

DATA MINING AND BUSINESS INTELLIGENCE

ITA5007

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COURSE OBJECTIVE

1. Learning Data mining methods and its importance
2. Learn about Business Intelligent and predictive analytics and decision making

EXPECTED OUTCOMES

On Completion of the course, the students will be able to

1. Implement the appropriate data mining methods like classification, clustering or association mining on large data sets.
2. Apply business intelligence to solve practical problems.
3. Apply Data mining for Business Intelligence

- Introduction to Data Mining(DM), Origin, Rapid Growth and Core Ideas in Data Mining
- Supervised and Unsupervised Learning
- Steps in Data Mining
- Introduction to Data Warehousing
- Introduction to Business Intelligence(BI)
- Role of mathematical model in DM, BI, etc
- Business Intelligent Architecture
- Development of business intelligent system

- Data Summaries
- Correlation Analysis
- Reducing the Number of Categories in Categorical Variables
- Converting a Categorical Variable to a Numerical Variable
- Principal Components Analysis

UNIT - III: PERFORMANCE EVALUATION AND PREDICTION

- Introduction to Evaluating Classification and Predictive Performance
- Judging Classification Performance
- Evaluating Predictive Performance
- Multiple linear regression
- Explanatory vs predictive modelling
- Estimating the regression equation and prediction variable selection in linear regression.

- Introduction to Classification
- Nave Bayes
- K-Nearest Neighbours (KNN)
- logistic regression models
- Evaluating classification performance
- Evaluating Goodness of fit
- Logistic regression for more than two classes

UNIT - V: DISCRIMINANT ANALYSIS AND ASSOCIATION RULES

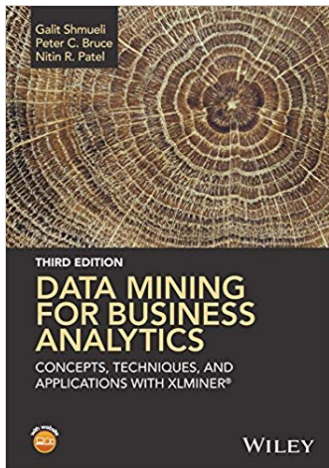
- Introduction to Discriminant analysis
- classification performance of discriminant
- prior probabilities
- unequal classification costs
- classifying more than two classes
- Introduction to Association Rule Mining
- Discovering Association Rules in Transaction Databases
- Generating Candidate Rules
- Selecting Strong Rules

- Introduction to Cluster Analysis
- Distance between two records
- Measuring Distance between two clusters
- Hierarchical Clustering
- Non-Hierarchical Clustering
- K-Means Clustering

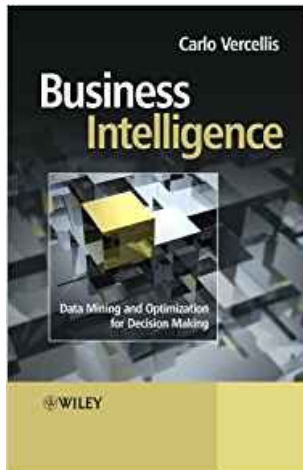
- Introduction to Time Series
- Explanatory versus Predictive Modelling
- Popular Forecasting Methods in Business
- Time Series Components
- Data Partitioning
- Regression-Based Forecasting
- Model with Trend
- Model with Seasonality
- Model with Seasonality and Trend
- Autocorrelation and ARIMA Models
- Smoothing Methods

- **Guest Lecture from Industry experts on recent trends in Data Mining for Business Applications**

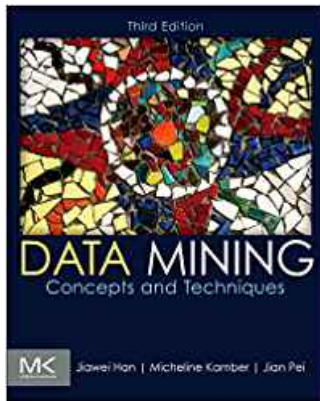
- **Data Mining for Business Analytics: Concepts, Techniques, and Applications in XLMiner, 3rd Edition, Wiley India Publications ,2015.** by Galit Shmueli, Peter C. Bruce, Nitin R. Patel



- **Business Intelligence: Data Mining and optimization for Decision Making, Wiley India Publications.2009** by Carlo Vercellis



- **Data Mining: Concepts and Techniques, 3rd Edition, Morgan Kaufman. 2011** by Jiawei Han , Micheline, Jian Pei.



- **Data Mining: Introductory and Advanced Topics, Pearson Education, 2006** by M. H. Dunham.

