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

**offered by Department of Information Systems**
**with effect from Semester A 2024 / 2025**


**Part I    Course Overview**


**Course Title:**          Management Support and Business Intelligence Systems


**Course Code**:          IS5740


**Course Duration:**     One Semester (13 weeks)


**Credit Units**:          3


**Level**:                    P5


**Medium of
Instruction:**             English


**Medium of
Assessment:**            English


**Prerequisites**:
*(Course Code and Title)*    Nil


**Precursors**:
*(Course Code and Title)*    Nil


**Equivalent Courses**:
*(Course Code and Title)*    Nil


**Exclusive Courses**:
*(Course Code and Title)*    Nil

**Part II    Course Details**

1.  **Abstract**

    This course aims to introduce emerging as well as popular analytical concepts and information technologies suitable for management support with business intelligence. This course aims to equip students with skills to extract information and knowledge from vast amount of data and discover actionable business 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.

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. | Recognize the importance of business intelligence for management decision support systems beyond managing information systems. | 20% | ✓ | | |
| 2. | Acquire and apply analytical concepts and skills of management support and business intelligence (e.g., diagnosis of problems (what symptoms exist, why they exist, what happens if no action is taken) and/or opportunities - motivation/need, obstacles, and decisions to be made). | 30% | ✓ | ✓ | |
| 3. | Differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis. | 20% | ✓ | ✓ | |
| 4. | Formulate and analyze the requirements for management support, and identify appropriate tools and techniques required for implementation of business intelligence systems. | 10% | ✓ | ✓ | |
| 5. | Design effective solutions to real management support and business intelligence problems. | 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 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.*

## 3. Learning and Teaching Activities (LTAs)

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

| LTA | Brief Description | CILO No. 1 | 2 | 3 | 4 | 5 | Hours/week (if applicable) |
|---|---|---|---|---|---|---|---|
| 1: Seminar | Students will learn the concepts and applications of business intelligence and analytics in the context of decision making and problem solving for management support. Students will conduct exercises and case studies for interactive learning in the seminars. | ✓ | ✓ | ✓ | | | |
| 2: Demonstration | Students will learn representative technologies and their application to address business problems. Students will critically analyze requirements for management support, and identify appropriate tools and techniques required. | | ✓ | ✓ | ✓ | ✓ | |
| 3: Practical Exercise | Students will do practical exercises to develop hands-on skills for solving real-life business problems analytically and with appropriate technologies of management support and business intelligence. | | ✓ | ✓ | ✓ | ✓ | |
| 4: Case Analysis | Students will be required to relate to the content of their own workplace or other relevant organizational environment, the relevance of the various business intelligence and management support solutions.   Results will be discussed and presented to fellow students. | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 5: In-class/online Discussion | Students will use online media such as discussion forums, weblogs, or wikis to self-reflect on their learning and share their insights with classmates. | ✓ | ✓ | ✓ | ✓ | ✓ | |

## 4. Assessment Tasks/Activities (ATs)

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

| Assessment Tasks/Activities | CILO No. 1 | 2 | 3 | 4 | 5 | Weighting | Remarks |
|---|---|---|---|---|---|---|---|
| Continuous Assessment: 60% | | | | | | | |
| **AT1. Seminar, Laboratory Exercises, Participation, and in-class/online Discussion** Each seminar and laboratory consists of exercises, small group discussions, or student presentations to assess students' understanding of the chosen topics and their abilities to apply their skills.   It also includes online comments with which students report key learning, self-reflection, and related concepts found online. | ✓ | ✓ | ✓ | ✓ | | 20% | |
| **AT2. Individual Assignment** An individual assignment which lets students analyze a business problem and develop an analytical of implemented solution. | | | ✓ | ✓ | ✓ | 10% | |
| **AT3. Group Project** A group project, which includes a project report and presentation, will be allocated to let students apply Management Support and Business Intelligence concepts and technologies to solve business problems. | ✓ | ✓ | ✓ | ✓ | ✓ | 30% | |
| Examination: 40% (duration: one 2-hour exam) | | | | | | | |
| **AT4. Examination** A written examination is developed to assess student's competence level of the taught subjects. | ✓ | ✓ | ✓ | ✓ | | 40% | |
| | | | | | | 100% | |

