INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

«Approved»

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Programme	LEVEL 5 EXTENDED DIPLOMA IN ARTIFICIAL INTELLIGENCE		
Unit Number/ Unit Title	**UNIT 1 INTRODUCTION TO ARTIFICIAL INTELLIGENCE (AI)**		
Cohort Code:	L04IAI-U1		
Unit Level	4		
Total GLH	Total qualification time 200/ Total Guided learning hours 90/ Self-guided learning hours 110		
Credits	20 CATS/ 10 ECTS		
Lecturer			
Start Date		**End Date**	

Unit Aims	This course aims to introduce the fundamental concepts of artificial intelligence (AI) to individuals from all academic backgrounds. Participants will develop a broad understanding of AI technologies, their implications, and their potential applications in various fields. The course will emphasize practical examples and real-world case studies to facilitate comprehension and inspire innovative thinking. To provide students with a foundational understanding of Artificial Intelligence, including its history, key concepts, and practical applications.
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**
	• "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig • "Machine Learning for Absolute Beginners" by Oliver Theobald • "Life 3.0: Being Human in the Age of Artificial Intelligence" by Max Tegmark.

Learning Outcome	Assessment Criteria
LO1. 1. Understand the history and evolution of AI.	1.1 Explain the historical development of AI and major milestones. 1.2 Identify key contributors and their contributions to the field of AI.
LO2. Comprehend fundamental concepts and terminologies in AI	2.1 Define core AI concepts, including machine learning, neural networks, and natural language processing. 2.2 Illustrate the basic principles of AI and how they are applied in real-world scenarios.
LO3. Analyze ethical considerations and societal impact of AI	3.1 Discuss the ethical implications of AI in various sectors. 3.2 Evaluate the societal impact of AI technologies on employment, privacy, and decision-making.
LO4. Apply basic AI techniques to simple problems	4.1 Implement simple AI algorithms using available tools and libraries. 4.2 Analyze the performance and limitations of basic AI models.

No	Learning Outcome / Topic	Learning and Teaching Activities	Which assessment criteria does the session relate to?	Day/month/year/ signature
1.	**Introduction to AI**	**Introduction to AI**: Definition, goals, and scope of AI. What is AI, Why learn AI, When to use AI	LO1: Understand the History and Evolution of AI	
2.	**Early Foundations of AI**	**Early Foundations of AI**: Philosophical and mathematical origins (Turing, McCulloch-Pitts).	LO1: Understand the History and Evolution of AI	
3.	**The Birth of AI (1950s–1960s)**	**The Birth of AI (1950s–1960s)**: Dartmouth Conference, early symbolic AI.	LO1: Understand the History and Evolution of AI	
4.	**AI Winters and Resurgence**	**AI Winters and Resurgence**: Challenges and breakthroughs (1970s–1990s).	LO1: Understand the History and Evolution of AI	
5.	**Modern AI Revolution**	**Modern AI Revolution**: Rise of machine learning, big data, and computational power (2000s–present).	LO1: Understand the History and Evolution of AI	
6.	**Key Contributors to AI**	**Key Contributors to AI**: Alan Turing, John McCarthy, Geoffrey Hinton, Yann LeCun, etc.	LO1: Understand the History and Evolution of AI	
7.	**Major Milestones in AI**	**Major Milestones in AI**: Deep Blue, AlphaGo, GPT, and transformative applications.	LO1: Understand the History and Evolution of AI	
8.	Half-Term Exam	- Review of LO1 topics: Explain the historical development of AI and major milestones. Identify key contributors and their contributions to the field of AI. - Practice questions and mock assessment - **Half-term assessment** based on LO1 (theory)		
9.	**Core AI Concepts and Machine Learning (ML) Basics**	**Core AI Concepts**: Intelligence vs. artificial intelligence, narrow vs. general AI. **Machine Learning (ML) Basics**: Supervised, unsupervised, and reinforcement learning.	LO2: Comprehend Fundamental Concepts and Terminologies in AI	

