cybersecurity and governance. Building on foundational knowledge in these areas from INFS1701 (Networking and

Cybersecurity) and INFS2701 (Cybersecurity Management and Governance), this course examines contemporary approaches to enterprise-level cloud solution architecture. Course content is presented through three learning modules. These include (1) 'Business Web Applications', (2) 'Designing Scalable Cloud Infrastructure', (3) 'Service Delivery of Enterprise Cloud'.

In Module 1, you will learn about Service-Oriented Architecture, Hypertext Transfer Protocol (HTTP) requests and responses, and REST Application Programming Interfaces (APIs). This includes hands-on experience with these concepts using JavaScript and the NodeJS JavaScript framework. In Module 2, you will learn about how the technologies from Module 1 can be deployed at scale, using difference types of cloud architectures including Infrastructure as a Service (IaaS), Software as a Service (SaaS), Platform as a Service (PaaS). This includes hands-on experience with these concepts using platforms such as Docker and Kubernetes. Finally, in Module 3, you will learn about the organisational aspects of enterprise architecture for scalable cloud solutions, including concepts such as Quality Assurance (QA), Incident Management (IM), and Service Level Agreements (SLAs).

Course Aims

This course aims to deepen students' expertise in Information Systems with an emphasis on Amazon Web Services (AWS) as a platform for scalable cloud solutions. Building on foundational knowledge from prior courses, it strives to deliver a comprehensive understanding of enterprise-level deployment and management of web applications using AWS. The ultimate goal of the course is to equip students with the knowledge and skills needed to effectively employ cloud solutions using AWS, providing them with a practical and applicable skill set for today's cloud-centric IT environments.

Relationship to Other Courses

This is a Level 3 Information Systems (IS) course that continues your study of IS by furthering your knowledge and skills in relation to IS networking infrastructure, cybersecurity and governance. Successful completion of INFS2701, Cyber Security Management and Governance, is a prerequisite for enrolling in this course.

Course Learning Outcomes

Course Learning Outcomes	Program learning outcomes
CLO1 : Explain and apply enterprise solution architecture principles in developing solutions for cloud-based business applications.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication
CLO2 : Design, write and evaluate cloud-based enterprise solution architecture plans for small to medium scale business problems.	• PLO2 : Problem Solving • PLO3 : Business Communication
CLO3 : Interpret, review share, and collaborate on programming code and technical information relating to cloud-based business applications.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork
CLO4 : Design, write and evaluate client-server designs for business applications.	• PLO1 : Business Knowledge • PLO2 : Problem Solving
CLO5 : Design, write and evaluate containerised application architectures for scalable and continuous deployment.	• PLO1 : Business Knowledge • PLO2 : Problem Solving

Course Learning Outcomes	Assessment Item
CLO1 : Explain and apply enterprise solution architecture principles in developing solutions for cloud-based business applications.	• Preparation and Participation • Assignment 2 • Final Exam
CLO2 : Design, write and evaluate cloud-based enterprise solution architecture plans for small to medium scale business problems.	• Preparation and Participation • Assignment 2 • Final Exam
CLO3 : Interpret, review share, and collaborate on programming code and technical information relating to cloud-based business applications.	• Preparation and Participation • Final Exam
CLO4 : Design, write and evaluate client-server designs for business applications.	• Assignment 1 • Preparation and Participation • Final Exam
CLO5 : Design, write and evaluate containerised application architectures for scalable and continuous deployment.	• Assignment 1 • Preparation and Participation • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams | Echo 360

Learning and Teaching in this course

The learning and teaching approach for this course involves a combination of theoretical

concepts and practical hands-on experiences. Students will learn architecting solutions in the cloud. The course instructors will utilise various teaching techniques such as lectures, hands-on workshops, quizzes, and peer-to-peer learning to enhance students' understanding of the course material. Students will also be encouraged to explore and experiment with Amazon Web Services (AWS) platform.

