

# FB6711B: DATA ANALYTICS WITH BUSINESS APPLICATIONS

## New Syllabus Proposal

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### Effective Term

Semester A 2025/26

## Part I Course Overview

### Course Title

Data Analytics with Business Applications

### Subject Code

FB - College of Business (FB)

### Course Number

6711B

### Academic Unit

College of Business (CB)

### College/School

College of Business (CB)

### Course Duration

One Semester

### Credit Units

2

### Level

P5, P6 - Postgraduate Degree

### Medium of Instruction

English

### Medium of Assessment

English

### Prerequisites

Basic knowledge on statistics

### Precursors

Nil

### Equivalent Courses

Nil

### Exclusive Courses

Nil

## Part II Course Details

### 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.

### Course Intended Learning Outcomes (CILOs)

| CILOs |                                                                                                                               | Weighting (if app.) | DEC-A1 | DEC-A2 | DEC-A3 |
|-------|-------------------------------------------------------------------------------------------------------------------------------|---------------------|--------|--------|--------|
| 1     | Discuss the relevant business problems into the framework of data analytics.                                                  | 30                  | x      |        |        |
| 2     | Design an appropriate data analytics models based on applications and available data.                                         | 30                  | x      | x      |        |
| 3     | Implement data analytics models and conduct analysis in a data analysis software package.                                     | 20                  |        | x      | x      |
| 4     | Analyze and interpret the outputs of data analytics models to support decision making in finance, marketing, operations, etc. | 20                  |        | x      | x      |

#### 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 real-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.

### Learning and Teaching Activities (LTAs)

| LTAs |               | Brief Description                                                                                                                                                                                                                                                                                 | CILO No.   | Hours/week (if applicable) |
|------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------|
| 1    | Lecture       | Students will participate in lectures 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. | 1, 2, 3, 4 | 27 hours                   |
| 2    | Laboratory    | Students will engage in hands-on exercises on implementing data analytics models and solving the selected analytics problems using a data-analysis software package.                                                                                                                              | 1, 2, 3, 4 | 9 hours                    |
| 3    | Group project | Students will participate in 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.     | 1, 2, 3, 4 | 3 hours                    |

**Assessment Tasks / Activities (ATs)**

| ATs |                             | CILO No.   | Weighting (%) | Remarks ("-" for nil entry) | Allow Use of GenAI? |
|-----|-----------------------------|------------|---------------|-----------------------------|---------------------|
| 1   | Participation / Interaction | 1, 4       | 15            | -                           | No                  |
| 2   | Assignments                 | 1, 2, 3, 4 | 15            | -                           | No                  |
| 3   | Group projects              | 1, 2, 3, 4 | 20            | -                           | No                  |
| 4   | In-class Quiz               | 1, 2, 3, 4 | 30            | -                           | No                  |
| 5   | Individual Case Study       | 1, 2, 3, 4 | 20            | -                           | No                  |

**Continuous Assessment (%)**

100

**Assessment Rubrics (AR)****Assessment Task**

1. Participation / Interaction (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

**Criterion**

Active learning efforts shown through class discussion, questions, etc.

**Excellent**

(A+, A, A-) High evidence of active participation in class discussion, questions, etc.

**Good**

(B+, B, B-) Significant evidence of active participation in class discussion, questions, etc.

**Fair**

(C+, C, C-) Moderate evidence of active participation in class discussion, questions, etc.

**Marginal**

(D) Basic evidence of active participation in class discussion, questions, etc.

**Failure**

(F) Little evidence of active participation in class discussion, questions, etc.

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**Assessment Task**

2. Assignments (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

**Criterion**

Performance in the submitted homework assignments

**Excellent**

(A+, A, A-) Strong evidence of understanding the key concepts and definitions of the learned subject

**Good**

(B+, B, B-) Evidence of understanding the key concepts and definitions of the learned subject

**Fair**

(C+, C, C-) Certain evidence of understanding the key concepts and definitions of the learned subject

**Marginal**

(D) Certain familiarity with the subject matter to enable the student to progress further

**Failure**

(F) Little evidence of familiarity with the subject matter

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**Assessment Task**

3. Group projects (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

**Criterion**

Performance in collaboration and contribution to the data analysis project

**Excellent**

(A+, A, A-) Students perform excellently in contributing knowledge to the project and deal with issues in collaboration

**Good**

(B+, B, B-) Students perform well in contributing knowledge to the project and deal with issues in collaboration

**Fair**

(C+, C, C-) Students perform reasonably well in contributing knowledge to the project and deal with issues in collaboration

**Marginal**

(D) Students fairly perform in contributing knowledge to the project and deal with issues in collaboration

**Failure**

(F) Students perform badly in contributing knowledge to the project and deal with issues in collaboration

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**Assessment Task**

4. In-class Quiz (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

**Criterion**

Performance in answering questions

**Excellent**

(A+, A, A-) Students perform excellently in the test and provide very good answers to test questions.

