**PS-FCS-102 Business Analytics**

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| **Unit** | **Content** | **No. of Lectures** |
| **1** | **1.1 Introduction to Business Analytics:** Business Analytics for competitive advantage, Foundation of Analytics, Information Management in Analytics.  **1.2 Statistical Models in Business Analytics:** Review of Statistical methods, Logistic Regression, Simulation Techniques, Sampling Techniques, Forecasting Techniques, Dynamic Programming, Inventory Models, Resampling Methods. | **15** |
| **2** | **2.1 Business Intelligence Architecture and Capabilities:**  Business Intelligence Architecture: Data - Model – Presentation, Business Intelligence capabilities - Reporting, Ad-Hoc Analysis, Dashboards, Scorecards, Event Management, Spreadsheet modeling, Overview of Data Visualization. | **15** |
| **3** | **3.1 Mining Social Networks:**  Social Networks as Graphs, Clustering of Social-Network Graphs, Direct Discovery of Communities, Finding Overlapping Communities. | **15** |
| **4** | **4.1 Applied Text Analytics:**  Fundamentals, Dimension Reduction (PCA, SVD). Sentiment Analysis, Opinion Mining.  **4.2 Application of Analytics:**  Business Verticals, Marketing, Financial and Operations Management. | **15** |

**References**

1. R - Gareth James, Daniela Witten, Trevor Hastie Robert Tibshirani, An Introduction to

Statistical Learning with Applications in R, Springer Publication, 2013.

1. Cathy O’Niel and Rachel Schutt, Doing Data Science, O’Rielly Publication, 2013.
2. Allen B. Downey, Think Bayes Bayesian Statistics Made Simple,Green Tea Press Needham, Massachusetts, 2013.
3. Bing Liu, Sentiment Analysis and Opinion Mining, Morgan and Claypool Publishers, 2012.
4. Mike Biere, Business Intelligence for the Enterprise, Prentice Hall Professional, 2003.
5. R N Prasad, Seema Acharya: Fundamentals of Business Analytics, Wiley India Ltd, 1st Edition, 2011.

**Project Topics**

* **Forecasting the Sales of a Supermarket During Festival Season**

## ****Employee Attrition and Performance****

## ****Predicting Sales in Tourism****

## ****Predicting the Success of an Upcoming Movie****

## ****Customer Segmentation****

**PS-FCS-104 Research Methodology**

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| **Unit** | **Content** | **No. of Lectures** |
| **1** | **1.1** Research: What does it mean? Characteristics of Research  **1.2** Research Methods versus Methodology, Research and Scientific Method.  **1.3** Types of Research: Descriptive versus Analytical, Applied versus Fundamental, Quantitative versus Qualitative, Conceptual versus Empirical.  Research Process.  **1.4** Formulating a Research Problem: Reviewing Literature, Formulating a Research Problem, Identifying Variables, Constructing Hypothesis | **15** |
| **2** | **2.1** The Research Design: Meaning, Need for Research Design, Important Concepts, Different Research Designs, Basic Principles of Experimental Designs.  **2.2** Sampling Design: Steps in Sampling Design, Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs, How to Select a Random Sample.  **2.3** Collecting Data: Considering Ethical Issues in Data Collection, Methods of Data Collection. | **15** |
| **3** | **3.1 Processing and Analysis of Data:**  Processing Operations,  Some Problems in Processing,  Elements/Types of Analysis,  Statistics in Research,  Measures of Central Tendency,  Measures of Dispersion,  Measures of Asymmetry (Skewness),  Measures of Relationship,  Simple Regression Analysis,  Multiple Correlation and Regression,  Partial Correlation,  Association in Case of Attributes.  **3.2 Hypothesis Testing:**  What is a Hypothesis?,  Basic Concepts Concerning Testing of Hypotheses,  Procedure for Hypothesis Testing,  Flow Diagram for Hypothesis Testing,  Tests of Hypotheses, One sided and Two sided hypothesis, Critical region, p-value, Confidence intervals, Conducting a Hypothesis Test, Type – I and Type – II errors. | **15** |
| **4** | **4.1 Technical Writing:** Writing a Research Proposal, What is a Scientific Paper? Ethics in Scientific Publishing.  **4.2** Preparing the Text: How to Prepare the Title, How to List the Authors and Addresses, How to Prepare the Abstract, How to Write the Introduction, How to Write the Materials and Methods Section, How to Write the Results, How to Write the Discussion, How to State the Acknowledgments, How to Cite the References.  **4.3 Preparing the Tables and Figures:** How to Design Effective Tables, How to Prepare Effective Graphs, How to Prepare Effective Photographs.  **4.4 Publishing the Paper:** Rights and Permissions, How to Submit the Manuscript, How and When to Use Abbreviations, How to Write a Thesis, Outcome of Research | **15** |

**References:**

1. Kothari C.R., Research Methodology, New Age International Publication, New Delhi.

2. Ranjit Kumar, Research Methodology-A Step-by-Step Guide for Beginners, (4th ed.), 2014,

Singapore, Pearson Education.

3. Robert, A. Day, How to Write and Publish a Scientific Paper, Cambridge University Press, Great Britain.