

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	DSAI5R09
Subject Title	Academic Integrity and Ethics in Computer and Mathematical Sciences
Credit Value	1
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	<ol style="list-style-type: none"> 1. Raise students' awareness of the importance of academic integrity and research. 2. To enable students to develop deeper understanding of Data Science and AI and enhance students' ability to critically analyse ethical issues and make ethical decisions.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> (a) Understand basic concepts and principles of academic integrity and research ethics. Demonstrate awareness and ability to analyse academic integrity and ethical issues. (b) Recognise important ethical issues and practices in a university context. Avoid major misconduct in academic integrity and research ethics, e.g., fabrication, falsification, and plagiarism. (c) Understand the implications and concerns on academic integrity raised by the latest technology, and recognise ethical practices in the data processing and result reporting. (d) Analyze and address complex ethical and professional issues within the discipline, and articulate them effectively to stakeholders and the public.
Subject Synopsis/ Indicative Syllabus	<ul style="list-style-type: none"> • Introduction to Computer and Mathematical Sciences Ethics – Ethical theories, decision-making frameworks, and the societal impact of data-driven technologies; why integrity matters in data science. • Academic Integrity and Misconduct – Plagiarism, data fabrication/falsification, code theft; responsible authorship, citation of datasets and code; consequences and prevention. • Collaboration and Authorship – Fair credit in team projects; defining contributions in papers, code repositories, and competitions; handling disputes. • Privacy, Consent, and Human Subjects – Informed consent, anonymization, de-identification; GDPR and IRB essentials for data involving people.

	<ul style="list-style-type: none"> • Bias, Fairness, and Discrimination – Sources of bias in data and models; fairness metrics; auditing and mitigating harmful outcomes; real-world case studies. • Intellectual Property and Open Science – Licensing datasets and code (MIT, GPL, CC); copyrights vs. patents in algorithms; balancing openness and protection. • Artificial Intelligence (AI) and GenAI Research Discuss current pitfalls of AI research and usages of AI platforms for research. • Ethical Use of AI and Generative Tools – Hallucinations, bias amplification, plagiarism risks; transparency, accountability, and regulations; responsible use in assignments and research. 																												
Teaching/Learning Methodology	Lectures: Formal classroom lectures will be given to introduce the concepts of research ethics in Computer and Mathematical Sciences. Principles and examples will be explained to highlight the ethical issues. Students need to achieve 100% attendance in the lectures to pass the subject.																												
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" data-bbox="534 943 1393 1494"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Quizzes on discipline-related scenario/case analysis</td> <td>50 %</td> <td>✓</td> <td></td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Assignment on discipline-related scenario/case analysis</td> <td>50 %</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="4"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Quizzes: Students will complete an online quiz after each lecture to show their understanding of the teaching material. They assess the intended learning outcomes (a)-(d).</p> <p>Individual assignment on discipline-related case analysis: this will encourage students to learn Computer and Mathematical Sciences ethics and academic integrity via analyses of real problems/projects. It assesses the intended learning outcomes (a), (b) and (d).</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	1. Quizzes on discipline-related scenario/case analysis	50 %	✓		✓	✓	2. Assignment on discipline-related scenario/case analysis	50 %	✓	✓		✓	Total	100 %				
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	▪ Self-study	12 Hours
	▪ Project preparation	10 Hours
	Total student study effort:	35 Hours
Reading List and References	<p>References:</p> <ul style="list-style-type: none"> • Leontidis, G. (2024). Science in the age of AI: how artificial intelligence is changing the nature and method of scientific research. The Royal Society. • Lance Eliot (2023). <i>Generative AI ChatGPT And AI Ethics</i>, Lance B. Eliot. • Rettinger, D. A. & Gallant, T. B. (2022). Cheating academic integrity: lessons from 30 years of research. Wiley. • Iphofen, R. (2020). Handbook of research ethics and scientific integrity. Springer. • Saxena, A. (2019). Ethics in science: pedagogic issues and concerns. Springer. • Bretag, T. (2016). Handbook of academic integrity. Springer Singapore. • Comstock, G. (2012). Research ethics: a philosophical guide to the responsible conduct of research. Cambridge University Press. • Cotton, D. R., Cotton, P. A. & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. <i>Innovations in Education and Teaching International</i>, 1-12. https://doi.org/10.1080/14703297.2023.2190148 	