Subject Code	MM6425
Subject Title	Data Science and Business Analytics
Credit Value	3
Level	6
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject contributes to the achievement of the programme outcome by sharpening students' ability to conduct applied research and innovation by critically applying knowledge and scientific skills within their academic discipline and formulating sophisticated solutions as critical thinkers (Outcome 1). The subject aims to equip students with knowledge and practical skills in basic statistics, regression analysis, and data mining applications in business. The course emphasizes hands-on learning over theoretical concepts. Key topics include data exploration techniques, statistical inference, regression, and introductory machine learning techniques. Students will also gain practical experience through Python programming exercises. This subject is particularly valuable for those who plan to conduct quantitative research for their dissertations, as well as for those who aim to leverage data science to derive data-driven insights for business and industry applications.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. identify and translate real-world business challenges into analytics problems; b. implement effective data science strategies to address business management problems; c. determine appropriate data science techniques for solving management problems and conducting academic research; d. better understand the relationship between theory-building and theory-testing in research; e. identify, evaluate, and leverage business analytics opportunities to create value.
Subject Synopsis/ Indicative Syllabus	• Introduction to statistical concepts, data description, and data exploration • Statistical inference, hypothesis testing, and regression analysis • Overview of machine learning methods • Hands-on experience with Python programming
Teaching/Learning Methodology	This subject will use a combination of lectures, discussions, and tutorials. Mini-group discussions and projects will engage students in solving real-world business problems, with reports submitted at the end of the term. Hands-on experience with business analytics tools and programming will enhance students' understanding of the applications of modern business analytics technologies.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
Continuous Assessment*	**100%**					
1. Class participation	20%	✓	✓	✓	✓	✓
2. Individual assignment	40%	✓	✓	✓	✓	✓
3. Group project	40%	✓	✓	✓	✓	✓
Total	100 %					

**Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.*

To pass this subject, students are required to obtain Grade D or above in the overall subject grade.

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the various methods are designed to ensure that all students taking this subject have a balanced learning experience. Individual assignment and group project will require students to apply business analytics principles and methods to handle business problems.

Student Study Effort Expected

Class contact:	
▪ Lectures / laboratories	30 Hrs.
Other student study effort:	
▪ Preparation for lectures / laboratories	30 Hrs.
▪ Preparation for assignment / group project and presentation	60 Hrs.
Total student study effort	120 Hrs.

Reading List and References	Reference Books Provost, F., & Fawcett, T. (2013). *Data Science for Business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media, Inc. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An Introduction to Statistical Learning: with Applications in R*. New York: springer. Shmueli, G., Bruce, P. C., Gedeck, P. G., & Patel, N. P. (2019). *Data Mining for Business Analytics: Concepts, Techniques and Applications in Python*. John Wiley & Sons. Evans, J. (2021). *Business Analytics: Methods, Models, and Decisions (3rd ed.)*. Harlow: Pearson. Academic Journals *Information Systems Research* *MIS Quarterly* *Management Science* *Marketing Science* *Journal of Marketing Research* *Journal of Consumer Research*

July 2025