IS6400: BUSINESS DATA ANALYTICS

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Business Data Analytics

Subject Code
IS - Information Systems
Course Number
6400

Academic Unit
Information Systems (IS)

College/School
College of Business (CB)

Course Duration
One Semester

Credit Units
3

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 the process, models, and tools for data analysis and analytics in business, such as in finance, marketing, etc. The course will teach students the practical skills to employ software packages (such as

spreadsheets and Python) and apply necessary packages (such as scikit-learn, statsmodels, tensorflow, etc.) to analytical framework and tackle business data analysis problems for corporation manage and decision making. On completion of the course students should be able to

(a) understand the target and requirements of a selection of critical business data analysis problems.

(b) manage the statistical techniques and machine learning models for data analytics.

(c) implement the models into a programming language, such as Python, and adapt the models through Python packages, and

(d) analyze and interpret the outputs of models to support decision making in finance, marketing, accounting, etc.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the target and requirements for a spectrum of business data analysis problems in finance, marketing, etc.	25	x		
2	Employ scripting and database tools to retrieve data and use spreadsheet and Python to discover patterns in data to address the selected problems.	35	x	x	
3	Creatively apply and adapt the introduced modelling techniques to propose original findings for practical organizational data analysis problems.	30		x	x
4	Creatively communicate analytical procedure and results effectively in presentations with oral, written and electronic formats.	10		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 learn the concepts, applications, and implications of a selection of business data analysis problems in finance, marketing, and so forth. Students will learn to formulate the problems and Introduce statistics models and data analytics techniques to address them.	1, 2, 3	
2	Laboratory	Students will learn to solve the selected business data analysis problems in finance, marketing, etc. through the demonstrations by instructor and their hand-on exercises. Widely used Python packages will be used as a means to practice the modelling techniques learnt in lectures.	1, 2, 3, 4	
3	Group Project	Students would have to complete a group project to investigate a real-life case in finance, marketing, or other area and apply business data analytics techniques to address it.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	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.	1, 2, 3, 4	30	-	Yes
2	Group Project A group project, which includes a written report and an oral presentation (about 10 min duration), will be assigned to students to investigate a real-life problem in business data analysis to critically apply the concepts learned in the course, and propose original findings. Each team will contain 4 to 6 students.	1, 2, 3, 4	30	-	Yes

Continuous Assessment (%)

60

Examination (%)

40

Examination Duration (Hours)

2

Minimum Continuous Assessment Passing Requirement (%)

30

Minimum Examination Passing Requirement (%)

20

Additional Information for ATs

Final Examination
The final exam is used to assess the student's competence in the taught subjects and will cover the readings assigned in class as well as the lectures, tutorials, and cases and examples mentioned in class.

Assessment Rubrics (AR)

Assessment Task

AT1.Class performance and assignments (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to show initiative and interactions in raising sensible questions and giving insightful discussion of issues relating to the course topics in class.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task

AT1.Class performance and assignments (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to demonstrate understanding of the course topics through assignments.

Excellent

(A+, A, A-) High

Good

(B+, B, B-) Significant

Fair

(C+, C, C-) Moderate

Marginal

(D) Basic

Failure

(F) Not even reaching marginal levels

Assessment Task
AT2. Group Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to frame the problem to the models learned in the class and push the ability of the model to a high level in tackling the problem.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT2. Group Project (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to contribute to the project and deal with issues in collaboration.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT3. Exam (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Ability to provide good answers to exam questions.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1.Class performance and assignments (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to show initiative and interactions in raising sensible questions and giving insightful discussion of issues relating to the course topics in class.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT1.Class performance and assignments (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to demonstrate understanding of the course topics through assignments.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task

AT2. Group Project (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to frame the problem to the models learned in the class and push the ability of the model to a high level in tackling the problem.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT2. Group Project (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to contribute to the project and deal with issues in collaboration.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
AT3. Exam (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Ability to provide good answers to exam questions.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Basic

Failure

(F) Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Introduction and Overview

- Data analysis in finance, marketing, and other business applications
- Business intelligence
- Python for Business Data Analytics

Techniques

- Feature Engineering
- Regression
- Time Series Modelling
- Association Analysis
- Text Analytics

Applications

- Financial forecasting: Sales, revenue, and stock
- Business intelligence in marketing: Census, segmentation & basket analysis
- Text analytics: sentiment analysis, topic discovery

Advanced topics

- Model evaluation and selection
- Deep learning methods

Reading List

Compulsory Readings

	Title
1	Pang-Ning Tan; Michael Steinbach; Anuj Karpatne; Vipin Kumar, Introduction to Data Mining,Pearson 2019.
2	Aurélien Géron Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems O'Reilly Media, 2017.

Additional Readings

	Title
1	S. Christian Albright, and Wayne Winston Business Analytics: Data Analysis and Decision Making, 5th edition, Cengage Learning, 2015.
2	Gordon S. Linoff Data Analysis Using SQL and Excel, Wiley Pub., 2nd edition, 2015.
3	Viktor Mayer-Schönberger Kenneth Cukier Big Data: A Revolution That Will Transform How We Live, Work, and Think, Eamon Dolan/Houghton Mifflin Harcourt, 2013.
4	John W. Foreman, Data Smart: Using Data Science to Transform Information into Insight, Wiley Pub, 2013.
5	Timothy R. Mayes and Todd M. Shank Financial Analysis with Microsoft Excel, South-Western College Pub, 2006.