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)
	Knowledge
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
	Professional Skill
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 the development of data warehouses, data lake, real-time processing 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 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	Lab exercises	8%	1,2,4,5,6	Four lab exericses will be used to assess students understanding and develop practical techniques of business intelligence, and is related primarily to learning outcomes 1, 2, 4, 5 and 6.
2	Assignments	12%	4-6	Two assignments are designed to assess the students' mastery of the techniques and applications of business intelligence related mainly to learning outcomes 4 to 6.
3	Group Project	20%	3-6	The project is designed to achieve learning outcomes 3, 4, 5, and 6 by requiring students to work in a team environment to design and implement creative solutions through the

				application of the methodologies learned, as well as to apply the BI applications learned.
4	Examination	60%	1-6	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.

Assessment Rubrics:

Excellent (A)	• Achieves all six CILOs, demonstrating a good mastery of both the theoretical and practical aspects of the knowledge and skills associated with business intelligence • Able to develop and present sound arguments and correct solutions to problems, accompanied by in-depth analysis and insight • Demonstrates a thorough understanding and solid knowledge of business intelligence concepts, algorithms, and methodologies • Able to draw on a variety of techniques and relevant knowledge and appropriately apply them to new business intelligence situations and problems
Good (B)	• Achieves all six CILOs, demonstrating a good understanding of the associated concepts and underlying methodologies • Able to develop solutions to problems, accompanied by adequate explanations • Demonstrates a competent level of knowledge of business intelligence concepts, algorithms, and methodologies • Ability to make use of appropriate techniques and knowledge and apply them to familiar situations and problems
Satisfactory (C)	• Achieves most of the six CILOs, demonstrating a basic level of understanding of the associated concepts and underlying methodologies • Able to provide acceptable solutions to problems • Demonstrates an adequate level of knowledge of business intelligence systems and situations • Ability to make use of some techniques and knowledge and apply them to familiar situations
Fail (F)	• Achieves less than three of the six CILOs, with little understanding of the associated concepts and underlying methodologies • Unable to provide solutions to simple problems • Knowledge of business intelligence falling below the basic minimum level • Unable to apply techniques and knowledge to situations or problems

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.
- Turban, E., Aronson, J., Delen, D, and Sharda, R. Business Intelligence, Analytics, and Data Science: A Managerial Perspective 4th Edition, Prentice Hall, 2017.
- Sherman, R. Business Intelligence Guidebook: From Data Integration to Analytics. 1st Edition, Morgan Kaufmann, 2014.

- Kimball, R., Ross, M. The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling. 3rd Edition, Kimball Group 2013.

Course Content:

Topic

I. The Business Intelligence Perspective
   A. Major characteristics and competitive advantages of business intelligence
   B. 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
   H. Real-time data processing

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