THE INTERNATIONAL QUALIFICATIONS AND ASSESSMENT CENTRE (IQAC)

«Approved»

2025 y. «____» _____

Programme	**International Foundation Year Diploma in Information Technology (RQF)**		
Unit Number/ Unit Title	**Unit 5 CLOUD COMPUTING & AI**		
Cohort Code:	L03CAI-U5		
Unit Level	Level 3		
Total GLH	Total qualification time 120/ Total Guided learning hours 48/ Self-guided learning hours 72		
Credits	12 CATS/ 6 ECTS		
Lecturer			
Start Date		**End Date**	

Unit Aims	This unit aims to provide students with an understanding of cloud computing principles and applications of artificial intelligence (AI). This unit arms explores the intersection of cloud computing and artificial intelligence (AI), two transformative technologies that are shaping the future of business and society. The unit begins with an introduction to cloud computing, including its definition, key characteristics, history, benefits, and challenges. Students will learn about cloud service and deployment models, as well as cloud computing architecture and components.
Differentiation Strategies *(e.g. planned activities or support for individual learners according to their needs)*	The total number of students to be in the lesson is approximately 20. This is a multicultural group of students predominantly between the ages of 24 – 45, with numerous ethnic, gender, and creed background. These are UK academic level 5 students; hence it is assumed that they have practical, theoretical, or technological knowledge and understanding of a subject or field of work to find ways forward in broadly defined, complex contexts. These students must be able to generate information, evaluate, synthesise the use information from a variety of sources. Various approaches to addressing the various identified students needs will be adopted throughout the lesson. Such will include:- 1. Progressive tasks

	2. Digital resources 3. Verbal support 4. Variable outcomes 5. Collaborative learning 6. Ongoing assessment 7. Flexible-pace learning
Equality & Diversity	Variety of teaching techniques will be employed to ensure that the needs of each individual learner are met.
Safeguarding & Prevent	Safeguarding policies and the Prevent duty are strictly observed to ensure the safety, well-being, and inclusivity of all students and staff.
Health & Safety	SIRM H&S policies will be maintained.
Learning Resources	**Teaching and Learning Materials** • "Cloud Computing: Concepts, Technology & Architecture" by Thomas Erl, Ricardo Puttini, and Zaigham Mahmood • "Artificial Intelligence: A Guide for Thinking Humans" by Melanie Mitchell

Learning Outcome	Assessment Criteria
1. Understand cloud computing concepts and technologies.	1.1 Define cloud computing and its essential characteristics (on-demand self-service, broad network access, etc.). 1.2 Explain cloud deployment models (public, private, hybrid) and service models (IaaS, PaaS, SaaS). Discuss the advantages and challenges of cloud computing.
2. Explore applications and benefits of AI in various domains.	2.1 Describe key concepts and approaches in artificial intelligence (machine learning, neural networks, etc.). 2.2 Analyze AI applications in industries such as healthcare, finance, and gaming. Evaluate the performance and scalability of cloud- based solutions and AI models.
3. Implement basic cloud-based solutions and AI models.	3.1 Deploy an application on a cloud platform (e.g., AWS, Azure). 3.2 Develop a simple AI model using machine learning algorithms. Validate form input using JavaScript.

