

**City University of Hong Kong**  
**Course Syllabus**

**offered by College of Business**  
**with effect from Semester B 2015 / 2016**

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**Part I Course Overview**

<b>Course Title:</b>	Data Mining and Analytics for Management
<b>Course Code:</b>	FB6711
<b>Course Duration:</b>	One Semester
<b>Credit Units:</b>	3
<b>Level:</b>	P6
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Basic knowledge on statistics
<b>Precursors:</b> <i>(Course Code and Title)</i>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	Nil
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	IS6400 Business Data Analytics

## Part II Course Details

### 1. Abstract

The course aims to teach students the management process, models, and tools for data analysis and analytics in business. The course will teach students practical skills on how to employ software packages (such as spreadsheets and statistics software) and necessary extensions (such as add-ins, macros, scripts, queries, etc.) to tackle business data analysis problems. The course will also touch issues on how to frame and manage corporation management and decision making problems following a data analytics approach.

On completion of the course students should be able to

- (a) understand the target and requirements of a selection of critical business problems that can be addressed using a data analytics approach;
- (b) manage the statistical techniques/models for data analytics;
- (c) implement the models into a software packages, such as spreadsheet, and adapt the models through add-ins and scripting/programming capabilities (such as using macro and VBA); and
- (d) analyze and interpret the outputs of models to support decision making in finance, marketing, accounting, 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.	Describe the target and requirements for a spectrum of business problems in finance, marketing, etc.	30%	X		
2.	Develop the ability to employ scripting, spreadsheet, and statistical software to discover patterns in data to address the selected problems.	30%	X	X	
3.	Creatively apply and adapt the introduced modeling techniques to propose original findings for practical organizational data analysis problems.	20%		X	X
4.	Creatively communicate analytical procedure and results effectively in presentations with oral, written and electronic formats.	20%		X	X
		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	Seminar	2	2	2				
2	Laboratory	1	2	2	1			
3	Project with Data Analysis Groups	2	2	2	2			

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

Lecture: 13 hours

Laboratory/Tutorial: 26 hours

**Seminar:** Seminars are designed to contain a mix of “lecture” and “discussion.” Lectures explain the concepts, applications, and implications of a selection of business data analysis problems in finance, marketing, and so forth. Formulate the problems and Introduce statistics models and data analytics techniques to address them. Discussions are supported by case analysis and students' individual/group investigation, thinking, in-class discussion, debate, etc.

**Laboratory:** Demonstrations by instructor and hands-on exercises by students on solving the selected business data analysis problems in finance, marketing, etc. Widely used commercial software, such as Microsoft Excel, will be used as a means to practice the modeling techniques learnt in lectures:

**Project with Data Analysis Groups:** Students would have to participate and 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: 100%								
Class performance and assignments	2	2	1	1			30%	
Project with Data Analysis Groups	2	2	2	2			30%	
Individual Lab Test	1	2	2				40%	
Examination: ____% (duration: _____, if applicable)							100%	

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

**Class performance and assignments:** Involvement in class discussions reflect on the materials covered in the lecture; Attempt in laboratory exercises; and Efforts shown in addressing the data analysis assignments provided by the instructor.

**Project with Data Analysis Groups:** Students would have to participate and a group project to investigate a real life case in finance, marketing, or other area. The students are expected to submit a written report and an oral presentation (about 10 minutes duration) to investigate the analytical or management issues rose during the process. Students need to critically apply the concepts learned in the course in the analysis and collaboration.

**Individual Lab Test:** An individual lab test is given to assess students' competence level of the subjects covered in the course. The students are expected to be able to demonstrate the understanding of concepts and use the use software to address questions asked based on provided data sets.

## 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-)	Adequate (C+, C, C-)	Marginal (D)	Failure (F)
1. Class performance and assignments	Performance in class activities and the submitted homework assignments	Students have demonstrated excellent initiative and interactions in raising sensible questions and giving insightful discussion of issues relating to the course topics in class. Students have demonstrated excellent understanding of the course topics through assignments.	Students have demonstrated good initiative and interactions in raising reasonable questions and joining discussion of issues relating to the course topics in class. Students have demonstrated good understanding of the course topics through assignments.	Students have demonstrated reasonable interactions in raising questions and joining discussion of issues relating to the course topics in class. Students have demonstrated reasonable understanding of the course topics through assignments.	Students have demonstrated occasional interactions in joining discussion of issues relating to the course topics in class. Students have demonstrated partial understanding of the course topics through assignments.	Students randomly or rarely join discussion of issues with little contribution to the course topics in class. Students have demonstrated limited understanding of the course topics through assignments.
2. Project with Data Analysis Groups	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. Individual Lab Test	Performance in answering questions in the test	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.)*

- Introduction and Overview
  - Data analysis in finance, marketing, and other business applications
  - Business intelligence
  - Spreadsheet modeling and Excel functions
- Techniques
  - Descriptive analysis, chart and pivot table
  - Regression and the modeling of business problems
  - Data collection, cleansing, normalization, & mining
  - VBA programming
- Advanced topics
  - Forecasting / Time series analysis
  - Risk assessment & portfolio management
  - Survival analysis
  - Social Network Analysis
  - Visualization
- Applications
  - Financial forecasting: Sales, revenue, and stock
  - Marketing: Segmentation, viral marketing, coupon distribution
  - Risk Management: Credit analysis and fraud detection
  - HR analytics: Performance analysis and turn over prediction

**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
2.	
3.	
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**2.2 Additional Readings**

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

1.	S. Christian Albright, and Wayne Winston, <u>Data Analysis and Decision Making</u> , 5 <sup>th</sup> edition, Cengage Learning, 2015
2.	Gordon S. Linoff, <u>Data Analysis Using SQL and Excel</u> , Wiley Pub., 2007.
3.	Jackson, M. and Staunton, M., <u>Advanced Modeling in Finance Using Excel and VBA</u> , Wiley.
4.	John Walkenbach, <u>Excel 2003 Power Programming with VBA</u> , Wiley.
5.	Moore, J.H. (Ed.), Weatherford, L.R. (Ed), <u>Decision Modeling with Microsoft Excel</u> , 6 <sup>th</sup> edition, Prentice Hall, 2001.