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Class Meetings:	Monday(14:30 - 17:30, LCH115)
	Jan: 15, 22, 27
	Feb: 5, 19, 26
	March: 4, 11, 28, 25
	April: 8, 15, 22, 29
Consultation Hours:	By appointment

Brief Course Description:

In the age of Big Data, marketing analytics increasingly plays an important role in business decision making. Big data marketing analytics improves the quality of marketing decision making by helping firms better understand their customers and competitors. This course introduces students to state-of-the-art big data and marketing analytics to generate business insights, demonstrates how to practically apply these analytical skills to real-world business decisions, and provides the skills needed to make intelligent use of marketing data in making recommendations about marketing strategies. These skills are learned through a combination of lectures, assignments, in-class exercises, and projects with real data.

Aims:

This course aims to:

1. Introduce students to fundamental theories, concepts, and approaches in big data marketing.

2. Equip students with data analytical tools to address marketing analytics problems through extracting, visualizing, and building models to analyse marketing data.

3. Enable students to professionally present ideas about data analytics for solving marketing problems

Indicative Content:

1. Course Introduction
2. Python Basics
3. Statistic Basics
4. Descriptive analytics I: Processing Data Using Pandas
5. Descriptive analytics II: Visualizing Data Using Matplotlib
6. Linear regression and Marketing Planning: Simple Regression
7. Linear Regression and Marketing Planning: Multiple Regression
8. Machine Learning and Customer Relationship Management: Classification I
9. Machine Learning and Customer Relationship Management: Classification II
10. Machine Learning and Customer Relationship Management: Clustering
11. Text Mining I
12. Text Mining II

Learning Outcomes:

On successfully completion of this course, students are expected to:

1. Apply the concepts and theories to the analysis of marketing problem and big data application. (LO1)
2. Develop necessary analytical skills to solve key marketing problems and data issues. (LO2)
3. Describe the data-handling methods used to make marketing decisions and apply these techniques to propose marketing problems involving new product design, consumer segmentation, targeting, and positioning, as well as pricing and product decisions. (LO3)
4. Make marketing recommendations based on rigorous analysis and on sound reasoning. (LO4)

Measurement of Learning Outcomes

1. Class discussions and In-class exercises, in the form of quizzes, case studies, and response exercise measure students' ability to explain concepts and apply appropriate analytical skills to given research problems and types of customer data (LO1, 3).

2. Individual assignment requires students to analyse a big data marketing problem and assesses their understanding of the key concepts of marketing analytics (LO1, 2, 3)

3. Group project requires students to create, design, and analyse a data-driven marketing problem. The objective of the project is to demonstrate student's ability to apply and integrate the various data-driven techniques and marketing analytics concepts to develop effective strategies for a sustained and successful business. (LO 1, 2, 3, 4)

4. Final examination is designed to evaluate students' general knowledge of fundamental data-driven business and marketing analytical skills and concepts, and ability to apply this knowledge in a various marketing application such as product design and customer segmentation. (LO 1, 2, 3, 4)

Measurement Criteria to Assess Learning Outcomes

Measurement of Learning Outcomes	Weights	Learning Outcomes			
		LO1	LO2	LO3	LO4
In-class exercise/ quizzes/ case studies (including attendance)	20%	√		√	
Individual Assignment	20%	√	√	√	
Group project	30%	√	√	√	√
Final examination	30%	√	√	√	√

<u>Assessment</u>

The assessment is based on continuous assessment (both individual assignment and group projects), in-class exercise, and final examinations.

Attendance	5%
In-class exercise / quizzes/ case studies discussion (excluding attendance)	15%
Individual Assignment	20%
Group project	30%
Final examination	30%
Total	100%

Required/Essential Readings

1. Vanderplas, Jake. _A Whirlwind Tour of Python._ " O'Reilly Media, Inc.", 2016.
   https://github.com/jakevdp/WhirlwindTourOfPython?tab=readme-ov-file

2. VanderPlas, Jake. _Python data science handbook: Essential tools for working with data._ " O'Reilly Media, Inc.", 2016..
   https://jakevdp.github.io/PythonDataScienceHandbook/

3. James, Gareth, et al. _An introduction to statistical learning. Vol. 112. New York: springer, 2013._ https://www.statlearning.com/
   .

