

## Quantitative Methods

Code: 41984  
ECTS Credits: 10

**2025/2026**

Degree	Type	Year
Management, Organization and Business Economics	OB	0

## Contact

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## Teachers

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## Teaching groups languages

You can view this information at the [end](#) of this document.

## Prerequisites

No specific preconditions although some general knowledge in statistics are more than welcome.

## Objectives and Contextualisation

The module introduces multivariate methods for the quantitative analysis of large databases. It also includes methods for creating and improving measurement scales and for analysis of experimental and non-experimental data. The data used will be related to economic and business issues, with an special emphasis on introducing gender aspects in the analyses. The use of statistical packages is emphasized through exercises and applied works. The module also contains econometric methods including response models, discrete censored regression models, methods of sample selection and panel data models. Additionally, also addresses mathematical programming in the context of operational research. The course also gives an introduction to qualitative methods.

## Competences

- Analyse and summarise large amounts of complex quantitative and qualitative information using statistical, econometric and mathematical programming techniques.
- Be able to evaluate inequalities for reasons of sex and gender to design solutions.
- Develop a critical and a constructive attitude to one's work and that of others.
- Develop an ethical, social and environmental commitment.
- Explain and motivate the analyses, interpret the results and present all these clearly and concisely in English.
- Identify the relevant sources of information and their content for subsequent analysis.
- Leadership and decision-taking capability.
- Make use of quantitative documentary sources that are significant for the economic analysis of organisations from a critical perspective.
- Master the technical and IT tools needed to carry out applied studies.
- Present research results to various audiences using the different media available.
- Recognise the problems associated with the comparability of different organisational situations in empirical international research
- Understand qualitative models of the firm and interpret their results.
- Understand the application of theoretical models to real business problems.
- Work in multidisciplinary international teams.

## Learning Outcomes

1. Choose the most appropriate theoretical model for the objectives set by the business situation under study.
2. Develop a critical and a constructive attitude to one's work and that of others.
3. Develop an ethical, social and environmental commitment.
4. Distinguish between the effect of variables in sex and gender in both theoretical and empirical analyses.
5. Explain and motivate the analyses, interpret the results and present all these clearly and concisely in English.
6. Further investigate the differences between different organisational situations.
7. Identify the aspects that differentiate the theoretical models.
8. Identify the relevant sources of information and their content for subsequent analysis.
9. Identify the sources of data at international level.
10. Know and distinguish the characteristics of the different business databases.
11. Know different statistical, econometric and mathematical programming techniques.
12. Leadership and decision-taking capability.
13. Master the technical and IT tools needed to carry out applied studies.
14. Present research results to various audiences using the different media available.
15. Resolve the models of probability and statistics, econometrics and mathematical programming.
16. Select the most appropriate techniques to analyse both quantitative and qualitative information.
17. Show mastery of the analysis of experimental data and survey data.
18. Work in multidisciplinary international teams.

## Content

The module provides vital input into decision-making in business and management. In particular, the course provides an applied introduction to data analysis. The main purpose is to provide students with the basic knowledge for developing empirical analysis and understanding the results. The approach to the subject will be essentially practical, being STATA the statistical computer package used throughout the module.

The following topics will be covered:

### Part 1

1. Data management, graphics and applications.

2. Descriptive statistics. Significance. Plots. Hypotheses tests.
3. Normality tests. Parametric and non-parametric tests for comparison of means.
4. Analysis of cross-classifications.
5. Measures of association.
6. Correlation.
7. Regression.
8. Logistic regression.
9. Factor analysis. Cluster analysis and property fitting.
10. Structural Equation Models.
11. Discrete choice models.
12. Censored and truncated models.
13. Panel Data.

## Part 2

1. Basic knowledge of Social Research terminology (Ontology, Epistemology, etc.)
2. Interviews and focus groups
3. Grounded Theory for Management studies
4. Basic Training in use of a computer package to assist with qualitative data analysis (e.g. NVivo)
5. Thematic análisis

Further details are provided in the MMOBE web page.

## Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures, discussions and case presentations	100	4	6, 11, 10, 17, 1, 7, 9, 15, 16
Type: Supervised			
Training and monitoring of work in progress and cases	15	0.6	6, 11, 10, 17, 1, 7, 9, 15, 16
Type: Autonomous			
Reading related cases and practical preparation, study and preparation of schemes	95	3.8	6, 12, 18, 14, 11, 10, 3, 2, 13, 17, 1, 5, 7, 9, 8, 15, 16

The module presents a practical approach, therefore sessions are scheduled in computer rooms and developed through the use of statistical packages (STATA mainly).

Generally, professors present different techniques (objectives and requirements related to the type of variables), they use the statistical packages and teach how they can be used in relation to the techniques previously commented, and finally they develop some exercises.

Other exercises and cases are assigned to the students.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Assessment

### Continuous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Assignments	40%	30	1.2	6, 12, 18, 14, 11, 10, 3, 2, 4, 13, 17, 1, 5, 7, 9, 8, 15, 16
Class participation	5%	0	0	6, 12, 18, 14, 11, 10, 3, 2, 13, 17, 1, 5, 7, 9, 8, 15, 16
Test	55%	10	0.4	6, 11, 10, 3, 13, 17, 1, 5, 7, 9, 15, 16

The system followed in the module considers 3 elements to assess the performance of the students:

1. Class participation.
2. Assignments.
3. Test.

"A student who does not take any assessable evaluation is considered 'non-assessable'; therefore, a student who takes any continuous assessment component can no longer be classified as 'non-assessable'."

This subject/module does not offer the option for comprehensive evaluation.

AI use:

Model 2 - Restricted Use: "For this subject, the use of Artificial Intelligence (AI) technologies is permitted exclusively in support tasks, such as bibliographic or information searches, text correction or translations.

The student must clearly identify which parts have been generated with this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of the activity.

The lack of transparency in the use of AI in this assessable activity will be considered a lack of academic honesty and may lead to a partial or total penalty in the grade of the activity, or greater sanctions in serious cases."

## Bibliography

Afifi, A., May, S., and Clark, V.A. (2011) Practical Multivariate Analysis, 5th ed., Chapman & Hall/CRC.

Amemiya, T. (1981) Qualitative Response Models: A Survey, Journal of Economic Literature, 19: 483-536.

Cameron, A.C., and Trivedi, P.K (2009) Microeconomics using Stata, STATA Press.

GIOIA, D. A., CORLEY, K.G., HAMILTON, A.L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, vol. 16, no 1, p. 15-31.

Greene, W. (2003) Econometric Analysis. Fifth edition. Upper Saddle River. New Jersey, USA: Prentice - Hall.

GRIX, J. (2002). Introducing students to the generic terminology of social research. *Politics*, vol. 22, no 3, p. 175-186. Hair, J., Black, B., Babin, B., Anderson, R., Tatham, R. (2005) Multivariate data analysis. Sixth edition. Upper Saddle River. New Jersey, USA: Prentice - Hall.

Hair, J., Black, B., Babin, B., Anderson, R., Tatham, R. (2010) Multivariate data analysis. Sixth edition. Upper Saddle River. New Jersey, USA: Prentice - Hall. Maddala, G. (1983) Limited Dependent and Qualitative Variables in Econometrics. Econometric Society Monographs No 3, Cambridge University Press, Cambridge, chapters 2 and 3.

## Software

STATA, NVivo, R

## Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PLABm) Practical laboratories (master)	30	English	second semester	morning-mixed
(TEm) Theory (master)	30	English	second semester	morning-mixed