

Data Governance, Compliance, and Ethics

Module title			
Data Governance, Compliance, and Ethics			
Module NFQ level (only if an NFQ level can be demonstrated)	Module number / reference	ECTS Value	Duration
9		15	12 Weeks
Parent programme(s) . Principal programme title, and embedded(s) if relevant		Stage of parent programme	Semester No.
Master of Science in Research Data Management		Award	1 (FT) / 1 (PT)
Teaching and Learning modes		Proportion Classroom (% of Total Directed Learning)	
Online		100%	
Entry requirements (statement of knowledge, skill and competence)			
Programme entry requirements must be satisfied as indicated			
Maximum number of learners per instance of the module			
Average (over the duration of the module) of the contact hours¹ per week			
Pre-requisite module title(s) (if any)		N/A	
Co-requisite module title(s) (if any)		N/A	
Is this a capstone module? (Yes or No)		No	
Module-specific physical resources and support required per centre (or instance of the module)			
Specification of the qualifications (academic, pedagogical and professional/occupational) and experience required of staff working in this module. (Staff includes workplace personnel who are responsible for learners such as apprentices, trainees and learners in clinical placements)			
Role e.g. Tutor, Mentor etc	Qualifications & experience required:		# of Staff with this profile (WTEs²)

¹ Effort while in contact with staff

² WTE is the whole-time equivalent number. The number 1 indicates a fulltime person fully dedicated to the programme. 0.5 indicates a part-time person available to this programme half of the time.

Analysis of required learning effort											
(much of the remainder of this table must also be presented in the programme schedule—take care to ensure consistency)											
							Hours of Learner effort				
Delivery Mode	Classroom and demonstrations		Mentoring and small-group tutoring		Other (specify)		Directed e-learning	Independent learning	Other (specify)	Work-based learning	Total effort
	Hours	Minimum ratio teacher / learner	Hours	Minimum ratio teacher / learner	Hours	Minimum ratio teacher / learner					
Online	24	1:100	12	1:25				89			125

Allocation of Marks					
	Continuous Assessment	Supervised Project	Proctored Practical Exam.	Proctored Written Exam	Total
Percentage Contribution	40%			60%	100%

2.1.1 Module aims and objectives

This module aims to provide learners with the knowledge and skills around the complex issues of data management and governance in an organisational context, including ethical and compliance issues that these present. Learners will explore the ethical, legal, and social implications of using data-driven technologies such as big data, analytics, internet of things, and machine learning. The students will learn how to establish processes and systems that consider best practices for data governance and adhere to ethical and regulatory requirements for data handling.

2.1.2 Minimum intended module learning outcomes

Upon successful completion of this module, learners will be able to:

LO1 Demonstrate critical understanding of the governance and regulatory frameworks associated with the key data lifecycle stages for an effective management of data assets.

LO2 Demonstrate critical awareness and interpretation of the data privacy and data protection regulatory landscape in socio-technical environments.

LO3 Critically analyse and evaluate the main ethical, legal, and social implications of using data-driven technologies.

LO4 Investigate and appraise the interplay of fairness, accountability, and transparency in algorithmic decision-making systems and demonstrate awareness of technical solutions to enhance these concerns.

2.1.3 Rationale for inclusion of the module in the programme and its contribution to the overall IPLOs

The Data Governance, Compliance, and Ethics module will teach students best practices for data governance and adhere to ethical and regulatory requirements when handling data.

MIPLO		Contributing MIMLO
MIPLO1.		
MIPLO2.		

MIPLO3.		
MIPLO4.		
MIPLO5.		
MIPLO6.		

2.1.4 Information provided to learners about the module

2.1.5 Module content, organisation and structure

An indicative schedule of topics to be addressed each week is outlined below:

