COURSE INFORMATION

Faculty:	Computing	**Page:**	1 of 5
Program name:	Computer Science (Software Engineering)		
Course code:	SECJ3403	**Academic Session/ Semester:**	2024/25/1
Course name:	Special Topic in Software Engineering	**Pre/co requisite (course name and code, if applicable):**	
Credit hours:	3		

Course synopsis	This course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure. Its main focus is on parallel programming techniques for cloud computing and large scale distributed systems which form the cloud infrastructure. The topics include: overview of cloud computing, cloud systems, parallel processing in the cloud, distributed storage systems, virtualization, security in the cloud, and multicore operating systems. Students will study state-of-the-art solutions for cloud computing developed by Google, Amazon, Microsoft, Yahoo, VMWare, etc. Students will also apply what they learn in one programming assignment and one project executed over Amazon Web Services.			
Course lecturer(s)	**Name**	**Office**	**Contact no.**	**E-mail @utm.my**
	Assoc Prof Mohd Shahizan Othman		0127363269	shahizan@utm.my

Mapping of the Course Learning Outcomes (CLO) to the Programme Learning Outcomes (PLO), Teaching & Learning (T&L) methods and Assessment methods:

No.	CLO	PLO (Code)	Taxonomies and generic skills	T&L methods	Assessment methods
CLO1	Ability to define the key terminologies related to Cloud Computing Principle.	PLO1	C4	Lecture, active learning	Midterm
CLO2	Apply solution using concepts of cloud computing.	PLO2	C3	Lecture, Active learning	PS, Assignment
CLO3	Demonstrate the use of appropriate methods and tools in developing cloud computing software.	PLO3	A2	Case Study	Lab Reflection, Final Exam
CLO4	Ability to work effectively in a team and present solution to a given problem	PLO7	TW1	project	Peer Review

PS – Problem Solving; A – Assignment; PE– Project e-Portfolio; PR: Project Report; Quiz:Q

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Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities
2.	Case Study	Conducted through given case study

Weekly Schedule:

Week 1	**TOPIC 1: CLOUD CONCEPTS OVERVIEW** Section 1 - Introduction to cloud computing Section 2 - Advantages of the Cloud Section 3 - Introduction to AWS Section 4 - Moving to the AWS Cloud Problem Solving 1: Cloud Adoption: Best Practise and Lesson Learnt
Week 2	**TOPIC 2: CLOUD ECONOMICS AND BILLING** Section 1 - Fundamentals of Pricing Section 2 - Total Cost of Ownership Section 3 - AWS Organizations Section 4 - AWS Billing & Cost Management
Week 3	**TOPIC 3: AWS GLOBAL INFRASTRUCTURE OVERVIEW** Section 1 - Intro to AWS Global Infrastructure Section 2 - AWS Services & Service Categories
Week 4	**TOPIC 4: CLOUD SECURITY** Section 1 - AWS Shared Responsibility Model Section 2 - AWS IAM Section 3 - Securing a new AWS Accounts Section 4 - Securing Data Section 5 - Working to Ensure Compliance Problem Solving 2: SWOT Analysis for Cloud Computing Implementation
Week 5	**TOPIC 5: NETWORKING AND CONTENT DELIVERY** Section 1 - Networking basics Section 2 - Amazon VPC Section 3 - VPC Networking Section 4 - VPC Security Section 5 - Route 53 ; Section 6 - CloudFront Assignment: Design infrastructure for cloud-based computing system

Week 6-7	**TOPIC 6: COMPUTE** Section 1 – Compute Services Overview Section 2 - Amazon EC2 Part 1 Section 3 - Amazon EC2 Part 2 Section 4 - Amazon EC2 Part 3 Section 5 – Amazon EC2 Cost Optimization Section 6 – Container Services Section 7 – Introduction to AWS Lambda Section 8 – Introduction to AWS Elastic Beanstalk
WEEK 8: MID-SEMESTER BREAK	
WEEK 9	**TOPIC 7: STORAGE** Section 1 – AWS EBS Section 2 – AWS S3 Section 3 – AWS EFS Section 4 – AWS S3 Glacier
WEEK 10	**TOPIC 8: DATABASE** Section 1 – Amazon RDS Section 2 – Amazon DynamoDB Section 3 – Amazon Redshift Section 4 – Amazon Aurora
WEEK11 - 12	**TOPIC 9: CLOUD ARCHITECTURE** Section 1 - AWS Well-Architected Framework Design Principles Section 2 - Operational Excellence Section 3 - Security Section 4 - Reliability Section 5 - Performance Efficiency Section 6 - Cost Optimization Section 7 - Reliability & High Availability Section 8 - AWS Trusted Advisor
WEEK13	**TOPIC 10: AUTO SCALING AND MONITORING** Section 1 – AWS ELB (Elastic Load Balancing) Section 2 – Amazon CloudWatch Section 3 – Amazon EC2 Auto Scaling

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Student learning time (SLT) details:

Distribution of student Learning Time (SLT) Course content outline					**Teaching and Learning Activities**		**TOTAL SLT**
	Guided Learning (Face to Face)				**Guided Learning Non- Face to Face**	**Independent Learning Non-Face to face**	
CLO	**L**	**T**	**P**	**O**			
CLO 1	14h			5h	13h	20h	52h
CLO 2	6h			1h	8h	14h	29h
CLO 3	6h			4h	5h	10h	25h
CLO4	2h			4h	2h		8h
Total SLT	**28h**			**14h**	**28h**	**44h**	**114h**

	Continuous Assessment	**PLO**	**Percentage**	**Total SLT**
1.	Midterm	PLO1	20	30m
2.	Assignment	PLO2	15	4h
3.	Problem Solving	PLO 2	10	2h
4.	Lab Reflection	PLO3	15	2h 30m
5.	Final Examination	PLO3	40	

Special requirement to deliver the course (e.g: software, nursery, computer lab, simulation room):

Computer lab with Windows for AWS Lab Management System

Learning resources

Text book (if applicable)

Main references
Cloud Computing: Theory and Practices

Online http://elearning.utm.my

Academic honesty and plagiarism: (Below is just a sample)

Assignments are individual tasks and NOT group activities (UNLESS EXPLICITLY INDICATED AS GROUP ACTIVITIES) Copying of work (texts, simulation results etc.) from other students/groups or from other sources is not allowed. Brief quotations are allowed and then only if indicated as such. Existing texts should be reformulated with your own words used to explain what you have read. It is not acceptable to retype existing texts and just acknowledge the source as a reference. Be warned: students who submit copied work will obtain a mark of zero for the assignment and disciplinary steps may be taken by the Faculty. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy.

Other additional information (Course policy, any specific instruction etc.): -