IS4834: BUSINESS INTELLIGENCE AND ANALYTICS

Effective Term
Semester A 2023/24

Part I Course Overview

Course Title
Business Intelligence and Analytics

Subject Code
IS - Information Systems

Course Number
4834

Academic Unit
Information Systems (IS)

College/School
College of Business (CB)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

We are in the era of big data. Large volume of data could reveal useful information about customers, products or other strategic aspects. This course aims to equip students with knowledge and skills to extract information and knowledge from vast amount of data and discover actionable insights. It emphasizes on the current issues, methodologies, practice, and emerging trends in business intelligence and analytics. Students will learn state-of-art techniques and critical skills to address existing business problems in today's information-rich environments. Upon completing this course, students will build their analytical capabilities to use data for innovative business solutions. Topics will cover, but are not limited to, the following:1) Descriptive, predictive and prescriptive analytics (e.g. data mining techniques, prediction modelling, business intelligence and machine learning);2) Business applications (e.g., social network analysis, market-basket analysis, fraud detection, credit scoring, and loan application).

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Recognize the need for business intelligence to support business management.	10	x	x	x
2	Understand the concepts and techniques of business intelligence and analytics in business practice.	40	x	x	x
3	Apply information technologies for data analytics.	30	x	x	x
4	Analyze the requirements for management support and identify appropriate tools and techniques for data analytics in order to create innovative business intelligence solutions.	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.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	TLA1: Lecture	Concepts and applications of information technology in the context of business intelligence and analytics are explained by instructor.	1, 2, 3, 4	Lecture: 2 Hours/Week

| 2 | TLA2: Laboratory/Tutorial | During laboratory/tutorial sessions, the following activities are used to reinforce the learning and practice of various business intelligence and data analytics techniques learnt in lectures:Exercises: Hands-on activities using SAS to perform data analytics techniques.Discussion: Discussion of various concepts learnt in lectures, and exemplified with exercise to demonstrate the applicability of various techniques in business intelligence and data analytics.Presentations: Members of project team will make presentation of their project work, and the rest of the tutorial group and the instructor will comment and offer suggestions for improvements. | 2, 3, 4 | Laboratory:1 Hour/Week |
| 3 | TLA3: Project | Students will have to complete a group project requiring them to adopt business intelligence and data analytics technology to solve business problems. | 2, 3, 4 | Laboratory:1 Hour/Week |

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	AT1: Lecture, Laboratory Exercises and ParticipationEach seminar and laboratory may consist of exercises, quizzes, small group discussions, self reflection, or student presentations to assess students' abilities to apply their skills.	1, 2, 3, 4	20	

2	AT2: Group ProjectA group project, which includes a project report and presentation, will be allocated to let students apply business intelligence and data analytics concepts and technologies to solve business problems.	1, 2, 3, 4	30	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Assessment Rubrics (AR)

Assessment Task

AT1:Lecture, Laboratory Exercises and Participation

Criterion

Ability to accurately describe all key concepts of business intelligence and data analytics; and deep understanding of their importance to business.

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:Lecture, Laboratory Exercises and Participation

Criterion

Ability to evaluate accurately the requirements of business intelligence and data analytics in order to transform massive amounts of transaction data into data warehouse of appropriate architecture.

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:Lecture, Laboratory Exercises and Participation

Criterion
Capability to compare and evaluate accurately and profoundly about distinguished impact of technologies for business intelligence and data analytics.

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:Lecture, Laboratory Exercises and Participation

Criterion
Capability to reasonably and effectively formulate and discriminate the requirements of management support; show well-rounded knowledge in identifying most appropriate existing data analytics tools and technique for respective system implementation problems.

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

Criterion

Ability to accurately describe all key concepts of business intelligence and data analytics; and deep understanding of their importance to business.

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

Criterion

Ability to evaluate accurately the requirements of business intelligence and data analytics in order to transform massive amounts of transaction data into data warehouse of appropriate architecture.

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

Criterion

Capability to compare and evaluate accurately and profoundly about distinguished impact of technologies for business intelligence and data analytics.

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:Examination

Criterion

Ability to accurately describe all key concepts of business intelligence and data analytics; and deep understanding of their importance to business.

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:Examination

Criterion

Ability to evaluate accurately the requirements of business intelligence and data analytics in order to transform massive amounts of transaction data into data warehouse of appropriate architecture.

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:Examination

Criterion

Capability to compare and evaluate accurately and profoundly about distinguished impact of technologies for business intelligence and data analytics.

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:Examination

Criterion

Capability to reasonably and effectively formulate and discriminate the requirements of management support; show well-rounded knowledge in identifying most appropriate existing data analytics tools and technique for respective system implementation problems.

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

Part III Other Information

Keyword Syllabus

Data mining process model (e.g. CRISP-DM); Data preprocessing and graphics; Linear and logistic regression; Decision tree; Cluster analysis; Association rules; Time series analysis; Social network analysis; Performance evaluation of prediction models

Reading List

Compulsory Readings

	Title
1	R. Sharda, D. Delen and E. Turban, Business Intelligence, Analytics, and Data Science: A Managerial Perspective, Pearson, 2018.
2	Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, Vipin Kumar, Introduction to Data Mining (2nd edition), Pearson, 2019.

Additional Readings

	Title
1	James R. Evans, Business Analytics. Pearson, 2017.
2	Ramesh Sharda, Dursun Delen, and Efraim Turban, Business Intelligence and Analytics: Systems for Decision Support. Prentice Hall, 2014.
3	Foster Provost and Tom Fawcett, Data Science for Business: What You Need to Know about Data Mining and Data-analytic Thinking. O'Reilly Media, Inc., 2013.
4	Jiawei Han, Micheline Kamber, and Jian Pei, Data Mining Concepts and Techniques. Morgan Kauffman, 2011.
5	Galit Shmueli, Nitin R. Patel, and Peter C. Bruce, Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner. John Willey & Sons, 2010.
6	Thomas H. Davenport, Jeanne G. Harris, and Robert Morison, Analytics at Work: Smarter Decisions, Better Results. Harvard Business Press, 2010.
7	Thomas H. Davenport and Jeanne G. Harris, Competing on Analytics: The New Science of Winning. Harvard Business Press, 2007.