



# **BUSINESS STATISTICS FOR DATA SCIENCE (MANB 1123)**

SEMESTER 1 2017/2018

DR. NURULHUDA FIRDAUS BT MOHD AZMI

# COURSE OVERVIEW

- ❖ Ice-Breaking
- ❖ Course Synopsis
- ❖ Course Outcome
- ❖ Course Outline
- ❖ Assessment and Grading
- ❖ Course References

# KNOW ME

## **Nurulhuda Firdaus Mohd Azmi (Huda)**

Diploma in Computer Science (1997), BSc Computer Science (UTM) (1999),

MSc Applied Statistics (UPM) (2001) - Thesis Title: Identifying Multiple Outliers In Linear Regression By Clustering Methodology Using MM Estimators

PhD in Computer Science (Univ. Of York, UK)(2014) - Thesis Title: Artificial Immune Systems for Information Filtering: Focusing on Profile Adaptation

### **Area of research:**

Soft Computing, Operational Research, Machine Learning, Data Mining, Data Analytics

**Research Group (RG):** Operational Business Intelligence (OBI)

**Interest Group (IG):** Machine Learning for Data Science (MLDS)

### **Contact Information:**

Tel: 03-26154786, 0125719624 Email: [huda@utm.my](mailto:huda@utm.my)

# COURSE SYNOPSIS

This course **introduces students to a range of statistical techniques which managers use**. The students will use **statistical tools** such as R Studio (R Programming), SAS, MATLAB, SPSS and many others to perform calculations associated with statistical techniques. This course will begin with a brief overview of the discipline of **business statistics** and will then quickly focus on descriptive statistics, introducing graphical methods of describing data. The students will learn about combinatorial probability and random distributions, the latter of which serves as the foundation for **statistical inference**. We will also examine the techniques to study the relationship between two or more variables; this is known as regression. The focus in this subject is on **how to analyze and interpret results or the output from statistical packages**. The students will learn how to apply these techniques by working with examples which are relevant to most major business disciplines and the functional areas of large organizations. These include examples from Accounting (particularly Auditing), Economics, Finance, Human Resource Management, Information Technology, Logistics and Transport, Marketing and others business related domain. At the end of the course students will have **advanced the knowledge and skills to collect, organize, analyze, and interpret business statistical output**.

# COURSE OUTCOME

At the end of the course, students will be able to:

- **Undertake** independent statistical analysis to make informed decisions and provide advice accordingly.
- **Apply** statistical methods to business related such as sales, human resource, logistic and supply chain and others.
- **Develop** analytics decision to solve business problems by finding new ideas and alternative solutions using statistical
- **Formulate** statistical solutions for business problems to find and manage relevant information from many sources.

# COURSE OUTLINE

TOPICS	ITEM
<b>Introduction to Business Statistics, Data Analytics and Data Science</b> <b>Data Collection</b> <b>Data Types, Data Measurement Level and Variables</b> <b>Descriptive Statistics: Visualization &amp; Numerical Description</b>	<b>1</b>
<b>Estimation</b>	<b>2</b>
<b>Hypothesis Testing &amp; Inferences</b>	<b>3</b>
<b>Linear Regression &amp; Correlation Analysis</b>	<b>4</b>
<b>Multiple Regression &amp; Predictive Model Building</b>	<b>5</b>
<b>More to advance predictive and prescriptive analytics: Forecasting</b> <b>Time Series Data &amp; Quality Statistical Process Control</b>	<b>6</b>

# ASSESSMENT & GRADING

Assessment	Quantity	% Each	% Total
Business Statistics Capstone Project (Group)	1	30	30
Project Presentation (Group)	1	10	10
Assignment (Individual)	2	15	30
Final Exam	1	30	30
TOTAL			100

# COURSE SCHEDULE & MATERIAL

**CLASS TIME:** 1<sup>ST</sup> Session – 10.00 am to 12.45 pm (with 10 min break)

2<sup>nd</sup> Session – 2.30 pm to 4 pm (with 10 min break)

## COURSE SCHEDULE:

26/9/17 (Tuesday) : Ice Breaking + Item 1 (Data Collection & Descriptive Stat)

28/9/17 (Thursday): Item 2 (Estimation) + Business Statistics Capstone Project Briefing

2/10/17 (Monday): Item 3 (Hypothesis Testing & Inferences) + Assignment 1 Briefing

3/10/17 (Tuesday): Item 4 (Linear Regression & Correlation Analysis) + Assignment 2 Briefing

5/10/17 (Thursday): Item 5 (Multiple Regression & Predictive Model Building)

10/10/17 (Tuesday): Item 6 (More to advance predictive and prescriptive analytics: Forecasting Time Series Data & Quality Statistical Process Control) + Business Statistics Capstone Project Presentation Briefing

\*\* Set the presentation date for Business Statistics Capstone Project = 13/10/17 (1 hour)

\*\* Set the date for Final Exam Review = will be updated



# COURSE REFERENCES

Not Limited to

- 1) Peng, R.D. 2015. R Programming for Data Science. Learnpub.  
Available at: <https://leanpub.com/rprogramming>
- 2) Mendenhall, W., Beaver, R. J., Beaver, B. M. 2012. Introduction to Probability and Statistics 14<sup>th</sup> Edition. Duxbury Press. ISBN: 1133103758
- 3) Downing, Douglas, and Jeffrey Clark. Business statistics. Barron's Educational Series, 2010.
- 4) Berenson, Mark, et al. Basic business statistics: Concepts and applications. Pearson Higher Education AU, 2012.
- 5) Weiers, Ronald M. Introduction to business statistics. Cengage Learning, 2010.
- 6) Groebner Shannon Fry. Business statistics a Decision Making Approach (9<sup>th</sup> Edition). Pearson International, 2014.