Additional Course Information

Refer to the course Moodle site

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Preparation and Participation Assessment Format: Individual	20%		• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice
Assignment 1 Assessment Format: Individual	15%	Start Date: Not Applicable Due Date: 07/10/2024 04:00 PM	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice
Assignment 2 Assessment Format: Group	25%	Start Date: Not Applicable Due Date: 11/11/2024 04:00 PM	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice
Final Exam Assessment Format: Individual	40%	Start Date: University exams period Due Date: University exam period	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice

Assessment Details

Preparation and Participation

Assessment Overview

Weekly tutorial preparation and participation.

Course Learning Outcomes

- CLO1 : Explain and apply enterprise solution architecture principles in developing solutions for cloud-based business applications.
- CLO2 : Design, write and evaluate cloud-based enterprise solution architecture plans for small to medium scale business problems.
- CLO3 : Interpret, review share, and collaborate on programming code and technical information relating to cloud-based business applications.
- CLO4 : Design, write and evaluate client-server designs for business applications.
- CLO5 : Design, write and evaluate containerised application architectures for scalable and continuous deployment.

Detailed Assessment Description

The course involves active engagement through the accomplishment of weekly tutorial objectives.

Students will be actively involved in labs that offer hands-on practice to reinforce concepts covered in lectures and recommended resources. Prior to each lab, detailed instructions on objectives, requirements, deliverables, and necessary software/tools will be provided. To ensure preparedness, attendance in lecture sessions is encouraged for clarifications. Tutors will be available during labs to guide and assist students as they work through assigned tasks. Participation in labs is mandatory, evaluating students on task completion.

Generative AI Permission Level

Not Applicable

Generative AI is not considered to be of assistance to you in completing this assessment. If you do use generative AI in completing this assessment, you should attribute its use.
For more information on Generative AI and permitted use please see here.

Assignment 1

Assessment Overview

Hosting a Static Website

Course Learning Outcomes

- CLO4 : Design, write and evaluate client-server designs for business applications.
- CLO5 : Design, write and evaluate containerised application architectures for scalable and continuous deployment.

Detailed Assessment Description

The primary objective of the Individual Assignment is to provide students with a practical experience in building web application in the Cloud, thereby preparing them for the real world senarios.

Assessment Length

Refer to the course Moodle site

Submission notes

Refer to the course Moodle site

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

Not Applicable

Generative AI is not considered to be of assistance to you in completing this assessment. If you do use generative AI in completing this assessment, you should attribute its use.
For more information on Generative AI and permitted use please see here.

Assignment 2

Assessment Overview

Architecting a Cloud Solution

Course Learning Outcomes

- CLO1 : Explain and apply enterprise solution architecture principles in developing solutions for cloud-based business applications.
- CLO2 : Design, write and evaluate cloud-based enterprise solution architecture plans for small to medium scale business problems.

Detailed Assessment Description

In this assignment, the students will delve into the world of Cloud Computing, exploring its concepts, benefits, and real-world applications. This assignment will provide students with a comprehensive understanding of how Cloud Computing revolutionises modern technology

landscapes.

Assessment Length

Refer to the course Moodle site

Submission notes

Refer to the course Moodle site

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

Not Applicable

Generative AI is not considered to be of assistance to you in completing this assessment. If you do use generative AI in completing this assessment, you should attribute its use.
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Final Exam

Assessment Overview

Final Exam

Course Learning Outcomes

- CLO1 : Explain and apply enterprise solution architecture principles in developing solutions for cloud-based business applications.
- CLO2 : Design, write and evaluate cloud-based enterprise solution architecture plans for small to medium scale business problems.
- CLO3 : Interpret, review share, and collaborate on programming code and technical information relating to cloud-based business applications.
- CLO4 : Design, write and evaluate client-server designs for business applications.
- CLO5 : Design, write and evaluate containerised application architectures for scalable and continuous deployment.

Detailed Assessment Description

The final exam is designed to assess the students' knowledge, understanding, and practical skills in cloud architecting. The exam will cover all the topics discussed throughout the course and will consist of both theoretical and practical questions. The students will be expected to demonstrate their ability to apply the concepts and principles learned in class to real-world cloud scenarios. To prepare for the final exam, students are encouraged to review their notes, complete all assignments and lab work, and practice the lab activities regularly.