Recommended/Supplementary Readings:

1. Provost, Foster, and Tom Fawcett. _Data Science for Business: What you need to know about data mining and data-analytic thinking. " O'Reilly Media, Inc.", 201_

2. 王汉生，王菲菲著 _商务统计学基础：从不确定性到人工智能. 北京大学出版社_

3. 王汉生编著. _数据思维: 从数据分析到商业价值. 中国人民大学出版_

4. Wasserman, Larry. _All of statistics: a concise course in statistical inference. Springer Science & Business Media, 2004._

Course Assessment:

1. **Group project (30%: project presentation and report)**:
A professional marketer can well promote and communicate the benefits of products or services to customers, and at the same time make and implement effective marketing strategies that bring the beneficial outcome to businesses. This assignment is designed to help students deepen their understanding of the big data strategies used by companies to evaluate and improve their business outcomes such as to increase companies' sales performance, to acquire and maintain customers, and to boost online word of mouth, etc. There is no restriction on the scope and presentation of your research and analysis. Each group can choose a particular company, or brand, or marketing campaign, AND investigate appropriate

big data strategies for it. The deliverable is a PowerPoint presentation with a description of the findings, to be presented during the class. Please organize yourselves into groups of **6~7 people** each, and then nominate your topics by sending an email to me before **24:00, 2ⁿᵈ Mar**. The form should contain the name, student ID, email address and the top three preferred choices of the project topic, you will be allocated your first choice of topic if it is still available. A brief proposal should be emailed to me before **24:00, 16ᵗʰ Mar**. The project presentation date and group project report are scheduled on **22ᵗʰ and 29ᵗʰ Apr**. Peer Evaluation may be conducted to ensure equitable contribution from group members.

Individual Assignment (20%): An individual assignment covering the material covered in the initial weeks of the course and covering materials from the associated book chapters will be distributed to students. The due dates of this assignment will be specified when distributed.

In-class exercise/ quizzes/ case studies (including attendance, 20%): Students are encouraged to participate in class discussions. A few cases are selected for this purpose. Students are expected to apply marketing concepts to solve realistic business problems and analyze cases which are selected from both the textbook and the industry.

Final Examination (30%): There will be a two-hour written examination at the end of the term. The exam paper will normally consist of case studies and a couple of essay type questions.

Important Notes:

1. Students are expected to spend a total of 9 hours (i.e. 3 hours of class contact and 6 hours of personal study) per week to achieve the course learning outcomes.

2. Students shall be aware of the University regulations about dishonest practice in course work, tests and examinations, and the possible consequences as stipulated in the Regulations Governing University Examinations. Plagiarism, being a kind of dishonest practice, is "the presentation of another person's work without proper acknowledgment of the source, including exact phrases, or summarized ideas, or even footnotes/citations, whether protected by copyright or not, as the student's own work". Students are required to strictly follow university regulations governing academic integrity and honesty.

3. Students are required to submit writing assignment(s) using Turnitin.

4. To enhance students' understanding of plagiarism, a mini-course "Online Tutorial on Plagiarism Awareness" is available on https://pla.ln.edu.hk/.

Appendix 1. Assessment Rubrics - In-class Exercise, Quizzes, and Case Studies
(including attendance, 20%)

Traits	Mastering (8 – 10 marks)	Developing (5 – 7 marks)	Emerging (0 – 4 marks)	Marking Weight
Attendance	Full, punctual attendance in class and mandatory seminars	Occasional absences or lateness from class or mandatory seminars	Frequent or recurring absence or lateness from class or mandatory seminars	25%
Participation	Communicates ideas effectively in both individual exercises and group discussions. Shows ability to raise questions and think critically. Displays an active level of class participation	Shows fair command all aspects of the course, with the ability to describe important concepts and applications in marketing analytics	Lack of participation or active disruption of class and group activities. Demonstrates poor ability to raise question and think critically	75%
Total	**Total Marks = (Marks obtained for each criterion) x (weight for each criterion)**			**100%**

Appendix 2. Assessment Rubric for Individual Assignment (20%)