10.	**Neural Networks and Deep Learning**	**Neural Networks and Deep Learning**: Structure of artificial neurons, backpropagation.	LO2: Comprehend Fundamental Concepts and Terminologies in AI	
11.	**Natural Language Processing (NLP)**	**Natural Language Processing (NLP)**: Language models, sentiment analysis, chatbots.	LO2: Comprehend Fundamental Concepts and Terminologies in AI	
12.	**Computer Vision**	**Computer Vision**: Image recognition, object detection, and convolutional neural networks (CNNs)	LO2: Comprehend Fundamental Concepts and Terminologies in AI	
13.	**AI Problem-Solving Methods and Real-World AI Applications**	**AI Problem-Solving Methods**: Search algorithms, heuristics, and optimization. **Real-World AI Applications**: Healthcare, finance, autonomous vehicles, and robotics.	LO2: Comprehend Fundamental Concepts and Terminologies in AI	
14.	Final Exam Preparation & Review	- Comprehensive review of all learning outcomes - Practice questions and revision of key topics	LO1,LO2	
15.	Final Exam	- **Final-term assessment** covering all learning outcomes (theory and practical elements)		
16.	**AI Ethics Overview and AI in Decision-Making**	**AI Ethics Overview**: Bias, fairness, transparency, and accountability. **AI in Decision-Making**: Algorithmic bias in hiring, criminal justice, and lending.	*LO3: Analyze Ethical Considerations and Societal Impact of AI*	
17.	Feedback & Reflection	- Review of final exam - Individual feedback on performance - Reflective discussion on key learning points		

18.	**Privacy and Surveillance**	**Privacy and Surveillance**: Facial recognition, data collection, and GDPR.	LO3: Analyze Ethical Considerations and Societal Impact of AI	
19.	**AI and Employment and AI in Warfare and Security**	**AI and Employment**: Automation, job displacement, and the future of work. **AI in Warfare and Security**: Autonomous weapons, cybersecurity risks.	LO3: Analyze Ethical Considerations and Societal Impact of AI	
20.	**Regulations and Policies and Case Studies**	**Regulations and Policies**: Global AI governance frameworks (EU AI Act, U.S. guidelines). **Case Studies**: Ethical dilemmas in AI (e.g., Tesla Autopilot, social media algorithms).	LO3: Analyze Ethical Considerations and Societal Impact of AI	
21.	**Introduction to AI Tools**	**Introduction to AI Tools**: Python, TensorFlow, PyTorch, and scikit-learn.	*LO4: Apply Basic AI Techniques to Simple Problems*	
22.	**Implementing Simple ML Models**	**Implementing Simple ML Models**: Linear regression, decision trees.	LO4: Apply Basic AI Techniques to Simple Problems	
23.	Half-Term Exam	**Group Project**: Developing a simple AI application (e.g., chatbot, recommendation system).		
24.	**Hands-on Neural Networks**	**Hands-on Neural Networks**: Building a basic perceptron or feedforward network.	LO4: Apply Basic AI Techniques to Simple Problems	
25.	**NLP Practical Exercise**	**NLP Practical Exercise**: Text classification using pre-trained models.	LO4: Apply Basic AI Techniques to Simple Problems	

26.	**Computer Vision Lab**	**Computer Vision Lab**: Image classification with CNNs (e.g., MNIST dataset).	LO4: Apply Basic AI Techniques to Simple Problems	
27.	**Evaluating AI Models**	**Evaluating AI Models**: Metrics like accuracy, precision, recall, and F1-score.	LO4: Apply Basic AI Techniques to Simple Problems	
28.	**Limitations of AI and Final Review and Future Trends**	**Limitations of AI**: Overfitting, data scarcity, and interpretability challenges. **Final Review and Future Trends**: Explainable AI (XAI), quantum AI, and AGI debates.	LO4: Apply Basic AI Techniques to Simple Problems	
29.	Final Exam Preparation & Review	LO1, LO2, LO3, LO4	LO1, LO2, LO3, LO4	
30.	Final Exam	LO1, LO2, LO3, LO4	LO1, LO2, LO3, LO4	