No	Learning Outcome / Topic	Learning and Teaching Activities	Which assessment criteria does the session relate to?	Day/month/ year/ signature
1.	**Introduction to Cloud Computing**	**Introduction to Cloud Computing** – Definition, NIST 5 characteristics (On-demand, Broad access, etc.)	LO1: Cloud Computing Fundamentals	
2.	**Cloud Deployment Models**	**Cloud Deployment Models** – Public vs. Private vs. Hybrid vs. Multi-cloud (case studies)	LO1: Cloud Computing Fundamentals	
3.	**Cloud Service Models**	**Cloud Service Models** – IaaS, PaaS, SaaS (AWS EC2 vs. Heroku vs. Gmail)	LO1: Cloud Computing Fundamentals	
4.	**Benefits of Cloud Computing**	**Benefits of Cloud Computing** – Cost, scalability, disaster recovery	LO1: Cloud Computing Fundamentals	
5.	**Cloud Challenges**	**Cloud Challenges** – Security, latency, vendor lock-in	LO1: Cloud Computing Fundamentals	
6.	**Cloud Security & Compliance**	**Cloud Security & Compliance** – Shared responsibility model, GDPR/HIPAA	LO1: Cloud Computing Fundamentals	
7.	**Cloud Cost Management**	**Cloud Cost Management** – Pricing models, TCO calculators	LO1: Cloud Computing Fundamentals	
8.	**AI Fundamentals**	**AI Fundamentals** – Machine Learning vs. Deep Learning vs. Generative AI	LO2: AI Concepts & Applications	
9.	**Supervised Learning**	**Supervised Learning** – Regression, classification (real-world examples)	LO2: AI Concepts & Applications	
10.	**Unsupervised Learning**	**Unsupervised Learning** – Clustering, anomaly detection	LO2: AI Concepts & Applications	
11.	**Neural Networks Basics**	**Neural Networks Basics** – Perceptrons, CNNs, LLMs (simplified)	LO2: AI Concepts & Applications	
12.	**AI in Healthcare**	**AI in Healthcare** – Diagnostics, drug discovery (e.g., IBM Watson)	LO2: AI Concepts & Applications	
13.	**AI in Finance**	**AI in Finance** – Fraud detection, robo-advisors	LO2: AI Concepts & Applications	
14.	**AI in Gaming**	**AI in Gaming** – NPC behavior, procedural generation	LO2: AI Concepts & Applications	

15.	**Ethics of AI**	**Ethics of AI** – Bias, job displacement, deepfakes	LO2: AI Concepts & Applications	
16.	**Midterm**	**Midterm**	LO1 - LO2	
17.	**Cloud Lab 1: AWS/Azure Free Tier Setup**	**Cloud Lab 1: AWS/Azure Free Tier Setup** – Creating an account, navigating consoles	LO3: Hands-on Implementation	
18.	**Cloud Lab 2: Deploy a Web App**	**Cloud Lab 2: Deploy a Web App** – EC2/App Service + simple HTML/CSS	LO3: Hands-on Implementation	
19.	**Cloud Lab 3: Serverless Function**	**Cloud Lab 3: Serverless Function** – AWS Lambda/Azure Functions (Python)	LO3: Hands-on Implementation	
20.	**AI Lab 1: Google Colab Intro**	**AI Lab 1: Google Colab Intro** – Running Jupyter notebooks	LO3: Hands-on Implementation	
21.	AI Lab 2: Train a Model	**AI Lab 2: Train a Model** – Scikit-learn (e.g., iris dataset classification)	LO3: Hands-on Implementation	
22.	**AI Lab 3: Computer Vision Demo** –	**AI Lab 3: Computer Vision Demo** – Pre-trained model (e.g., TensorFlow.js)	LO3: Hands-on Implementation	
23.	**Integration Lab: AI + Cloud**	**Integration Lab: AI + Cloud** – Deploy ML model as an API (e.g., Flask on EC2)	LO3: Hands-on Implementation	
24.	**Case Study: Cloud Migration**	**Case Study: Cloud Migration** – Netflix/Spotify architecture discussion	Extended Topics & Assessments	
25.	**AI Performance Metrics**	**AI Performance Metrics** – Precision/recall, F1-score, confusion matrices	Extended Topics & Assessments	
26.	**Troubleshooting Workshop**	**Troubleshooting Workshop** – Debugging cloud/AI errors	Extended Topics & Assessments	
27.	**Group Project: Cloud-Based AI Solution**	**Group Project: Cloud-Based AI Solution** – Proposal drafting	Extended Topics & Assessments	
28.	**Project Implementation**	**Project Implementation** – Build & document a solution (e.g., chatbot on AWS)	Extended Topics & Assessments	
29.	Final Exam Preparation & Review	- Comprehensive review of all learning outcomes - Practice questions and revision of key topics		
30.	Final Exam	- **Final-term assessment** covering all learning outcomes (theory and practical elements)		

31.	Feedback & Reflection	- Review of final exam - Individual feedback on performance - Reflective discussion on key learning points		