## 5. Assessment Rubrics

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

Applicable to students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter

| Assessment Task | Criterion | Excellent (A+, A, A-) | Good (B+, B, B-) | Fair (C+, C, C-) | Marginal (D) | Failure (F) |
|---|---|---|---|---|---|---|
| AT1. Seminar, Laboratory Exercises, Participation, and Online Discussion | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to formulate and critically analyze the requirements for management support, and identify appropriate tools and techniques required for implementation of business intelligence systems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| AT2. Individual Assignment | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to formulate and critically analyze the requirements for management support, and identify appropriate tools and techniques required for implementation of business intelligence systems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Capability to creatively develop effective solutions to real management support and business intelligence problems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| AT3. Group Project | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |

| Assessment Task | Criterion | Excellent (A+, A, A-) | Good (B+, B) | | Marginal (B-, C+, C) | Failure (F) |
|---|---|---|---|---|---|---|
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to formulate and critically analyze the requirements for management support, identify appropriate tools and techniques required for implementation of business intelligence systems, and conduct in-depth analysis. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to creatively develop effective solutions to real management support and business intelligence problems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| AT4. Examination | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Significant | Moderate | Basic | Not even reaching marginal levels |

Applicable to students admitted from Semester A 2022/23 to Summer Term 2024

| Assessment Task | Criterion | Excellent (A+, A, A-) | Good (B+, B) | Marginal (B-, C+, C) | Failure (F) |
|---|---|---|---|---|---|
| AT1. Seminar, Laboratory Exercises, Participation, and Online Discussion | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Moderate | Basic | Not even reaching marginal levels |
| | Capability to formulate and critically analyze the requirements for management support, and identify appropriate tools and techniques required for implementation | High | Moderate | Basic | Not even reaching marginal levels |

| | | | | | |
|---|---|---|---|---|---|
| | of business intelligence systems. | | | | |
| AT2. Individual Assignment | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Moderate | Basic | Not even reaching marginal levels |
| | Capability to formulate and critically analyze the requirements for management support, and identify appropriate tools and techniques required for implementation of business intelligence systems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Capability to creatively develop effective solutions to real management support and business intelligence problems. | High | Moderate | Basic | Not even reaching marginal levels |
| AT3. Group Project | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to formulate and critically analyze the requirements for management support, identify appropriate tools and techniques required for implementation of business intelligence systems, and conduct in-depth analysis. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to creatively develop effective solutions to real management support and business intelligence problems. | High | Moderate | Basic | Not even reaching marginal levels |
| AT4. Examination | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to explain how the analytics underlying management support and business intelligence generate better business information and help solve business problems. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to differentiate between various information technologies for management support and business intelligence that enable quantitative and non-quantitative analysis; and compare and contrast technology characteristics and corresponding capabilities. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to formulate and critically analyze the requirements for management support, identify appropriate tools and techniques required for implementation of business intelligence systems, and conduct required analysis. | High | Moderate | Basic | Not even reaching marginal levels |
| | Ability to accurately describe key concepts of management support and business intelligence and differentiate against typical management information system; and explain the need for management support and business intelligence requirements beyond typical Management Information Systems. | High | Moderate | Basic | Not even reaching marginal levels |

**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.)*

     1)   Introduction to Management Support and Business Intelligence Systems – managerial decision making; role of decision support systems, business analytics, data warehouses, data mining, and related machine learning technologies in decision making; developing state-of-art techniques and critical skills to address existing business problems in today's information-rich environments.
     2)   Principles of decision making and problem solving: intelligence-design-choice; decision making under uncertainty; multi-attribute decision making; optimization, satisficing; goal seeking; simulation.
     3)   Data science and data mining: Data warehouses, big data analytics, data visualization, machine learning, and multidimensional databases.
     4)   Non-quantitative methods and technologies for management support and business intelligence – knowledge management, neural computing, intelligent agents, and hybrid intelligent systems.

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 |
|----|-----|

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

| 1. | Foster Provost and Tom Fawcett, Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking, 1st Edition, O'Reilly, ISBN-13: 978-1449361327, ISBN-10: 1449361323 |
|----|-----|
| 2. | Kattamuri S. Sarma, Predictive Modeling with SAS Enterprise Miner : Practical Solutions for Business Applications, Third Edition, Cary, NC : SAS Institute. 2017, ISBN-13: 978-1629602646, ISBN-10: 1629602647 |