OUTCOMES:

Upon completion of the course, the students will be able to:

- Describe the principle functions in database administration and security
- Discuss the need for performance tuning in databases
- Write optimized code for accessing multiple databases
- Reconstruct indexes and optimize queries for better database performance.
- Carry out troubleshooting in database systems

REFERENCES:

1. Craig S. Mullins, "Database Administration: The Complete Guide to Practices and Procedures", Addison-Wesley Professional, 2nd edition, 2013.
2. Dennis Shasha and Philippe Bonnet, "Database Tuning, Principles, Experiments and Troubleshooting Techniques", Elsevier Reprint, 2005.
3. Silberschatz, Korth, "Database System Concepts", McGraw Hill, 6th edition, 2010.
4. Thomas Connoly and Carlolyn Begg, "Database Systems, A Practical Approach to Design, Implementation and Management", Fourth Edition, Pearson Education, 2008.

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CP5077 DATA WAREHOUSING AND DATA MINING TECHNIQUES L T PC
3 0 0 3

OBJECTIVES:

- To understand data mining principles and techniques and Introduce DM as a cutting edge business intelligence.
- To expose the students to the concepts of data warehousing architecture and implementation.
- To learn various Data Mining techniques such as classification, clustering & Association rule mining
- To study the overview of developing areas – web mining, text mining and ethical aspects of data mining.
- To identify business applications and trends of data mining.

UNIT I INTRODUCTION TO DATA WAREHOUSING 9

Evolution of Decision Support Systems- Data warehousing Components – Building a Data warehouse, Data Warehouse and DBMS, Data marts, Metadata, Multidimensional data model, OLAP vs OLTP, OLAP operations, Data cubes, Schemas for Multidimensional Database: Stars, Snowflakes and Fact constellations

UNIT II DATA WAREHOUSE PROCESS AND ARCHITECTURE 9

Types of OLAP servers, 3–Tier data warehouse architecture, distributed and virtual data warehouses. Data warehouse implementation, tuning and testing of data warehouse. Data Staging (ETL) Design and Development, data warehouse visualization, Data Warehouse Deployment, Maintenance, Growth, Business Intelligence Overview- Data Warehousing and Business Intelligence Trends - Business Applications- tools-SAS

UNIT III INTRODUCTION TO DATA MINING 9

Data mining-KDD versus data mining, Stages of the Data Mining Process-task primitives, Data Mining Techniques -Data mining knowledge representation – Data mining query languages, Integration of a Data Mining System with a Data Warehouse – Issues, Data preprocessing – Data cleaning, Data transformation, Feature selection, Dimensionality reduction, Discretization and generating concept hierarchies-Mining frequent patterns- association-correlation

UNIT IV CLASSIFICATION AND CLUSTERING 9

Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Clustering techniques – Partitioning methods- k-means- Hierarchical Methods – distance based agglomerative and divisible clustering, Density-Based Methods – expectation maximization -Grid Based Methods – Model-Based Clustering Methods – Constraint – Based Cluster Analysis – Outlier Analysis

UNIT V PREDICTIVE MODELING OF BIG DATA AND TRENDS IN DATA MINING 9

Statistics and Data Analysis – EDA – Small and Big Data –Logistic Regression Model - Ordinary Regression Model-Mining complex data objects – Spatial databases – Temporal databases – Multimedia databases – Time series and sequence data – Text mining – Web mining – Applications in Data mining

TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of the course, the student will be able to

- Evolve multidimensional intelligent model from typical system.
- Discover the knowledge imbibed in the high dimensional system and gain knowledge on datawarehouse process.
- Acquire knowledge of data processing and data quality.
- Design and deploy classification and clustering techniques.
- Evaluate various mining techniques on complex data objects.

REFERENCES:

1. Jiawei Han, Micheline Kamber, “Data Mining: Concepts and Techniques”, Morgan Kaufmann, Third edition, 2011.
2. Alex Berson, Stephen J. Smith, “Data Warehousing, Data Mining & OLAP”, Tata McGraw Hill, Tenth Reprint, 2007.
3. G. K. Gupta, “Introduction to Data Mining with Case Studies”, Eastern Economy Edition, Prentice Hall of India, Third Edition, 2014.
4. Ian.H.Witten, Eibe Frank and Mark.A.Hall, “Data Mining: Practical Machine Learning Tools and Techniques”, Morgan Kaufmann, Third edition, 2011.
5. Bruce Ratner, “Statistical and Machine - Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data”, CRC Press, Second Edition, 2012.

6. Mehmed kantardzic, “Data mining: Concepts, Models, Methods, and Algorithms”, Wiley-Blackwell, Second Edition, 2011.
7. Ian Witten, Eibe Frank, “Data Mining: Practical Machine Learning Tools and Techniques”, ThirdEdition, Morgan Kaufmann, 2011.
8. George M Marakas, “Modern Data Warehousing, Mining and Visualization: Core Concepts”, Prentice Hall, 2002.

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CP5086 SOCIAL NETWORK ANALYSIS L T P C
3 0 2 4

OBJECTIVES:

- To gain knowledge about the current web development and emergence of social web.
- To study about the modeling, aggregating and knowledge representation of semantic web.
- To appreciate the use of machine learning approaches for web content mining.
- To learn about the extraction and mining tools for social networks.
- To gain knowledge on web personalization and web visualization of social networks.

UNIT I CLUSTERING AND CLASSIFICATION 9+6

Supervised Learning – Decision tree - Naïve Bayesian Text Classification - Support Vector Machines - Ensemble of Classifiers – Unsupervised Learning – K-means Clustering – Hierarchical Clustering – Partially Supervised Learning – Markov Models – Probability-Based Clustering – Vector Space Model

UNIT II SOCIAL MEDIA MINING 9+6

Data Mining Essentials – Data Mining Algorithms - Web Content Mining – Latent semantic Indexing – Automatic Topic Extraction – Opinion Mining and Sentiment Analysis – Document Sentiment Classification

UNIT III EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS 9+6

Extracting evolution of Web Community from a Series of Web Archive – Detecting Communities in Social Networks – Definition of Community – Evaluating Communities – Methods for Community Detection & Mining – Applications of Community Mining Algorithms – Tools for Detecting Communities – Social Network Infrastructure and Communities – Decentralized Online Social Networks – Multi-Relational Characterization of Dynamic Social Network Communities