	Mastering (8 – 10 marks)	Developing (5 – 7 marks)	Emerging (0 – 4 marks)	Marking Weight
Answers the questions with references to marketing analytics or concepts.	Demonstrate a good mastery of both the theoretical and practical aspects of marketing analytics and understand of marketing analytics concepts and techniques	Demonstrate a basic level of understanding of the theoretical and practical aspects of marketing analytics, concepts, and techniques	Show little understanding of the theoretical and practical aspects of marketing analytics and concepts	20%
Display an ability to conduct appropriate analysis to the business applications	Able to conduct marketing analytics and use appropriate methods according to application requirements, using system tools	Able to conduct marketing analytics according to some of the application requirements, though some answers are incorrect	Unable to provide solutions to simple problems which require basic understanding of marketing concepts	30%
Displays an ability to practically apply analytical skills and make reasonable conclusion	Able to draw on a variety of relevant knowledge and concepts and apply them to solve marketing analytics problems, resulting in effective solution	Able to make use of some, but not all relevant knowledge and concepts and apply them to solve marketing analytics problems	Unable to apply marketing analytics concepts and techniques to solve practical problems	40%
Ability to answer questions clearly	Answers are logical, well-structured, clearly presented, with few grammatical errors.	Answers are fairly presented, with some confusion in structure or writing style.	Answers are poorly written and poorly structured that makes it difficult to follow and comprehend.	10%
Total	**Total Marks = (Marks obtained for each criterion) x (weight for each criterion)**			**100%**

Appendix 3. Assessment Rubric for Group Project (30%)

Traits	Mastering (8 – 10 marks)	Developing (5 – 7 marks)	Emerging (0 – 4 marks)	Marking Weight
Clear statement of research scope and identification of analytical techniques	Identifies clearly and lays down how the research has been conducted	Identifies clearly but unclear about how the research has been conducted	Does not identify clearly or does not state how research was conducted	10%
Students accurately propose a comprehensive plan on how intelligence data could be collected and analyzed to improve the outcomes of the marketing initiatives	Clear and concise marketing plan of current marketing strategy and incorporate all relevant information and uses minimal amounts of irrelevant information	Uses much relevant information, but omits some important information or incorporates a notable amount of unnecessary information.	Fails to utilize a substantial amount of relevant information	20%
Students reasonably and effectively formulate and discriminate the marketing intelligence analytical techniques to solve given marketing problems	Correctly utilizes all expected appropriate marketing analytical tools	Correctly use appropriate marketing analytics methods, but misuses some operations	Fails to correctly use a majority of expected or appropriate analytical tools	25%
Students show well-rounded knowledge in identifying most appropriate existing technique and make correct interpretation	Interpretation clearly and logically follows from prior relevant analysis	Interpretation is clear, generally follows from prior analysis, and uses relevant analysis	Interpretation is incorrect, does not logically follow from prior analysis, or is based on analysis with limited relevance	20%

Students deliver a professional written report of their findings	A fully professional business report with good formatting, use of tables and charts, referencing and appendices	A satisfactory business report although missing some key elements or lacking in structure or grammar	A poor report, confusing in structure or grammar. Fails to provide adequate tables, charts, referencing or appendices	10%
Students deliver a professional well-structured presentation of their findings	A smooth, well-structured presentation with clear data and conclusions. Well-handled answers to questions	A satisfactory presentation although with mistakes in data presented or showing signs of lack of preparation.	A poor presentation that displays a clear lack of preparation and significant flaws in information presented	15%
Total	**Total Marks = (Marks obtained for each criterion) x (weight for each criterion)**			**100%**

Appendix 4. Assessment Rubric for Final Exam (30%)

Traits	Excellent A A-	Satisfactory B+ B B-	Fair C+ C C- F	Marking Weight
Indicators	Mastery of course materials. Able to apply concepts to business situations and express ideas clearly and logically	Knowledge of most topics but with gaps in ability to apply concepts or weaknesses in ability to express ideas	Serious deficiency in knowledge with inability to apply concepts or to express ideas	
Test Score	80-100	50-79	<49	100%
Total	**Total Marks = (Marks obtained for each criterion) x (weight for each criterion)**			**100%**