

University of Management and Technology



Inferential Statistics for Finance

QM-715

Dr Hasan Murad School of Management (HSM)

Basic Information

Program:	MS Finance
Semester:	
Credit Hours:	3
Duration:	15 Sessions of 2:30 hours each
Prerequisites:	Students attending this course should have studied Quantitative Techniques & Methods Or Equivalent
Resource Person:	
Contact Information:	

Course Description

Important decisions involving research and development projects are rarely made by intuition alone. We need to use the data to develop our insights and to support our analysis. Today, statistics and its applications are an integral part of our lives. In such diverse settings as politics, medicine, education, and business, human activities are both measured and guided by statistics. More and more decisions made in the business and research world now rely on soundness of statistical information, and on appropriateness of the use of analytical tools. It is, therefore, imperative for a professional manager and academic personnel to be aware of the multifaceted role of statistics as a descriptor of information, a tool for analysis, a means of reaching conclusions, and an aid to decision

This course is aimed to provide the necessary tools to R&D managers, researchers and entrepreneurs for decision making in variety of professional and academic situations involving research and R & D projects. Participants will learn to formulate the real life business problems into quantitative models. Teaching of conceptual framework of these tools will be supplemented by hands on application of various software packages that will

aid in solving these models. Expertise will be developed in interpretation of these solutions and their use in decision making.

Learning Objectives

Purpose of the course is to provide the participants with statistical and analytical tools useful for researchers to carry out different research projects. Future researchers and R&D managers will use these tools in planning, executing and evaluating their research related academic and business needs. Upon successfully completing this course, the participants will be able to:

- Identify and formulate key research problems areas where quantitative techniques can have an impact.
- Use quantitative and statistical tools to solve these problems.
- Assess data with healthy skepticism and seek expert help when needed.
- Recognize when better data and information are needed for decision making.

Learning Methodology

Following instructional tools and methodologies would be used during the course.

Lectures: 15 sessions in total including MID TERM Exam. Each of these lectures is accompanied by detailed description of the technique, its use in the form of data analysis, and pertinent examples from the research world.

Research Papers & Case Studies: Every alternate session would be accompanied by discussions on Case Studies as well as Research Publications.

In Class Exercises: Data analyses would be conducted to appreciate numerical aspects of the techniques.

Computer Software: IBM SPSS and MS EXCEL

Recommended Text

Considering the nature and requirement of this course no single book is recommended. However, there are some books available that can cover the course in its minimum requirements. This deficiency may be overcome by using some references besides a recommended book. Following is the recommended text as well as some reference texts for the course;

1- Business Statistics – A Decision Making Approach, 7th Edition

By Kent D. Smith & Philip C. Fry

2- Multivariate Data Analysis, 6th Edition

By Hair, Black, and Anderson

3- Discovering Statistics Using IBM SPSS Statistics, 4th Edition

By Andy Field

4- Applied Statistics: From Bivariate Through Multivariate Techniques, 2nd Edition, by Rebecca M. Warner

5- Spreadsheet Modeling & Decision Analysis, 5th Edition

By Cliff T. Ragsdale

6- SPSS for Intermediate Statistics, Use and Interpretation, 3rd Edition

By Nancy L. Leech, Karen C. Barrett, and George A. Morgan

7- Quantitative Analysis for Management, 10th Edition

By Barry Render, Ralph M. Stair, Jr., and Michael E. Hanna

Assessment Scheme

Participants would be evaluated on the basis of their overall performance during the semester including their attendance, discipline, participation besides academic pursuits. In summary, a participant would be evaluated as follows;

1- Class Participation 5%

Participants are expected to be present, both physically and mentally, in each and every session and this is contributed towards their final evaluations. Attendance would be called in first 5 minutes of each session and no concession would be given in relaxing these minutes. Discipline should be maintained at all cost and a healthy and conducive participation is always cherished.

2- Assignments 40%

There would be 6 assignments in total. Some of these assignments are group assignments where participants are expected to produce the solution in groups. All of these assignments are week long duration and are to be submitted at the start of next class for full grading. No concession would be given for this due date. However, you may submit your assignments at any time after this date with a deduction of 10% points/day.

3- Exams 40%

There would be TWO exams; one around the middle and the other at the end of the semester.

4- Term Paper 15%

Participants are expected to produce a term paper at the end of the semester. The themes for current semester are “Theoretical Finance”, “International trade”, “Corporate Governance”, “Outsourcing”, and “Intrapreneuring” where the students are expected to collect data using a given instrument, analyze the data for the hypotheses, and to present the results. Usually, a time period of ONE week is given after the conclusion of 14 classes to submit the paper.

Cheating

Participants are expected to do their own work in their assignments, quizzes and exams. They are always encouraged to discuss with each other but the assignments, quizzes and exams should be their own work reflecting their own effort and intellect. The School of Business & Economics is VERY STRICT against any action of plagiarism, copying and cheating. So don't put yourself in any embarrassing position that may mar your career. In summary, any or all of these actions may be taken against you in case of cheating.