Topic	Lecture Topic	Lecture Detail
1	Data Governance and Data Management I	Data governance and data management; Data management principles; Data lifecycle; Data quality; Data provenance; Data integrity and security
2	Data Governance and Data Management II	Data governance frameworks; Data governance within the DAMA Wheel; Policies, principles, rules, procedures, and standards; Data governance operating models and tools
3	Data Governance and Data Management III	Roles and responsibilities; Maturity levels; Ladley's 8-phase implementation process for data governance; Data risk identification and management
4	Privacy and Data Protection I	Brief history of human rights; Privacy and confidentiality; Sources of rights: Universal declaration of human rights, European Convention on Human Rights, EU Charter of Fundamental Rights; Types of EU legislation
5	Privacy and Data Protection II	National law; General Data Protection Regulation Scope; Personal data; Legitimate bases for data processing; Data protection principles; Data subject rights; Privacy by design and by default
6	Privacy and Data Protection III	Data protection impact assessment; Issues of consent; Supervision and enforcement; Data protection in practice including international transfers, surveillance, cloud computing, and auditing
7	Ethical Issues Pertaining to Data I	Personal, professional, societal, and legal morality; Branches of normative ethics (deontology, utilitarianism, virtue theory, social justice, etc.); IT Ethics including spam, censorship and free speech, anonymity, cyberbullying, copyright, etc.
8	Ethical Issues Pertaining to Data II	Frameworks for ethical design and decision making (e.g., Ethical Impact Assessment, The data ethics canvas); Ethics in Research: considerations Before, During, and After; Codes of ethics and professional conduct (e.g., ACM)
9	Ethical Issues Pertaining to Data III	Ethic concerns in health technology, Pervasive monitoring and tracking; Image, video and sound capture; Perpetuity of data storage
10	Fairness, Accountability, and Transparency of Algorithmic Systems I	The meaning of fairness with respect to algorithmic systems; Unconscious Bias and techniques to address/reduce it; Perceptions of algorithmic bias and unfairness; Interventions to mitigate biases in systems, or discourage biased behaviour from users; Fairness-aware machine learning and data mining;

		Methods, tools, and standards for ensuring that algorithms comply with fairness policies (e.g., IEEE P7003 TM).
11	Fairness, Accountability, and Transparency of Algorithmic Systems II	The meaning of accountability with respect to algorithmic systems; Processes and strategies for developing accountable systems; Principles and frameworks for accountable algorithms.
12	Fairness, Accountability, and Transparency of Algorithmic Systems III	The meaning of transparency with respect to algorithmic systems; Trade-offs between privacy and transparency; Tools and methodologies for conducting algorithm audits (e.g., Algorithmic Impact Assessments).

2.1.6 Module teaching and learning (including formative assessment) strategy

2.1.6.1 Online

The blended teaching and learning strategy in the Data Governance, Compliance, and Ethics module will consist of

2.1.7 Work-based learning and practice-placement

Not Applicable

2.1.8 E-learning

2.1.9 Module physical resource requirements

2.1.10 Reading lists and other information resources

Recommended Book Reading

- DAMA International (2017). *DAMA-DMBOK: Data Management Body of Knowledge* (2nd ed.). Technics Publications. [ISBN:978-1634622349].
- Ladley, J. (2019). *Data governance: How to design, deploy, and sustain an effective data governance program*. Academic Press.
- Smallwood, R. F. (2019). *Information Governance: Concepts, Strategies and Best Practices*. Wiley. [ISBN: 978-1119491446].
- Sharma, S. (2019). *Data Privacy and GDPR Handbook*. Wiley. [ISBN: 978-1119594246].
- O'Keefe, K. & O'Brien, D. (2018). *Ethical Data and Information Management*. Kogan Page. [ISBN: 978-0749482046].
- Barocas, S., Hardt, M. and Narayanan, A., (2019). *Fairness and Machine Learning: Limitations and Opportunities*. fairmlbook.org.

Supplementary Book Reading

- Kearns, M. & Roth, A. (2019). *The Ethical Algorithm: The Science of Socially Aware Algorithm Design*. Oxford University Press. [ISBN: 978-0190948207].
- Tavani, H. T. (2015). *Ethics and Technology: Controversies, Questions, and Strategies for Ethical Computing*. Wiley. [ISBN: 978-1119355311].
- West, S.M., Whittaker, M. and Crawford, K., 2019. *Discriminating systems*. AI Now.
- Eberhardt, J.L., 2020. *Biased: Uncovering the hidden prejudice that shapes what we see, think, and do*. Penguin Books. [978-0735224957]

2.1.11 Specifications for module staffing requirements

This module requires a lecturer holding a Master's degree or higher, in a cognate discipline.

2.1.12 Module summative assessment strategy

The summative assessment strategy is shown in the Table below.

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formative Assessment	Formative assessment will be provided on the in-class individual or group activities. Feedback will be provided in written or oral format, or on-line through Moodle. In addition, in class discussions will be undertaken as part of the practical approach to learning.	LO1, LO2, LO3, LO4	N/A	Ongoing
Continuous Assessment	This assessment will assess learners' insights and evaluation of ethical issues relating to both their own research work and other situational contexts and scenarios. Students will work in groups.	LO1, LO2, LO3	40%	Week 10
Terminal Examination	The examination will be of two hours duration and may include a mix of: theoretical, applied and interpretation questions.	LO1, LO2, LO3, LO4	60%	

2.1.13 Sample assessment materials