

## Subject Description Form

Subject Code	DSAI1201					
Subject Title	Introduction to Data Analytics					
Credit Value	3					
Level	1					
Pre-requisite/ Co-requisite/ Exclusion	Nil					
Objectives	<p>The objectives of this subject are to:</p> <ol style="list-style-type: none"><li>1. understand data analytics concepts;</li><li>2. apply data analytics tools; and</li><li>3. strengthen students’ mathematics background for computing</li></ol>					
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <p><u>Professional/academic knowledge and skills</u></p> <ol style="list-style-type: none"><li>(a) understand basic data analytics concepts;</li><li>(b) manipulate, analyse and visualise data; and</li><li>(c) understand and apply related mathematics operations</li></ol>					
Subject Synopsis/ Indicative Syllabus	<table><tr><th>Topic</th></tr><tr><td><b>1. Data Analytics Basics</b>  Defining data requirements, collecting data, processing data, cleaning data and analysing data</td></tr><tr><td><b>2. Data Processing</b>  Data manipulation, data analysis, data visualisation</td></tr><tr><td><b>3. Statistical Analysis</b>  Basic statistical functions, linear regression, time series analysis</td></tr><tr><td><b>4. Linear Algebra and Calculus</b>  Vector basics, matrix basics, differentiation, integration, finding maxima and minima</td></tr></table> <p>The aforementioned topics will be taught with the aid of a suitable programming language such as R.</p>	Topic	<b>1. Data Analytics Basics</b>  Defining data requirements, collecting data, processing data, cleaning data and analysing data	<b>2. Data Processing</b>  Data manipulation, data analysis, data visualisation	<b>3. Statistical Analysis</b>  Basic statistical functions, linear regression, time series analysis	<b>4. Linear Algebra and Calculus</b>  Vector basics, matrix basics, differentiation, integration, finding maxima and minima
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Teaching/Learning Methodology	Lectures on data analytics and mathematics concepts (e.g., using R) will be given through lectures. There will be in-class activities for active learning. Hands-on lab/exercises will be arranged for students to practice data analytics tools. Students will also be required to study e-learning materials.				
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed		
			a	b	c
	Continuous Assessment	55%			
	1. Assignments, Test, Quizzes		✓	✓	✓
	Examination	45%	✓	✓	✓
	Total	100%			
	The assignments/test/quizzes (individual assessment) are used to assess learning outcomes (a) – (c) (e.g., how to apply R). Finally, students are assessed by a formal examination, covering learning outcomes (a) – (c).				
Student study effort expected	Class Contact:				
	▪ Class/ Learning Activities			39 Hrs.	
	Other student study effort:				
	▪ Self-study, Assignments, e-Learning			66 Hrs.	
	Total student study effort			105 Hrs.	
Reading list and References	<b>Reference Books:</b>  1. Beecher, K., <i>Computational Thinking</i> , BCS, 2017. 2. Teetor, P., <i>R Cookbook</i> , O’Reilly Media, 2011. 3. Wickham, H. and Grolemond, G., <i>R for Data Science</i> , O’Reilly Media, 2017. 4. Boyd, S. and Vandenberghe, L., <i>Introduction to Applied Linear Algebra</i> , Cambridge University Press, 2018. 5. Stewart, J., <i>Calculus: Early Transcendentals</i> , 8 <sup>th</sup> Edition, Cengage Learning, 2015.				