

**City University of Hong Kong
Course Syllabus**

**offered by College of Business
with effect from Semester A 2017 / 2018**

Part I Course Overview

Course Title:	Data Analytics with Business Applications
Course Code:	FB6711
Course Duration:	One Semester
Credit Units:	3
Level:	P6
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: <i>(Course Code and Title)</i>	Basic knowledge on statistics
Precursors: <i>(Course Code and Title)</i>	Nil
Equivalent Courses: <i>(Course Code and Title)</i>	Nil
Exclusive Courses: <i>(Course Code and Title)</i>	Nil

Part II Course Details

1. Abstract

The course aims to teach students data mining and predictive analytics models and tools for data analysis in business related applications, including applications in finance, marketing and operations etc. The course will also teach students practical skills on handling data, conducting analysis in statistical software packages, and visualizing and presenting data analysis findings.

On completion of the course students should be able to

- (a) formulate relevant business problems into the framework of data analytics;
- (b) develop appropriate analytics models based on applications and available data;
- (c) implement the models and conduct analysis in a software package, such as R; and
- (d) analyse and interpret the outputs of models to support decision making in finance, marketing, operations, etc.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Formulate relevant business problems into the framework of data analytics	30%	✓		
2.	Develop appropriate data analytics models based on applications and available data.	30%	✓	✓	
3.	Implement data analytics models and conduct analysis in a data analysis software package.	20%		✓	✓
4.	Analyze and interpret the outputs of data analytics models to support decision making in finance, marketing, operations, etc.	20%		✓	✓
		100%			

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
1	Lecture	2	2	1	1	
2	Laboratory	1	2	2	1	
3	Group project	2	2	2	2	

(1: Indirectly Supporting ILO; 2: Directly Supporting ILO)

Lecture: 27 hours
 Laboratory: 9 hours
 Group Project: 3 hours

Lecture: Seminars are designed to explain the concepts of a selection of popular data analytics techniques, and to discuss data analytics cases and applications in finance, marketing, operations, etc., with a focus on problem formulation, model development and results presentation.

Laboratory: Demonstrations by instructor and hands-on exercises by students on implementing data analytics models and solving the selected analytics problems using a data-analysis software package.

Group project: Students would have to participate a group project to investigate a real life case in finance, marketing, or other area. The project will apply business data analytics techniques to address the problem. Students will contribute to the project and inspect the process of the project conduction.

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.				Weighting	Remarks
	1	2	3	4		
Continuous Assessment: 50%						
Assignments	2	2	2	1	30%	
Group projects	2	2	2	2	20%	
Examination: 50% (duration: 2 hours, if applicable)						
					100%	

(1: ILO moderately assessed by AT; 2: ILO heavily assessed by AT)

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Assignments	Performance in the submitted homework assignments	Strong evidence of understanding the key concepts and definitions of the learned subject; capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base	Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature	Student who is profiting from the university experience; understanding of the subject; ability to show some evidence of familiarity with literature	Sufficient familiarity with the subject matter to enable the student to progress further.	Little evidence of familiarity with the subject matter; limited or irrelevant use of literature
2. Group projects	Performance in collaboration and contribution to the data analysis project	Students perform excellently in contributing knowledge to the project and deal with issues in collaboration.	Students perform well in contributing knowledge to the project and deal with issues in collaboration.	Students perform reasonably well in contributing knowledge to the project and deal with issues in collaboration.	Students fairly perform in contributing knowledge to the project and deal with issues in collaboration.	Students perform badly in contributing knowledge to the project and deal with issues in collaboration.
3. Written examination	Performance in answering questions in the written exam.	Students perform excellently in the test and provide very good answers to test questions.	Students perform well in the test and provide good answers to test questions.	Students perform reasonably well in the test and provide some good answers to test questions.	Students fairly perform in the test and provide some acceptable answers to test questions.	Students perform badly in the test and cannot provide acceptable answers to test questions.

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

- Regressions: linear and nonlinear regressions, nearest neighbours
- Classifications: logistic regression and linear discriminant analysis
- Model validation and regularization
- Tree-based models
- Text mining and social network analysis
- Applications: credit scoring, online recommendation, advertisement, healthcare etc.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Nil
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2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	J. Ledolter. Data mining and business analytics with R. Wiley 2013.
2.	G. James, D. Witten, T. Hastie, R. Tibshirani. An introduction to statistical learning with applications in R. Springer 2013.