

Macao Polytechnic Institute

School of Applied Sciences

Master of Science in Big Data and Internet of Things

Module Outline

Academic Year 2020 / 2021 Semester 2

Learning Module	Selected Topics I: Frontiers in Data Sciences and Business Analytics		Class Code	COMP6105
Pre-requisite(s)	Nil			
Medium of Instruction	English		Credit	3
Lecture Hours	45 hrs	Lab/Practice Hours	0 hrs	Total Hours 45 hrs
Instructor	Dr. Amang Kim		E-mail	amang@ipm.edu.mo
Office	Rm# A320, Chi Un Building, Main Campus		Telephone	8599-6455

Description

In this module, students will undertake in-depth topics about the interrelation between Big Data, information science, statistics, business and other information-related phenomena in the world. Upon completing the module, students will be able to identify and access the interdisciplinary issues in data sciences with respect to smart applications, and to situate studies of technological innovation in a broad social and Region-specific context.

Learning Outcomes

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

1. Determine the problems typically encountered in each aspect of Data Sciences and Business Analytics in various perspectives (SM1fl, ET3fl, D1fl)
2. Adapt data sciences (or business analytics) methods and processes including those for requirements, design, construction, testing, project management and data quality assurance. (EA1fl, EP1fl, EP3fl)
3. Recommend the practical solutions for various data related matters and the importance to the profession of applying data sciences and/or business analytics. (EP3fl, D3fl)
4. Choose the mathematical cores for data sciences and apply the related mathematical models for data science techniques. (SM2fl, EA2fl, ET3fl)

Content

1. Introduction to Data Sciences & Business

1.1	Course Introductions	1.0 hours
1.2	Data Sciences & Business Analytics	2.0 hours
1.3	Big Data & Compact Data	3.0 hours
1.4	Mathematics for Data Sciences	7.5 hours
1.5	Process Design for Business Analytics	3.0 hours

2. Data in Science and Engineering Perspectives

2.1	Engineering for Data (AI & ML)	13.5 hours
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3. Business Analytics in Management Perspectives

3.1	Statistics for Data Sciences	6.0 hours
3.2	Data Visualization	1.5 hours
3.3	Real-World Data Focused Projects	1.5 hours
3.4	Business Impact of Data	1.5 hours
3.5	Data Strategic Management	1.5 hours
3.6	Data Driven Business	1.5 hours
3.7	Ethics of Data	1.5 hours

Teaching Method

Lectures and tutorials, case method teaching

Attendance

Attendance requirements are governed by the “Academic Regulations Governing Master’s Degree Programmes of Macao Polytechnic Institute”. Students who do not meet the attendance requirements for the module shall be awarded an ‘F’ grade.

Assessment

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

Item	Description	AHEP3 LO	Percentage
1. Popup Quizzes	Home/Class-based exercises	SM1fl, D1fl	15 %
2. Group Project	Knowledge assessment	D3fl, ET3fl, EP3fl,	30 %
3. Seminars (Group)	Classroom presentation	EA2fl, EA3fl, EP1fl	25 %
4. Tests	In-class test	EA1f, EP1fl, SM1fl, SM2fl,	30 %
Total Percentage:			100%

Teaching Material(s)

Textbook(s)

- Steven S. Skiena (2017), *The Data Science Design Manual*, Springer, Stony Brook, NY.

Reference

Reference book(s)

- Jared Dean (2014), *Big Data, Data Mining, and Machine Learning*, Wiley, Hoboken, NJ.
- Rachel Schutt and Cathy O'Neil (2014), *Doing Data Science: Straight Talk from The Frontline*, O'Reilly, Sebastopol, CA