

Business Analytics Course Structure

Course outline

I. Overview of Business Analytics

- Introduction to Analytics
- Davenport article - “Competing on Analytics”
- LaValle et al. article - “Analytics: The New Path to Value”

II. Visualization/ Data Issues

- Organization/sources of data
- Importance of data quality
- Dealing with missing or incomplete data
- Data Classification
- Davenport and Harris article - “The Dark Side of Customer Analytics”

III. Introduction to Data Mining

- Introduction to Data Mining
- Data Mining Process
- Data mining tool XLMiner (Excel add-in – free 15 day trial available at www.solver.com/xlminer-data-mining)
- Loveman article – “Diamonds in the Data Mine”
- Market Basket Analysis – Shmueli Chapter 13
- Classification and Regression Trees – Shmueli Chapter 14

IV. Introduction to Decision Modeling

- Optimization,
 - Use of Excel to solve business problems: e.g. marketing mix, capital budgeting, portfolio optimization
- Decision Making under Uncertainty
 - Simulation

- Introduction to Risk
- Types of problems: inventory management, capital investment analysis, market share estimation, sensitivity analysis

V. Using a Data Analytic Language to Solve Business Problem

- the role of data analytics in business domains
- R and RStudio.
- Data handling in R
- Dictionary, Markbooks, notebooks in R.
- Summary statistics , FACT framework

VI. Use Functions to Help with Data Preparation

- Assembling Data, Data Types
- More on Functions, Packages
- Introduction to Other Data Types
- Creating Date Types, Calculations with Dates
- Factors, Logical Type and Relational Operators, Character Strings

VII. Data Preprocessing techniques

- Framing Questions for Actionable Insight, Dataframe Shape: Level of Aggregation
- Dataframe: Control Versus Feasibility, Dataframe Shape: Wide Versus Long
- Review of Notebooks and Introduction to dplyr, Subset Data Using dplyr's Select and Filter Functions
- Useful Operators: %>% and %in%, Using dplyr's Mutate, Rename, Relocate, and Distinct Functions
- Handling Missing Values, Data Aggregation and Summary
- Pivoting Dataframes Between Wide and Long Shapes, Stacking and Sorting Data, Joining Data