

**COURSE DATA****Data Subject**

Code	42390
Name	Quantitative research
Cycle	Master's degree
ECTS Credits	10.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
2178 - M.D. in Res. and Interv. in Physical Act. and Sport Sciences	Faculty of Physical Education and Sport Sciences	1	Annual

Subject-matter

Degree	Subject-matter	Character
2178 - M.D. in Res. and Interv. in Physical Act. and Sport Sciences	2 - Quantitative research	Obligatory
3161 - Actividad Física y Deporte	1 - Complementary Training	Optional

Coordination

Name	Department
GONZALEZ MORENO, LUIS MILLAN	122 - Physical and Sports Education

SUMMARY

The purpose of M2 module is to provide basic knowledge and methodology necessary to conduct quantitative research in Physical Activity and Sport Sciences.

The module covers aspects related to: a) The ethical approach of research, b) the most appropriate research designs depending on the purpose of the study, c) measuring instruments and data processing, d) analysis statistical data based on the study objectives, the type of design and their characteristics, and e) the development of a scientific report.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It is not necessary previous knowledge

OUTCOMES

2092 - M.U. en Invest. e Interv. CC Activi. Física y Deporte 10-V.1

- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- To be able to integrate knowledge and make complex judgments based on information that remains incomplete or limited, but include social and ethical responsibility reflections linked to the application of their knowledge and judgments, from a gender perspective.
- To understand and analyze the research being done in the context of exercise and health, physical education and sport, and sports performance and management of physical activity and sport.
- To apply knowledge and be able to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related Physical Activity and Sport Sciences.
- To adapt the design and methodology to the subject matter and research characteristics, as well as to interpret the results, discuss and develop clear and consistent conclusions.
- To conceive, design and develop applied research in one of the social contexts of physical activity and sport.
- To identify new problems related to physical activity and sport that can be studied through applied research.
- To understand the complex research environment, limitations and challenges.
- To know the measuring instruments in the field of quantitative research.
- To design experimental research according to ethical principles of quantitative research.
- To choose and apply appropriate statistical techniques according to a particular study.
- To prepare a scientific report from a quantitative research.
- To communicate experimental research results according to the scientific culture of quantitative research.
- To detect and identify problems related to physical activity and sport that can be studied from quantitative methodology.



LEARNING OUTCOMES

- To understand the complex research environment, limitations and challenges.
- To know the measuring instruments in the field of quantitative research.
- Designing experimental research according to ethical principles of quantitative research.
- To select and apply appropriate statistical techniques to study type.
- To prepare a scientific report derived from quantitative research.
- To communicate experimental research results according to the scientific culture of quantitative research.
- To detect and identify problems related to physical activity and sport that can be studied from quantitative methodology.

DESCRIPTION OF CONTENTS

1. Ethics and experimental research.

- 1.1. Science and technology. The scientific explanation. Objectivity and subjectivity.
- 1.2. Observation and experimentation. The hypothetical-deductive method. Facts, hypotheses, laws, theories, paradigms. Verification and falsification.
- 1.3. The predictive capability. Natural sciences, social sciences, humanities. The limits of scientific knowledge.
- 1.4. The experimental method in the life sciences. Claude Bernard and biological experimentation. The analytical experiment. Science and animal experimental laboratory.
- 1.5. Regulations and experimental ethics committees

2. Research in athletic performance.

- 2.1. Approach to research problems.
- 2.2. Objectives and basic research issues in sports performance.
- 2.3. Literature review websites, journals, and links.

3. Research designs.

- 3.1. Types of designs adapted to the field of research problems
 - 3.1.1. The experimental method: control and validity.
 - 3.1.2. The experimental method: univariate designs.
 - 3.1.3. The experimental method: factorial designs.
 - 3.1.4. The experimental method: single-case designs.
 - 3.1.5. The experimental method: quasi-experimental designs.