**Good**

(B+, B, B-) Students perform well in the test and provide good answers to test questions.

**Fair**

(C+, C, C-) Students perform reasonably well in the test and provide some good answers to test questions.

**Marginal**

(D) Students fairly perform in the test and provide some acceptable answers to test questions.

**Failure**

(F) Students perform badly in the test and cannot provide acceptable answers to test questions.

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**Assessment Task**

5. Individual Case Study (Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

**Criterion**

Performance in the submitted case study that analyse the use of data analytics in business applications

**Excellent**

(A+, A, A-) Strong evidence of capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base

**Good**

(B+, B, B-) Some evidence of critical capacity and analytic ability; reasonable understanding of issues in practice

**Fair**

(C+, C, C-) Evidence on understanding of the subject; Some understanding of issues in practice

**Marginal**

(D) Some evidence on understanding of subject; limited understanding of issues in practice

**Failure**

(F) Little evidence of familiarity with the subject matter; no understanding of issues in practice

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**Assessment Task**

1. Participation / Interaction (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

**Criterion**

Active learning efforts shown through class discussion, questions, etc.

**Excellent**

(A+, A, A-) High evidence of active participation in class discussion, questions, etc.

**Good**

(B+, B) Significant evidence of active participation in class discussion, questions, etc.

**Marginal**

(B-, C+, C) Moderate evidence of active participation in class discussion, questions, etc.

**Failure**

(F) Little evidence of active participation in class discussion, questions, etc.

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**Assessment Task**

2. Assignments (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

**Criterion**

Performance in the submitted homework assignments

**Excellent**

(A+, A, A-) Strong evidence of understanding the key concepts and definitions of the learned subject

**Good**

(B+, B) Evidence of understanding the key concepts and definitions of the learned subject

**Marginal**

(B-, C+, C) Certain evidence of understanding the key concepts and definitions of the learned subject

**Failure**

(F) Little evidence of familiarity with the subject matter

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**Assessment Task**

3. Group projects (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

**Criterion**

Performance in collaboration and contribution to the data analysis project

**Excellent**

(A+, A, A-) Students perform excellently in contributing knowledge to the project and deal with issues in collaboration

**Good**

(B+, B) Students perform well in contributing knowledge to the project and deal with issues in collaboration

**Marginal**

(B-, C+, C) Students perform reasonably well in contributing knowledge to the project and deal with issues in collaboration

**Failure**

(F) Students perform badly in contributing knowledge to the project and deal with issues in collaboration

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**Assessment Task**

4. In-class Quiz (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

**Criterion**

Performance in answering questions

**Excellent**

(A+, A, A-) Students perform excellently in the test and provide very good answers to test questions.

**Good**

(B+, B) Students perform well in the test and provide good answers to test questions.

**Marginal**

(B-, C+, C) Students perform reasonably well in the test and provide some good answers to test questions.

**Failure**

(F) Students perform badly in the test and cannot provide acceptable answers to test questions.

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**Assessment Task**

5. Individual Case Study (Applicable to students admitted from Semester A 2022/23 to Summer Term 2024)

**Criterion**

Performance in the submitted case study that analyse the use of data analytics in business applications

**Excellent**

(A+, A, A-) Strong evidence of capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base

**Good**

(B+, B) Some evidence of critical capacity and analytic ability; reasonable understanding of issues in practice

**Marginal**

(B-, C+, C) Evidence on understanding of the subject; Some understanding of issues in practice

**Failure**

(F) Little evidence of familiarity with the subject matter; no understanding of issues in practice

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## Part III Other Information

**Keyword Syllabus**

- 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.

## Reading List

### Compulsory Readings

| Title |     |
|-------|-----|
| 1     | Nil |

### Additional Readings

| Title |                                                                                                                               |
|-------|-------------------------------------------------------------------------------------------------------------------------------|
| 1     | Alberto Boschetti, Luca Massaron, Python Data Science Essentials, 2e, Packet Publishing, 2016, 978-1786462138                 |
| 2     | G. James, D. Witten, T. Hastie, R. Tibshirani. An introduction to statistical learning with applications in R. Springer 2013. |
| 3     | John W. Foreman, Data Smart: Using Data Science to Transform Information into insight, 978-1118661468                         |