Course Description and Objectives

In this world of marching science and galloping technology, the problems faced by decision makers in today’s competitive business environment are often extremely complex.

- Business Analytics guides and helps organizations to use data and glean insights to make sound business decisions in multiple possible interesting ways.

- Evaluating these alternatives and gaining insight from past performance is the essence of business analytics.

- This course is an application of Business Analytics that discusses the benefits of employing the famous/widely used analytics technique and a structured approach to problem-solving.

Course objectives and Outcomes

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<th>LG</th>
<th>Critical and integrative Thinking</th>
<th>Effective written and oral communication</th>
<th>Societal and Environmental Awareness</th>
<th>Ethical Reasoning</th>
<th>Leadership</th>
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<tbody>
<tr>
<td>CO1: Knowledge</td>
<td>3</td>
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<tr>
<td>CO2: Skill sets: Analytics Tools</td>
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<td>CO3: Solving problems</td>
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Course contributes mostly to: Employability/ Skill Development/ Value-add

Course Outline

MODULE 1 – Introduction to Data Mining

- Introduction to Data Mining – components, primary goals, tasks, real life case studies, applications
- Supervised Vs Unsupervised Learning – definition, examples
- Overall process flow – industry scenario and example.
MODULE 2 – Clustering (Part I)
- Introduction to Clustering – definition, purpose, goals, real life case studies, examples
- Clustering Algorithms – types, examples
- Distance and similarity – differences, pair wise distances for numeric, distances for binary data, importance of standardization, dataset

Hands on using Excel Miner. *Students will also be introduced to R*

MODULE 3 – Clustering (Part II)
- K-means Clustering – introduction, algorithm at high level and in detail, examples
- Hierarchical Clustering – introduction, algorithm at high level and in detail, examples
- Applications and Examples
- Limitations and challenges

Hands on using Excel Miner. *Students will also be introduced to R*

MODULE 4 – Regression (Part I)
- Regression – An Overview
- Simple linear regression – Assumptions; Model estimations; Goodness of Fit; Residuals; Regression diagnostics; Heteroscedasticity

Hands on using R

MODULE 5 – Regression (Part II)
- Multiple Linear Regression – Complete as well as Step-wise; Goodness of Fit (Adjusted R-square, AIC, BIC); Regression diagnostics; Residuals; Multicollinearity
- Model Validation and Accuracy Measurement - Cross validation, MAPE, RSE

Hands on using R

MODULE 6 – Advanced Analytic Techniques and Applications
- An insight into business problems faced by various industries and the possible techniques used.
- Advanced Analytics - Sentiment Analysis, Fraud Analytics, Web Analytics