

Course Unit	Data Analysis	Field of study	Mathematics
Master in	Management - Public Management	School	School of Technology and Management
Academic Year	2023/2024	Year of study	1
Type	Semestral	Semester	1
Level	2-1	ECTS credits	6.0
Code	5009-518-1105-00-23		
Workload (hours)	162	Contact hours	T - , TP 42, PL - , TC - , S 3, E - , OT - , O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Paula Odete Fernandes

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Apply research methods for data collection, ability to prepare and analyse quantitative and qualitative information;
2. Develop and to understand the rules of the questionnaire design;
3. Apply the appropriate statistical techniques to the information collected;
4. Analyze and to interpret the results of the application of statistical methods, using the statistical software;
5. Interpret, to formalize and to solve organizational problems with support of statistical tools and data analysis;
6. Develop logical, critical and analytic reasoning in a creative way.

### Prerequisites

Before the course unit the learner is expected to be able to:

1. Apply concepts of real analysis and statistics;
2. Use computational tools and browsers;
3. Be fluent in both oral and written English.

### Course contents

Steps of the methodological procedure. Data collection methods. Constructing the questionnaire. Building the database supported by statistical software. The data analysis: Applying the statistical methods.

### Course contents (extended version)

1. Steps of the methodological procedure and data collection methods
  - Steps of the methodological procedure and research proposal
  - Types of research
  - Sources of information
  - Tools and methods for data collection
  - Sampling methods. Sample size
2. Constructing the questionnaire
  - Preliminary study
  - Questionnaire design
  - The questions: scales of measurement
  - The questions: types and problems
  - Building the questionnaire for measure the latent variables
  - Prepare the final questionnaire
3. Building the database
  - General vision of statistical software
  - Editing and manipulating files
  - Data handling and presentation
  - Transforming variables
  - Additional exercises using the statistical software
4. The data analysis: Applying the statistical methods
  - Univariate and bivariate analysis
  - Multivariate analysis
5. Seminars for acquiring other skills.

### Recommended reading

1. Beall, A. (2019). Strategic Market Research: A Guide to Conducting Research that Drives Businesses (3rd Edition). Beall Research Inc.
2. Keller, G. (2017). Statistics for Management and Economics (11th Edition). Cengage Learning. ISBN-13 : 978-1337093453
3. Machado, I. , Costa, J. , & Rodrigues, A. (2014). O essencial do questionário: preparação, recolha e tratamento de dados em SPSS. Porto: IPAM. ISBN: 978-989-98442-6-1
4. Maroco, J. (2018). Análise Estatística com a utilização do SPSS (7.ª edição). Ed. Report Number.
5. Sarstedt, M. , & Mooi, E. (2019). A Concise Guide to Market Research: The Process, Data, and Methods Using IBM SPSS Statistics (3rd Edition). Springer, Berlin, Heidelberg. ISBN: 978-3-662-56706-7

### Teaching and learning methods

Theoretical-practical classes with audiovisual resources. This course is based on "learning by doing", involving active participation of the student via interventions, individual and team work and problem solving. Real-life case studies are incorporated into lectures to provide opportunities for students to apply theory into practice in a real-life context.

### Assessment methods

1. Alternative A - (Regular, Student Worker) (Final, Supplementary)
  - Practical Work - 50%
  - Final Written Exam - 50% (Minimum score: 7 out of 20 values.)
2. Alternative B - (Regular, Student Worker) (Final, Supplementary, Special)
  - Final Written Exam - 100%

## Language of instruction

1. Portuguese
2. English

## Electronic validation

Paula Odete Fernandes	Joaquim Agostinho Mendes Leite	José Carlos Rufino Amaro
07-10-2023	10-10-2023	20-10-2023