Course Unit	Data Analysis		Field of study	Mathematics	
Master in	Management - Health Services Management		School	School of Technology and Management	
Academic Year	2019/2020	Year of study	1	Level	2-1	ECTS credits	6.0
Type	Semestral	Semester	1	Code	5009-517-1105-00-19

| 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

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. Data collection methods
    - The 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 sofware
    - 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

Recommended reading

1. Bacon-Shone, J. (2015). Introduction to Quantitative Research Methods. Graduate School, The University of Hong Kong.
2. Lisboa, J., Augusto, M. , & Ferreira, P. (2012). Estatística aplicada à Gestão. Vida Económica.
3. Machado, I., Costa, J., & Rodrigues, A. (2013). O essencial do questionário: preparação, recolha e tratamento de dados em SPSS (1. ª Ed.). Porto: IPAM.
4. Maroco, J. (2018). Análise Estatística com o SPSS Statistics. ReportNumber, Lisboa.
5. Smith, S., & Albaum, G. (2013). Basic Marketing Research. Qualtrics Labs, Inc.

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%
2. Alternative B - (Regular, Student Worker) (Special)
    - Final Written Exam - 100%

Language of instruction

1. Portuguese
2. English

Electronic validation

Paula Odete Fernandes	António Borges Fernandes	Paulo Alexandre Vara Alves
22-10-2019	11-11-2019	12-11-2019