

**Title (Units):** **COMP7810 Business Intelligence (3,2,1)**

**Course Aims:** To provide a study of business intelligence and underlying techniques, including data warehousing, data analytics, data mining and text mining. Emphasis will be placed on the understanding of enabling technologies and their applications to improved operations and decision making in business and healthcare contexts.

**Prerequisite:** Nil

**Course Intended Learning Outcomes (CILOs):**

Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	<b>Knowledge</b>
1	Describe business intelligence methodologies and concepts
2	Explain the characteristics, architectures, and development of data warehouses and decision support systems
3	Explain business analytics and mining techniques
	<b>Professional Skill</b>
4	Perform data warehouse design
5	Formulate analysis queries for analyzing business data
6	Apply appropriate intelligence techniques to extract significant patterns and solve problems in business and healthcare contexts

**Calendar Description:** Students will learn the methodologies and concepts of business intelligence, including the characteristics, architectures, and development of data warehouses and data analytics. After completing the course, the students will understand the features and applications of business intelligence techniques. Emphasis will be placed on the understanding of enabling technologies and their applications to improve operations and decision making in business and healthcare contexts.

**Teaching and Learning Activities (TLAs):**

CILOs	Type of TLA
1, 2, 3	Lectures, project or problem-solving problem, class presentation, problem and laboratory classes
4, 6	Lectures, exercises and problem-solving assignments, or project
5	Problem-solving and laboratory classes, or project
6	Lectures, exercises and assignments, independent information search and research as required by the project, problem or laboratory tasks

**Assessment:**

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	40%	1, 2, 3, 4, 5, 6.	This may include written assignments, lab assignments and a student project. Assignments are designed to assess the students' mastery of the techniques and applications of data warehouses and analytics and are related mainly to learning outcomes 2, 3, 4, and 6. The lab assignments and student project are designed to achieve learning outcomes 4, 5, 6 by requiring students design and implement creative solutions through the application of the methodologies learned.
2	Examination	60%	1, 2, 3, 4, 5, 6	The final examination is designed to measure the extent to which the students have reached all of the learning outcomes. Students are required to have a good mastery of the concepts, techniques,

				methodologies, and applications of business intelligence to familiar as well as novel business situations and problems.
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#### Assessment Rubrics:

<b>Excellent (A)</b>	<ul style="list-style-type: none"> <li>• Achieves all six CILOs, demonstrating a good mastery of both the theoretical and practical aspects of the knowledge and skills associated with business intelligence</li> <li>• Able to develop and present sound arguments and correct solutions to problems, accompanied by in-depth analysis and insight</li> <li>• Demonstrates a thorough understanding and solid knowledge of business intelligence concepts, algorithms, and methodologies</li> <li>• Able to draw on a variety of techniques and relevant knowledge and appropriately apply them to new business intelligence situations and problems</li> </ul>
<b>Good (B)</b>	<ul style="list-style-type: none"> <li>• Achieves all six CILOs, demonstrating a good understanding of the associated concepts and underlying methodologies</li> <li>• Able to develop solutions to problems, accompanied by adequate explanations</li> <li>• Demonstrates a competent level of knowledge of business intelligence concepts, algorithms, and methodologies</li> <li>• Ability to make use of appropriate techniques and knowledge and apply them to familiar situations and problems</li> </ul>
<b>Satisfactory (C)</b>	<ul style="list-style-type: none"> <li>• Achieves most of the six CILOs, demonstrating a basic level of understanding of the associated concepts and underlying methodologies</li> <li>• Able to provide acceptable solutions to problems</li> <li>• Demonstrates an adequate level of knowledge of business intelligence systems and situations</li> <li>• Ability to make use of some techniques and knowledge and apply them to familiar situations</li> </ul>
<b>Fail (F)</b>	<ul style="list-style-type: none"> <li>• Achieves less than three of the six CILOs, with little understanding of the associated concepts and underlying methodologies</li> <li>• Unable to provide solutions to simple problems</li> <li>• Knowledge of business intelligence falling below the basic minimum level</li> <li>• Unable to apply techniques and knowledge to situations or problems</li> </ul>

#### Course Content and CILOs Mapping:

Content		CILO No.
I	The Business Intelligence Perspective	1,6
II	The Data Warehouse	2,4
III	Business Analytics	3,5
IV	Case Studies and Applications	1,6

#### References:

- Turban, E., Aronson, J., Liang, T., and Sharda, R. Decision Support and Business Intelligence Systems. 10th Edition, Prentice Hall, 2014.
- Inmon, W. H. Building the Data Warehouse. 4th Edition, Wiley, 2005.
- E. S. Berner (Ed.) Clinical Decision Support Systems: Theory and Practice(Health Informatics), Springer, 2016

#### Course Content:

##### Topic

- I. The Business Intelligence Perspective
  - A. Major characteristics and competitive advantages of business intelligence

- B. Business intelligence and decision support
  - C. Structure and components of business intelligence and decision support systems
- II. The Data Warehouse
- A. Characteristics of a data warehouse
  - B. Data warehouse architectures
  - C. Star and snowflake schemas
  - D. Data integration and the extraction, transformation, and load (ETL) process
  - E. Data warehouse development
  - F. OLAP (Online Analytic Processing)
  - G. Multi-dimensional analysis
- III. Business Analytics
- A. Knowledge discovery and information mining
  - B. Business statistics
  - C. Data mining
  - D. Text mining
- IV. Case Studies and Applications
- A. Customer relationship management (CRM)
  - B. Supply chain management (SCM)
  - C. Business Performance Management (BPM)
  - D. Clinical Decision Support Systems