INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

«Approved»

2025 y. «16» iyul

Programme	Level 7 Diploma in Data Science		
Unit Number/ Unit Title	UNIT 4 ETHICAL AI AND RESPONSIBLE INNOVATION		
Cohort Code:	L07AIRI-U4		
Unit Level	Level 7		
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 module critically examines the ethical, legal, and societal implications of AI technologies. It equips students with the ability to assess risks, ensure accountability, and design ethically-aligned AI systems within frameworks of responsible innovation, regulatory compliance, and public trust.
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** • Mittelstadt, B. D., & Floridi, L. (2016). The Ethics of Artificial Intelligence. Springer. • Jobin, A., Ienca, M., & Vayena, E. (2019). The Global Landscape of AI Ethics Guidelines. Nature Machine Intelligence. • Eubanks, V. (2018). Automating Inequality. St. Martin's Press. • Cath, C. (2018). Governing Artificial Intelligence: Ethical, Legal, and Technical Opportunities and Challenges. Philosophical Transactions.

Learning Outcome	Assessment Criteria
LO1. Critically evaluate ethical frameworks in AI.	**Written Essay**: 1.1 Compare deontological, consequentialist, and virtue ethics in AI. 1.2 Apply ethical principles to algorithmic decision-making.
LO2. Analyze AI governance and regulatory landscapes.	**Report**: 2.1 Review major AI regulations (e.g. EU AI Act, OECD guidelines). 2.2 Examine institutional responsibilities and compliance requirements.
LO3. Assess risks and mitigation strategies in AI deployment.	**Case Study**: 3.1 Identify sources of algorithmic bias and discrimination. **3.2** Recommend mitigation methods for fairness and transparency.
LO4. Propose responsible innovation strategies for AI systems.	**Presentation**: 4.1 Design frameworks for stakeholder-inclusive AI development. 4.2 Evaluate the societal impact of an AI use case.

No	Learning Outcome / Topic	Learning and Teaching Activities	Which assessment criteria does the session relate to?	Day/month/year/ signature
1.	**Introduction to AI Ethics**	**Introduction to AI Ethics** Key principles: Fairness, Accountability, Transparency (FAT)	LO1: Ethical Frameworks for AI	
2.	**Deontological Ethics in AI**	**Deontological Ethics in AI** Rule-based approaches (e.g., Kantian ethics, AI "commandments")	LO1: Ethical Frameworks for AI	
3.	**Consequentialist Ethics**	**Consequentialist Ethics** Utilitarianism, cost-benefit analysis of AI systems	LO1: Ethical Frameworks for AI	
4.	**Virtue Ethics & AI**	**Virtue Ethics & AI** Role of developer virtues (honesty, prudence) in AI design	LO1: Ethical Frameworks for AI	
5.	**Algorithmic Decision-Making**	**Algorithmic Decision-Making** Case studies: Criminal justice, hiring, healthcare triage	LO1: Ethical Frameworks for AI	
6.	**Global AI Regulatory Landscape**	**Global AI Regulatory Landscape** EU AI Act, US Executive Orders, China's AI laws	LO2: AI Governance & Regulations	
7.	**OECD AI Principles**	**OECD AI Principles** Human-centric values, transparency, robustness	LO2: AI Governance & Regulations	
8.	Half-Term Exam	- Review of LO1 topics - Practice questions and mock assessment - **Half-term assessment** based on LO1 (theory)	LO1 LO2	
9.	**Sector-Specific Regulations**	**Sector-Specific Regulations** HIPAA (healthcare), FINRA (finance), GDPR (privacy)	LO2: AI Governance & Regulations	

10.	**Compliance & Risk Management**	**Compliance & Risk Management** Algorithmic impact assessments (AIAs), audit trails	LO2: AI Governance & Regulations	
11.	**Institutional Accountability**	**Institutional Accountability** Roles of ethics boards, chief AI officers	LO2: AI Governance & Regulations	
12.	**Sources of Algorithmic Bias**	**Sources of Algorithmic Bias** Data bias (e.g., COMPAS), model bias, user bias	LO3: Risk Assessment & Mitigation	
13.	**Fairness Metrics**	**Fairness Metrics** Statistical parity, equal opportunity, calibration	LO3: Risk Assessment & Mitigation	
14.	Final Exam Preparation & Review	- Comprehensive review of all learning outcomes - Practice questions and revision of key topics		
15.	Final Exam	- **Final-term assessment** covering all learning outcomes (theory and practical elements)		
16.	Feedback & Reflection	- Review of final exam - Individual feedback on performance - Reflective discussion on key learning points		
17.	**Bias Mitigation Techniques**	**Bias Mitigation Techniques** Pre-processing (reweighting), in-processing (adversarial debiasing)	LO3: Risk Assessment & Mitigation	
18.	**Explainability Tools**	**Explainability Tools** SHAP, LIME, counterfactual explanations	LO3: Risk Assessment & Mitigation	
19.	**Transparency Standards**	**Transparency Standards** Model cards, datasheets for datasets	LO3: Risk Assessment & Mitigation	

20.	**Stakeholder-Inclusive Design**	**Stakeholder-Inclusive Design** Participatory workshops, co-creation with marginalized groups	LO4: Responsible Innovation Strategies	
21.	**Human Rights Impact Assessments**	**Human Rights Impact Assessments** UN Guiding Principles, due diligence frameworks	LO4: Responsible Innovation Strategies	
22.	**AI for Social Good**	**AI for Social Good** Case studies: Climate modeling, disaster response	LO4: Responsible Innovation Strategies	
23.	Half-Term Exam	**Designing an Ethical AI Framework** Step-by-step guide for organizations		
24.	**Ethical Dilemmas in Innovation**	**Ethical Dilemmas in Innovation** Dual-use AI (e.g., facial recognition), open-source risks	LO4: Responsible Innovation Strategies	
25.	**Societal Impact Evaluation**	**Societal Impact Evaluation** Long-term effects on employment, democracy, inequality	LO4: Responsible Innovation Strategies	
26.	**Regulatory Simulation Exercise**	**Regulatory Simulation Exercise** Role-play: Balancing innovation vs. compliance	LO5: Capstone & Implementation	
27.	**Responsible AI Pitch**	**Responsible AI Pitch** Develop and present an ethically aligned AI product	LO5: Capstone & Implementation	
28.	**Final Reflection**	**Final Reflection** Personal manifesto for responsible AI practice	LO5: Capstone & Implementation	
29.	Final Exam Preparation & Review	LO1, LO2, LO3, LO4	LO1, LO2, LO3, LO4	
30.	Final Exam		LO1, LO2, LO3, LO4	