

Macao Polytechnic University
Faculty of Applied Sciences
Master of Science in Big Data and Internet of Things

Module Outline

Academic Year 2022/2023 Semester 2

Learning Module	E-commerce with Big Data		Class Code	COMP6126
Pre-requisite(s)	Nil			
Medium of Instruction	English		Credit	3
Lecture Hours	45 hrs	Lab/Practice Hours	0 hrs	Total Hours 45 hrs
Instructor	Wuman Luo		E-mail:	luowuman@mpu.edu.mo
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Description

Recent advances in information and communication technologies (ICTs) have led to the rapid explosion of consumer and user data. Business intelligence derived from big data can help firms to better understand market needs, develop new products and services, improve operational efficiency, and acquire competitive advantages. This learning module provides an overview of common big data applications and analysis techniques (e.g., market basket analysis, sentiment analysis, decision tree, clustering, etc.) in business and discusses some implementation issues related to big data projects. As part of a group project, students will need to demonstrate the ability to come up with a business plan based on a given case study and a relevant data set.

Learning Outcomes

After completing the learning module, students will be able to:

1. Understand the processes involved in preparing big data for analytics in a typical business setting. (ET2fl, EP2fl)
2. Acquire some commonly used data mining techniques in e-commerce. (SM1fl, SM3fl, ET2fl)
3. Make use of business intelligence to support business decisions. (D2fl, D3fl, ET2fl, EP4fl)
4. Evaluate ethical and privacy issues related to data mining. (ET1fl, ET5fl, ET6fl)

Content

1. Introduction to Data-Analytic Thinking (4 hours)
 - 1.1 Overview of Big Commerce Data
 - 1.2 Data Science
2. Data Modeling for E-Commerce (12 hours)
 - 2.1 Decision Trees and Bayesian Classifier
 - 2.2 Linear Regression and Logistic Regression
 - 2.3 Support Vector Machine
 - 2.4 Overfitting Issues
3. Similarity, Neighbors and Clusters (12 hours)
 - 3.1 K-Means Clustering
 - 3.2 Hierarchical Clustering Methods
 - 3.3 Model-Based Clustering and Density-Based Clustering
 - 3.4 Subspace Clustering
4. Other General Data Mining Techniques (12 hours)
 - 4.1 Association Rules
 - 4.2 Stream Mining and Web Databases
 - 4.3 Multi-criteria Decision Making
5. Decision Analytic Thinking (5 hours)
 - 5.1 Business Problems and Data Science Solutions
 - 5.2 Model Performance Evaluation
 - 5.3 Ethical Issues of Data Mining

Teaching Method

Lectures and case discussions.

Attendance

Attendance requirements are governed by the “Academic Regulations Governing Master’s Degree Programmes” of Macao Polytechnic University. Students who do not meet the attendance requirements for the module will not be permitted to sit the final examination and shall be awarded an ‘F’ grade.

Assessment

This module is graded on a 100 point scale, with 100 being the highest possible score and 50 the pass score.

Item	Description	AHEP3 LO	Percentage
1. Assignments	Class exercises	ET2fl, EP2fl, ET5fl, ET1fl, ET6fl	10%
2. Test	Knowledge assessment	ET2fl, EP2fl, SM1fl, ET1fl	25%
3. Group Project	Knowledge expansion	ET2fl, EP2fl, SM1fl, ET5fl, ET6fl, SM3fl, D2fl, D3fl, ET5fl, EP4fl	25%
4. Examination	3-hour written examination	ET2fl, EP2fl, SM1fl, ET1fl, ET5fl, ET6fl	40%
Total Percentage:			100%

Students with an overall score of less than 35 in the coursework will fail the module even if the overall score for the module is 50 or above.

Students with a score of less than 35 in the final examination will fail the module even if the overall score for the module is 50 or above.

Teaching Material(s)

Textbook(s)

1. Foster Provost, Tom Fawcett (2013). *Data Science for Business: What You Need to Know About Data Mining and Data Analytic Thinking* (1st Edition), O'Reilly Media, Inc.

Reference

Reference book(s)

1. Jeffrey D. Camm James J. Cochran Michael J. Fry author Gale Group. (2017), *Essentials of Business Analytics*, Cengage Learning.
2. Han Jiawei, Kamber Micheline, Pei Jian (2011). *Data Mining: Concepts and Techniques*, Elsevier Science.
3. Dimitris Bertsimas, Allison K. O'Hair, and William R. Pulleyblank (2016), *The Analytics Edge*, Dynamic Ideas.