



Course Code MBAN-603	Course Title Decision Making Methods & Tools	ECTS Credits 7.5
Department School of Business	Semester Fall, Spring	Prerequisites MBA-530
Type of Course Core	Field Statistics	Language of Instruction English
Level of Course 2 nd Cycle	Year of Study 1 or 2	Lecturer(s) Dr Haritini Tsangari
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- Follow on the topics that students covered in the introductory course Foundations in Statistics and Research (MBA 530) or its equivalent.
- Take a business perspective and concentrate on how Statistics and quantitative methods in general can be used in problem solving and decision-making.
- Provide students with the necessary skills in order to use a scientific approach to solve problems and make decisions as business executives.
- Introduce students to a number of important topics on statistics and probability theory.
- Introduce students to basic principles of forecasting and familiarize them with a number of statistical forecasting methods.
- Introduce students to the basic principles of decision theory.

Learning Outcomes:

After completion of the course students are expected to be able to:

- 1. use various sampling methods and apply the sampling distribution** (students should be able to select the most appropriate sampling method according to the purpose of the study; they should also apply the sampling distribution of the mean in relation to statistical inference).
- 2. utilize the basic concepts of estimation** (students should be able to compute point estimators as well as confidence intervals).
- 3. apply the basic concepts of hypothesis testing** (students should be able to execute hypothesis testing for the population mean μ and Proportion p , execute hypothesis testing for the difference between two Population Means

and two Population Proportions (independent samples), and do One-Way ANOVA tests).

4. **analyze categorical data** (students should be able to use Chi-Square to execute Tests of Independence and Homogeneity).
5. **utilize the basic principles of modeling and forecasting** (students should be able to use linear correlation and perform simple and multiple regression, handle time series analysis and develop forecasting models based on appropriate forecasting methods.)
6. **demonstrate the basic principles of optimization and decision theory**
7. **develop their ability to summarize and present data in a professional way** (students should be able to look beyond the numbers and interpret the numerical results according to the business problem they are dealing with).
8. **get acquainted with and use the SPSS package in analyzing business data.**

Course Contents:

1. **Sampling and sampling distributions:** sampling methods, sampling distribution of the mean and the relation with inferential statistics.
2. **Point and Interval estimation:** computation of point estimators and confidence intervals for the population mean and proportion.
3. **Hypothesis testing for the value of the Population Mean and the Proportion.**
4. **Statistical Inference about means and proportions:** Hypothesis Testing and Confidence intervals for the difference of two Population Means and two Population Proportions.
5. **Analysis of Variance:** Comparison of more than two population means.
6. **Inferences about population variances.**
7. **Tests of goodness of fit and independence:** analysis of categorical data, using Chi-Square tests of Independence and Homogeneity.
8. **Regression analysis:** Linear Correlation and Simple Regression, Multiple Regression, Regression testing through residual analysis and tests of significance.
9. **Time Series Analysis and Forecasting:** handling time series data, Statistical testing for identifying seasonality and trend patterns, Averaging and exponential smoothing forecasting methods, Measuring forecast accuracy.
10. **Statistical methods of quality control**
11. **Decision Theory, Linear Programming methods and applications**
12. **The SPSS package.**

Learning Activities and Teaching Methods:

Lectures, Assignments, Handouts, Discussion on in-class exercises and real-life examples, Computer Labs for the demonstration of SPSS.

Assessment Methods:

Homework, Project, Midterm Exam, Final Exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Newbold, P., Carlson, W.L. and Thorne, B.	Statistics for Business and Economics	Pearson Education	2010	0-13-507248-4

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Anderson, D. R., Sweeney, D. J. and Williams, T.A.	Statistics for Business and Economics	Thomson Learning	2002	0-324-06671-6
Hanke, J.E. and Wichern, D.W.	Business Forecasting	Prentice Hall	2005	0-13-122856-0