National Taiwan University of Science and Technology

2020 Winter Program

BUS 260 Business Analytics I

Course Outline

Course Code: BUS 260

Instructor: Dr. Yunshan (Victor) Lian

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Credit: 4

Course Description:
Students will learn quantitative decision-making skills for managers. Particular focus will be given to understanding statistics and management science concepts, and developing the skills required to analyze data, conduct statistical hypothesis testing, and use management science techniques in business settings.

Prerequisites:
Must meet Excel competency requirement

Required Textbooks:
Business Analytics: Data Analysis and Decision Making (6e). (2017). S. Christian Albright and Wayne Winston. Cengage/Southwestern Publishing.
ISBN: 9781305947542

Course Overview
Living in the age of technology has implications for everyone entering the business world. Technology makes it possible to collect huge amounts of data. Technology has given more people the power and responsibility to analyze data and make decisions. A large amount of data already exists and will only increase in the future. One of the hottest topics in today's business world is business analytics.
This term encompasses all of the types of analysis discussed in this course. It also typically implies the analysis of very large data sets. By using quantitative methods to uncover the information in these data sets and then acting on this information, companies are able to gain a competitive advantage.
This course combines topics from two separate fields: statistics and management science. Statistics

is the study of data analysis. Management science is the study of model building, optimization, and decision making. Three important themes run through this book:

1. Data analysis—includes data description, data inference, and the search for relationships in data.
2. Decision making—includes optimization techniques for problems with no uncertainty, decision analysis for problems with uncertainty, and structured sensitivity analysis.
3. Dealing with uncertainty—includes measuring uncertainty and modeling uncertainty explicit.

Concepts covered in this course include:

1. Probability and data distributions
2. Statistical techniques, including conducting descriptive statistical analyses, creating graphical data displays and tables, confidence intervals, and hypothesis testing.
3. Management Science techniques, including decision making under uncertainty, optimization, and simulation.
4. How to make decisions based on quantitative data analysis; and
5. How to use Excel to conduct all the analyses listed above.

Learning Outcomes

On completion of this course, you will be able to:

1. Describe the properties of normal, binomial, Poisson, and exponential distributions, provide examples of when they apply, and perform calculations involving them;
2. Discriminate between sampling schemes that are generally used in real sampling applications;
3. Analyze sample data in order to infer the properties of the entire population;
4. Construct and analyze data files using Excel;
5. Evaluate data using tables, graphs, and descriptive statistics;
6. Analyze a single sample of data using hypothesis testing;
7. Investigate differences in two or more samples using hypothesis testing;
8. Assess relationships between variables using hypothesis testing;
9. Analyze decision problems that involve uncertainty;
10. Understand how to test the assumptions associated with statistical hypothesis tests; and
11. Apply statistical analysis and management scientific techniques to decision making situations.

Evaluation:

20% Attendance and discussion
20% Exercises and homework
30% Midterm Exam
30% Final Exam

Attendance & Discussion:

You are expected to actively participate the class time and TA led discussion.

Exercise:

Due to the nature of the hybrid format of this course, it's highly important for you to complete the assigned exercises during each week. Late submission is not accepted and will be regarded as zero

point.

Midterm and Final Exam

Midterm and final exam will be in the format of problem solving and concept discussion. Final exam is non-cumulative, which means only covers the rest chapters after the midterm exam.

Grading:

A+ : 95 - 100 A : 94 – 90
B+ : 89 - 85 B : 84 – 80
C+: 79 - 75 C : 74 – 70
D+: 69 - 65 D : 64 – 60
F : Fail

Academic Integrity

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Students must recognize that failure to follow rules and guidelines may constitute academic misconduct.

Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and/or possession of unauthorized materials during an examination.

Any suspicious academic misconduct in this course will be reported to the administration of the university. If it is determined that you have committed academic misconduct, the sanctions could include a failing grade in this course and suspension or dismissal from the program.

Course Schedule (may subject to change for the purpose of learning effectiveness):

Week1

Chapter 1 Introduction to business analytics
Chapter 2 Describing the distribution of a single variable
Chapter 3 Finding relationships among variables
TA led review session

Week2

Chapter 4 Probability and probability distributions
Chapter 5 Normal, Binomial, Poisson and Exponential distributions
Chapter 6 Decision making under uncertainty
TA led review session
Mid-term exam

Week3

Chapter 7 Sampling and sampling distributions
Chapter 8 Confidence interval estimation
Chapter 9 Hypothesis testing
TA led review session

Week4

Chapter 10 Regression analysis: Estimating relationships

Chapter 11 Regression analysis: Statistical inference
Chapter 12 Time series analysis and forecasting
TA led review session
Final exam