Subject Description Form

Subject Code	DSAI3911
Subject Title	Professionalism and Ethics in Data Science and AI
Credit Value	2
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	The objectives of this subject are to: 1. Understand key legal principles and regulations impacting data science and AI. 2. Identify the roles and responsibilities of data scientists, AI professionals, and legal experts in ensuring compliance and accountability. 3. Develop strategies to align technical projects with legal and professional standards.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. be aware of the potential ethical issues in DSAI, and discuss how professionalism and ethics are manifested in the practices of DSAI; b. develop personal strategies for staying current with professional standards, industry trends and developments in the DSAI field; c. communicate effectively both verbally and in writing as a professional in DSAI; d. develop the basic skills to work independently to solve routine problems and conduct reviews of DSAI related topics; e. think and reason critically, especially on different issues related to DSAI.
Subject Synopsis/ Indicative Syllabus	• Data Ethics & Fairness in Data Science - Bias detection in datasets; Fairness metric • Privacy-Preserving Data Science - Anonymization techniques; Implementation • Explainability & Model Documentation • Data Analysis Reports - Frameworks/structures of data analysis reports; Proper references • Other Selected Topics (e.g., Case studies; Introduction of legal and technical skills for data scientists)
Teaching/Learning Methodology	This subject highlights the ethical and legal dimensions of the computing profession. It aims to equip students with both theoretical knowledge and practical experience in addressing ethical, technological, and legal challenges in Data Science and Artificial Intelligence (DSAI). The lectures will cover fundamental concepts and offer guidance on executing data science projects.

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<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="5">Intended subject learning outcomes to be assessed</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td></tr>
<tr><td>Continuous Assessment</td><td>100 %</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="5"></td></tr>
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Continuous Assessment comprises of individual assignment, quiz and group project.
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<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lecture</td><td>26 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Assignments, Quizzes, Projects</td><td>44 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>70 Hrs.</td></tr>
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<tr><td>Reading List and References</td><td>

Barocas, S. et al. (2023). Fairness and Machine Learning: Limitations and Opportunities.
Mehrabi et al. (2024). A Survey on Bias and Fairness in Machine Learning – ACM Computing Surveys
Jobin, A., Ienca, M., & Vayena, E. (2019). The Global Landscape of AI Ethics Guidelines. Nature Machine Intelligence.
Dwork, C. & Roth, A. (2023). The Algorithmic Foundations of Differential Privacy. (2nd Ed.)
Molnar, C. (2024). Interpretable Machine Learning. Online Book.

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