



Course Syllabus

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

Course Objectives:

The main objectives of the course are to:

- Follow on the topics covered in the introductory course Foundations in Statistics and Research (MBAN-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.
- Demonstrate a number of important topics on statistics and probability theory.
- Discuss the basic principles of forecasting and elaborate on a number of statistical forecasting methods.
- Discuss the basic principles of decision theory.

Learning Outcomes:

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

1. **Make informed decisions on sampling methods based on the appraisal of various sampling techniques** (students should be able to select the most appropriate sampling method according to the purpose of the study and the sampling frame)
2. **Utilize the basic concepts of estimation** (students should be able to compute point estimators as well as confidence intervals).
3. **Construct and test various hypotheses of interest** (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).
5. **Perform modeling and forecasting** (students should be able to use linear correlation and formulate simple and multiple regression models, handle time series analysis and develop forecasting models based on appropriate forecasting methods.)
6. **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).
7. **Get acquainted with and use the SPSS package in analyzing business data.**

Course Content:

1. **Overview of basic statistical terms and sampling methods:** data, variables, sample, population, probability and non-probability sampling methods.
2. **Point estimation:** introduction to statistical inference, computation of point estimators for population means and proportions.
3. **Confidence intervals for a population mean.**
4. **Hypothesis testing for a population mean:** Definitions and Steps to follow in hypothesis testing for the value of a Population Mean.
5. **Hypothesis testing for two population means and ANOVA for more than two population means:** Performing Hypothesis Testing for the difference between two Population Means and comparison of more than two population means (Analysis of Variance).
6. **Statistical Inference for a population proportion:** Confidence intervals; Hypothesis testing for a population proportion.
7. **Tests of independence:** analysis of categorical data, using Chi-Square tests of Independence.
8. **Bivariate Correlation:** Correlation analysis to describe linear relations between two variables.
9. **Simple Regression:** Simple regression analysis for examining the effect of an independent variable on the dependent variable of interest.
10. **Multiple Regression:** Multiple Regression models, forecasting and estimation using the regression models; handling time series data.
11. **Additional Topics in Regression:** Testing the regression model assumptions through residual analysis and tests of significance.

Learning Activities and Teaching Methods:

1. Lectures
2. Assignments
3. Handouts
4. Discussion on in-class exercises and real-life examples
5. Computer Labs for the demonstration of SPSS.

Assessment Methods:

Assignments, Mid-term exam, Final exam

Required Textbooks / Readings:

| Title | Author(s) | Publisher | Year | ISBN |
|---------------------------------------|---|----------------------|--------------------------------------|-----------------------------------|
| Statistics for Business and Economics | Newbold, P., Carlson, W.L. and Thorne, B. | Pearson Education | 2013 | 978-0-273- 76706-0 |
| Basic Statistics for Social Research | Hanneman, R.A., Kposowa, A.J. and Riddle M.D. | John Wiley & Sons | 2013 (8 th edition) | 978-1-118- 23415-0 (E-book) |

Recommended Textbooks / Readings:

| Title | Author(s) | Publisher | Year | ISBN |
|---------------------------|--------------------------------|-----------|---------------------------------------|---------------------|
| Understandable Statistics | Brase, C.H. and Brase, C.P. | Wiley | 2015 (11 th Edition) | 978-1- 285460918 |