

NATIONAL UNIVERSITY OF SINGAPORE
NUS Business School
Department of Decision Sciences

DSC5103 Statistics

Lecturer : Adj Assoc Prof Rita Chakravarti

Session : Semester I, 2014/2015

Aims & Objectives

As the world is evolving rapidly in the technological space, the way organizations function is also changing. Data storage and processing has also become cheap over time. Competition and regulation is forcing organizations to make use of their data efficiently and intelligently to remain profitable and compliant. It boils down to relevant story telling from your data so that Business Leaders can make meaningful decisions to steer the organization in a relevant direction. However, this requires, proper training and knowledge of data handling and extract the juice out of it.

Successful businesses make use of Business Analytics & Intelligence which are fundamentally based on quantitative statistical methods and optimization techniques, to identify patterns and trends in their data which eventually leads to meaningful insight and appropriate predictions. The focus of this course is to build the relevant competence in Business Statistics which is the forerunner of achieving analytics capabilities. It introduces students to the fundamental concepts of statistical inference such as hypothesis testing, parameter estimation and pattern recognition including statistical tools useful in business analytics, such as regression analysis, logistic regression, factor analysis, principal component analysis, cluster analysis and time series analysis.

Module content will make use of examples that are based on real life problems. This module makes active use of the Excel spreadsheet and the SAS/SPSS/R softwares..

Module Outline

Inferring from Data (Week 1-2)

- Testing hypothesis
- Comparing distributions
 - Goodness-of-fit
 - Homogeneity
- Comparing averages
 - 1 sample
 - 2 samples
 - Multiple samples
 - Analysis of Variance
- Relating variables
 - Correlation

Predicting beyond Data (Week 3-5)

- Simple regression
- Multiple regression
- Logistic regression

Time Series Analysis (Week 6-8)

- Time Series Regression

Decomposition Methods
Exponential Smoothing

Geometric Concepts of Data Manipulation (Week 9)

Fundamentals of Data Manipulation (Week 10)

Principle Components Analysis (Week 11)

Factor Analysis (Week 12)

The Text Book

Statistics for Managers Using Microsoft Excel, 7th Edition by David M Levine, David F Stephan & Kathryn A Szabat

Reference Books

Applied Multivariate Techniques by Subhash Sharma

Forecasting, Time Series and Regression, 4th Edition by Bruce L Bowerman, Richard T O'Connell and Anne B Koehler

WEIGHTAGES OF ASSESSMENT (100% CA):

Class participation exercises / assignments	- 15%
Class presentation	- 15%
Group Analytics Project	- 20%
Mid Semester Exam	- 15%
Final Exam	- 35%

As a part of the course and assessment the students will be involved in:

- a) **Group Analytics Project** : involving a practical application project in groups
- b) **Group Presentation** : will be based on relevant and key situations / literature which will broaden their perspective on applying the statistical techniques.