1. Zero Point for the assignment/quiz/exam

2. Case would be sent to UMC Committee

Topics to be Discussed

- ✓ Statistics, Descriptive versus Inferential Statistics
- ✓ The Where, Why, and How of Data Collection
- ✓ Graphs, Charts, and Tables – Describing Your Data
- ✓ Describing Data Using Numerical Measures
- ✓ Using Probability, Probability and Sampling Distributions
- ✓ Selecting and Interpreting Inferential Statistics
- ✓ Models and Model Building, Linear and Multiple Regression
- ✓ Linear Programming and Sensitivity Analysis
- ✓ Decisions Theory Analysis
- ✓ Exploratory Factor Analysis and Principal Components Analysis
- ✓ Logistic Regression and Discriminant Analysis
- ✓ Analysis of Variance ANOVA, Multiple Analysis of Variance MANOVA and Canonical Correlation

Calendar of Activities

Topic	Content to be Covered	Readings
The Where, Why, and How of Data Collection	What is Statistics? Descriptive and Inferential Statistics Differentiation, Tools for Collecting data, Populations, Samples, and Sampling Techniques, Data Types and Data Measurement Levels Activity: Demonstration through SPSS	Business Statistics – A Decision Making Approach, 7th Edition, by Kent D. Smith & Philip C. Fry - Ch-1
Graphs, Charts, and Tables – Describing Your Data	Frequency Distributions and Histograms, Bar Charts, Pie Charts, and Stem and Leaf Diagrams, Line Charts and Scatter Diagrams Activity: Demonstration through SPSS	1. Kent D. Smith & Philip C. Fry - Ch-2 2. Satish Kumar, Lalit K. Bansal, (2008),"The Impact of Mergers and Acquisitions on Corporate Performance in India", Management Decision, Vol. 46 Iss: 10 pp. 1531 - 1543
Describing Data Using Numerical Measures	Measures of Center and Location, Measures of Variation, Using Both Together Activity: Demonstration through SPSS	Business Statistics – A Decision Making Approach, 7th Edition, by Kent D. Smith & Philip C. Fry - Ch-3
Using Probability, Probability and Sampling Distributions	The Basics of Probability, The Rules of Probability, Discrete and Continuous Probability Distributions, Introduction to Sampling Distributions	Business Statistics – A Decision Making Approach, 7th Edition, by Kent D. Smith & Philip C. Fry - Ch-4, 5, 6, and 7
Selecting and Interpreting Inferential Statistics	Selection of Inferential Statistics, The General Linear Model, Interpreting the Results of a Statistical Test Activity: Demonstration through SPSS	1. SPSS for Intermediate Statistics, 3rd Edition By Nancy L. Leech, Karen C. Barrett, and George A. Morgan - Ch-5 2. Ruzita Jusoh, John A. Parnell,(2008),"Competitive strategy and performance measurement in the Malaysian context: An exploratory study", Management Decision, Vol. 46 Iss: 1 pp. 5 - 31
Models and Model Building	What is Simple and Multiple Regression Analysis? A Decision Process for Multiple Regression Analysis Activity: Demonstration through SPSS	Multivariate Data Analysis, 6th Edition by Hair, Black, and Anderson - Ch-4

Statistical Simulation for Finance	What is Statistical Simulation? How it helps in Statistical Inference? Monte Carlo Simulation, Generation of Random Numbers Activity: Demonstration through STATA	Handouts involving STATA Do Files
Financial Models	Black Scholes Option Pricing (BSOP) Model, Value at Risk (VAR)	Handout
Linear Programming and Sensitivity Analysis	Optimization and Linear Programming, Modeling and Solving LP in Spread Sheet, Sensitivity Analysis and Simplex method Activity: Demonstration through MS EXCEL	Spread Modeling & Decision Analysis, 5th Edition by Cliff T. Ragsdale - Ch-2, 3, and 4
Decisions Theory Analysis	Characteristics of Decision Problem, Non Probabilistic Vs Probabilistic Models, Decision Trees Activity: Demonstration through MS EXCEL	Quantitative Analysis for Management, 10th Edition by Barry Render - Ch-3
Exploratory Factor Analysis and Principal Components Analysis	What is Factor Analysis? Factor Analysis Decision Process Activity: Demonstration through SPSS	1. Multivariate Data Analysis, 6th Edition by Hair, Black, and Anderson - Ch-3 2. K. Hasnah, 2009, "Corporate Governance and Board Performance: Evidence from Malaysia" 5th International GABER Conference, KL, Malaysia
Logistic Regression	Logistic Regression, Hierarchical Logistic Regression, Discriminant Analysis (DA) Activity: Demonstration through SPSS	SPSS for Intermediate Statistics, Use and Interpretation, 3rd Edition by Nancy L. Leech, Karen C. Barrett, and George A. Morgan - Ch-7
Analysis of Variance ANOVA,	Factorial (1-Way) ANOVA, Post Analysis of a Significant Interaction, Activity: Demonstration through SPSS	SPSS for Intermediate Statistics, Use and Interpretation, 3rd Edition by Nancy L. Leech, Karen C. Barrett, and George A. Morgan - Ch-8, and 9

Term Paper

A term paper is a research paper written by students over an academic term (or a semester). Term papers are generally intended to describe an event, a concept, or argue a point. A term paper is a written original work discussing a topic in detail, usually several typed pages in length. Typically, a term paper is composed of following sections;

- ✓ **Introduction**
 - Objectives of the Term Paper
- ✓ **Literature Review**
 - Hypotheses to be tested in the Term Paper
- ✓ **Methodology**
 - Data Instrument to be used in the Term Paper
 - Data Collection Scheme
- ✓ **Analysis and Results**
 - The statistical analysis; its rationale and its findings
- ✓ **Discussion and Conclusion**
 - Implication
 - Direction for Future Research