Assessment Length

Refer to the course Moodle site

Submission notes

Refer to the course Moodle site

Assignment submission Turnitin type

Not Applicable

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
- meet any additional requirements described in the Assessment Summary section
- attend at least 80% of the tutorial sessions

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	Cloud Foundations
	Assessment	Class Preparation and Participation
	Tutorial	Introduction to AWS Platform
Week 2 : 16 September - 22 September	Lecture	Cloud Architecting - Compute
	Assessment	Class Preparation and Participation
	Tutorial	Introduction to AWS EC2
Week 3 : 23 September - 29 September	Lecture	Cloud Architecting - Storage
	Assessment	Class Preparation and Participation
	Tutorial	Adding a storage layer
Week 4 : 30 September - 6 October	Lecture	Cloud Architecting - Databases
	Assessment	Class Preparation and Participation
	Tutorial	Adding a database layer
Week 5 : 7 October - 13 October	Lecture	Cloud Architecting - Networking
	Assessment	Individual assignment
	Tutorial	Creating a Virtual Private Cloud (VPC)
Week 6 : 14 October - 20 October	Lecture	Flexibility Week (No class)
Week 7 : 21 October - 27 October	Lecture	Cloud Security Foundations
	Assessment	Class Preparation and Participation
	Tutorial	Securing resource in AWS
Week 8 : 28 October - 3 November	Lecture	Securing User Access & Data
	Assessment	Class Preparation and Participation
	Tutorial	Securing AWS Infrastructure
Week 9 : 4 November - 10 November	Lecture	Logging, monitoring, and managing incidents
	Assessment	Class Preparation and Participation
	Tutorial	Monitoring and alerting with AWS CloudTrail and CloudWatch
Week 10 : 11 November - 17 November	Lecture	Auto scaling and serverless architecture
	Assessment	Group assignment
	Tutorial	Auto scaling and load balancing in AWS

Attendance Requirements

Your regular attendance and active engagement in all scheduled classes and online learning activities is expected in this course. Failure to attend / engage in assessment tasks that are

integrated into learning activities (e.g. class discussion, presentations) will be reflected in the marks for these assessable activities. The Business School may refuse final assessment to those students who attend less than 80% of scheduled classes where attendance and participation is required as part of the learning process (e.g. tutorials, flipped classroom sessions, seminars, labs, etc.). If you are not able to regularly attend classes, you should consult the relevant Course Authority.

View more information on attendance

Course Resources

Prescribed Resources

This course requires students to use a range of prescribed resources to enhance their learning experience. These resources include online articles, video tutorials, and sample solutions in the Cloud. The course instructors will provide students with a list of recommended resources at the beginning of each week, which will cover essential topics such as creating compute services in the Cloud, making data secure, and following best practices for architecting in the Cloud.

Recommended Resources

For students embarking on this course, a diverse mix of resources will empower them to grasp the intricate landscape of scalable cloud solutions effectively. Online platforms such as Linkedin Learning, Coursera, and Udemy offer specialised courses and tutorials on cloud architecture and solutions. Exploring cloud-related documentations and tutorials from reputable sources like AWS, Microsoft Azure, and Google Cloud can provide real-world insights.

https://learning.linkedin.com
https://www.coursera.org
https://www.udemy.com
https://docs.aws.amazon.com
https://cloud.google.com/docs

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 the Moodle forum and in-class discussions. This feedback will be taken into consideration and applied where appropriate. For example, the discussion forum was introduced as a result of feedback highlighting the need for a general platform for student discussions.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	George Joukhadar				TBA	Yes	Yes
Lecturer	Hamid Dehghani Samani				TBA	No	No
Tutor	Marvin Ma					No	No
Head tutor	Parth Shah					No	No
Tutor	Vinayak Kuanr					No	No
	Palaash Rawat					No	No
	Jayden So					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 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

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.