| **Faculty of Computing and Informatics**  **Department of Information Systems**  **University of Gondar** | |
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| Course Code | **MSIS 6121** |
| Course Title | Data Mining and Business Intelligence |
| Credit Hour | 3 |
| ECTS Credits | 7 |
| Contact Hours (per week) | Lecture – 2 Lab - 2 |
| Pre-requisite | Students should have the background knowledge on Database Technology and Statistical methods. |
| Year / Semester | 1/2 |
| Status of Course | Supporting |
| Course Objectives | The course aims to make the students:   * Learn the concepts of database technology evolutionary path which has led to the need for data mining and its applications. * Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system. * Apply preprocessing statistical methods for any given raw data. * Students to achieve a profound understanding of Business Intelligence (BI) systems in terms of its tools, current practices and impacts. The students should acquire knowledge on how to design BI solutions for different BI targets and users. |
| Course Contents | **Unit 1 Data Mining Primitives, Languages, and System Architectures**: Data Mining Primitives, Data Mining Query Languages, Designing Graphical User Interfaces Based on a Data Mining Query Language Architectures of Data Mining Systems.  **Unit 2 Characterization and Comparison**: Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases.  **Unit 3 Mining Association Rules in Large Databases:** Association Rule Mining, Mining Single Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.  **Unit 4 Classification and Prediction**: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.  **Unit 5 Cluster Analysis Introduction** : Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.  **Unit 6:Business Intelligence:**  6.1.Definition,Concept  6.2.Need for Business intelligence  6.3. Role of Mathematical Models  **Unit:7 Business Analytics at the Strategic level**  7.1. Strategy and BA  7.2. Link between strategy and Business Analytics  7.3. BA supporting strategy at functional level  7.4. Information at strategic resource  7.5.Business Analytics at Analytical Level  **Unit 8: Business Intelligence Architectures:**  8.1.Cycle of Business Intelligence Analysis  8.2.Development of Business Intelligence System  8.3.Concept of Dashboard  8.4.OLAP,SOA, Decision Engineering  8.5.BI Tools |
| Literature | **Textbook:**  1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.  2. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY, Pearson Asia.  **References:**  1. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION  2. Data Mining Techniques – ARUN K PUJARI, University Press.  3.Decision Support and Business Intelligence Systems, Turban, Sharda, Delen, Pearson.  4. Business Intelligence Success Factors Tools for aligning your business in the global economy of Olivia Parr Rud, John Wiley and sonsm2009  5. Business Intelligence: Practices, Technologies, and Management-Rajiv Saherwalm Irma Becerra-Femandez |