FACULTY OF BUSINESS

BACHELOR OF E-COMMERCE

LEARNING MODULE OUTLINE

Academic Year	2025 / 2026	Semester	2
Module Code	ECOM3140 - 321		
Learning Module	Business Intelligence		
Pre-requisite(s)	Nil		
Medium of Instruction	English		
Credits	3	Contact Hours	45
Instructor	Billy Yu	Email	billyyu@mpu.edu.mo
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MODULE DESCRIPTION

This course includes data warehousing, data mining, business performance management, predictive analysis, online analytical processing. Data techniques are becoming indispensable in business. A warehouse is designed to facilitate reporting and analysis while data mining is the key part of the analysis. This course begins with the architecture for such warehousing followed by its design methodologies. Then the data mining sections are more practical. It focuses on the use of tools as in analytical CRM as well as the mechanisms behind.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	explain concepts of machine learning (ML)
M2.	use SAS® Viya® for ML purposes
M3.	explain and use appropriate model for analysis
M4.	compare working mechanisms of various models
M5.	propose their choice of models for analysis

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs	**M1**	**M2**	**M3**	**M4**	**M5**
P1. Demonstrate an understanding of the business processes and operations and the skillful realization of information technologies required to practice electronic commerce;	✓	✓			✓

P2. Apply knowledge in business, mathematics, programming, computing, web development, and database to address complex problems in the context of electronic commerce;		✓		✓	✓
P3. Analyze critically the effect of web technology use on organizational performance and develop electronic commerce strategies that fit organizational objectives;					
P4. Select and apply tools and technologies to effectively implement electronic commerce systems in business intelligence, enterprise resources planning, supply chain management, and customer relationship management;				✓	✓
P5. Develop relationships, motivate others, manage conflicts, lead changes, and work across differences in multi-disciplinary electronic commerce projects;					
P6. Communicate and work effectively using written and spoken word, non-verbal language, and electronic tools with fellow professionals and different stakeholders in the electronic commerce industry;					
P7. Demonstrate a global electronic commerce perspective as evidenced by an understanding of foreign languages and the role of Macau as an interface between the East and the West;					
P8. Cope with and manage contemporary advancement related to electronic commerce development and demonstrate lifelong learning attitudes and abilities;			✓		✓
P9. Conduct research and devise innovative electronic commerce models to exploit business opportunities; and			✓	✓	
P10. Reflect on professional responsibilities and keep up with the latest electronic commerce issues on legal, environmental, ethical, and societal considerations to benefit society comprehensively.	✓		✓		

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1	Chapter 1 Introduction - An Introduction and DM project overview Chapter 2 Introduction to CRM - Introduction to BPM and BI	3 hours
2	Chapter 2 Analytical CRM - Analytical CRM, modeling, data warehousing and OLAP	3 hours
3	Chapter 3 Basic of analysis - Predictive modeling using regression	3 hours
4	Chapter 4 Decision Trees - Predictive Modeling Using Decision Trees	3 hours
5	Chapter 5 Decision Trees - Working mechanism of Gini in Decision Trees	3 hours
6	Chapter 5 Preprocessing - Data preprocessing and filtering	3 hours
7	Chapter 6 Data Preview	3 hours

	- Data Profiling for analysis	
8	Midterm Exam - Reviewing midterm exam result and briefing for project presentations	3 hours
9	Project Demo - Project audit, comments and corrections	3 hours
10	Chapter 7 Neural Networks - Predictive Modeling Using Neural Networks	3 hours
11	Chapter 8 Model Comparison and data pipeline - Model Evaluation and visual pipeline	3 hours
12	Chapter 9 Scoring - Scoring data and cluster analysis	3 hours
13	Chapter 10 Unsupervised learning - Association and Sequence Analysis	3 hours
14	Project Presentation	3 hours
15	Final examination	3 hours

TEACHING AND LEARNING ACTIVITIES

Students are required to prepare for and actively participate in lectures. Other than passive listening, they are expected to practice, take notes and ask questions in class. The projects expect students to be creative. Students should apply the module material as well as knowledge from other subjects for their group project. For the examination preparation, they are encouraged to study in group discussions with all sorts of reference materials, including videos. Students are also strongly encouraged to participate in class learning activities. As mature university students, they should demonstrate the efforts to think and answer questions in classes and show active learning attitude. In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	**M1**	**M2**	**M3**	**M4**	**M5**
T1. Lectures: related management theories, concepts, and approaches will be presented using multimedia instructional materials. Q&A: It allows interactions between instructor and among students.	✓	✓	✓	✓	✓
T2. Project: 5 to 7 students will be required to work as a group to complete a group project. This group project will be designed to promote students intellectual, social and presentation skills and help to prepare them for the real world in which teamwork and collaboration are important. Q&A: It allows interactions between instructor and among students.		✓	✓	✓	✓
T3. Preparation: Students must read teaching materials before coming to the class. They will be asked to work on problems or respond to key conceptual issues during the class hour. - Midterm exam will be given to students in order to motivate them to review what they have learned.	✓	✓	✓		

ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing [Doctoral/Master's/Bachelor's] Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	**Weighting (%)**	**ILOs to be Assessed**
A1. Project	35	M2 – M5
A2. Midterm	25	M1, M3, M4
A3. Examination	40	M1, M3 - M5

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits. Project is not assignment. Students are required of their critical thinking, problem solving skills, collaboration, and various forms of communication. To answer a driving question and create high-quality work, students need to do much more than remember information. They need to use higher-order thinking skills and learn to work as a team. (ref. https://www.pblworks.org/what-is-pbl)

MARKING SCHEME

	Assessment Tasks	Criteria	Excellent (A, A-)	Very Good, Good (B+, B, B-)	Satisfactory (C+, C, C-)	Pass (D+, D)	Fail (F)
			88-100	73 - 87	58 - 72	50 - 57	0 – 49
1.	Group Project	Demonstrate the **understanding** of the subject and the **ability** to solve problems with articulated arguments in well-organized oral presentation and written report	High	Significant	Moderate	Basic	Not even reaching marginal levels
2.	Mid-term test and Final examination	Demonstrate the **ability** to **identify, apply** and **compare**	High	Significant	Moderate	Basic	Not even reaching

		appropriate concepts, methods and techniques					marginal levels

REQUIRED READINGS

Textbook(s)

1. Fortino, A. (2023). Data mining and predictive analytics for business decisions: a case study approach. Mercury Learning and Information, ISBN 9781683926733
2. Sarma, Kattamuri S. (2018) Predictive Modeling with SAS® Enterprise Miner™: Practical Solutions for Business Applications, Third Edition, SAS Publishing, ISBN 1635268958.
3. SAS Publishing (2019) Exploring SAS® Viya®: Visual Analytics, Statistics, and Investigations, SAS Publishing ISBN 978-1-64295-453-1.

REFERENCES

1. López, César Pérez (2021) Predictive models to risk analysis with neural networks, regression, and decision trees, Lulu.com, ISBN 100897952X.

STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.

Note:

1. The above class schedule is tentative and subject to change depending on the progress of the students.
2. Students are responsible for ALL materials covered in class AND in the textbook.