- 3.1.6. The selective method: ex post facto designs and survey methodology
- 3.1.7. The observational method: research designs.
- 3.2. Relationship between design and statistical techniques applied.
 - 3.2.1. Descriptive Statistics.
 - 3.2.2. Factor Analysis.
 - 3.2.3. Regression analysis and causal models.
 - 3.2.4. Comparison of means.
 - 3.2.5. Analysis of Variance

4. Collection and analysis of data. Preparation of a report.

- 4.1. Statistical Software.
- 4.2. Requirements for data collection.
- 4.3. Treatment of different types of primary variables.
- 4.4. Interpretation of results and conclusions.
- 4.5. Presentation of data. Academic writing and quantitative analysis.

WORKLOAD

ACTIVITY	Hours	% To be attended
Computer classroom practice	43,00	100
Theory classes	22,00	100
Development of individual work	100,00	0
Study and independent work	50,00	0
TOTAL	215,00	

TEACHING METHODOLOGY

Teaching methodologies and tasks for students will depend on the type of activity to develop:

- Expert presentations by teachers (lectures).
- Discussion in small and large groups of students with and without teacher intervention.
- Supervised work individually or in small groups, to perform searches in databases, portals and other sources of information.
- Study (oneself and guided).
- Presentations.
- Mentorship meetings.



EVALUATION

For the evaluation of the module it will be assessed:

The realization of an individual work of review and design of an study, consisting of two parts:

- Review and justification of the study.
- Design and analysis of reliability and validity.

The preparation and performance of seminars and written test.

REFERENCES

Basic

- Alvira, P. (1991) Metodología de la evaluación de programas. Madrid: CIS.
- Anguera, M.T. (1989) Metodología de la observación en las mediciones. Madrid: Cátedra.
- Babbie, E. (1996) Manual para la práctica de la investigación social. Bilbao: Desclee de Brouwer.
- Balluerca, N. (1999). Planificación de la investigación. La validez del diseño. Salamanca: Amarú Ediciones
- Buck, C., Llopis, A., Nájera, E., Terris, M. (eds). El desafío de la epidemiología. Washington, D.C.: Organización Panamericana de la Salud. 1988.
- Caine, D., Caine, C., Lindner, K. (eds.) Epidemiology of Sport Injuries, Champaign, IL: Human Kinetics Books, 1996.
- Campbell, D.T., Stanley, J. (1970) Diseños experimentales y cuasiexperimentales en la investigación social. Buenos Aires: Amorrónu.
- Field A. (2005). Discovering Statistics Using SPSS. London: Sage.
- Fontes et al. (2001). Diseños de investigación en Psicología. Madrid: UNED.
- García Jiménez y Alvarado (Eds.) (2000). Métodos de investigación en Psicología: Experimental, Selectivo y Observacional. Barcelona: EUB.
- García, J.L. (1995) Cómo elaborar un proyecto de investigación. Alicante: Universidad de Alicante.
- Garcia, M., Ibáñez, J., Alvira, F. (2000) El análisis de la realidad social. Métodos y técnicas de investigación. Madrid: Alianza Editorial.
- García, M.V. (2002) Métodos y diseños de investigación científica. Barcelona: EUB.
- Geymonat, L. (1998) Historia de la filosofía y de la ciencia. Barcelona: Crítica.
- Goldberg, M. (1994) La epidemiología sin esfuerzo. Madrid: Ediciones Díaz de Santos, SA.
- Marczyk, G., DeMatteo, D., Festinger, D. (2005). Essentials of Research Design and Methodology. Hoboken: John Wiley & Sons.



- Moreno, Martínez y Chacón (2000). Fundamentos metodológicos en Psicología y Ciencias afines. Madrid: Pirámide.
- Petrie, A., Sabin, C. (2005). Medical Statistics at a Glance. Victoria: Blackwell Publishing
- Primo, E. (1994) Introducción a la investigación científica y tecnológica. Madrid: Alianza Universidad.
- Sallis JF, Owen N (1999) Physical activity and behavioral medicine. London: Sage.
- Sierra R. (2001) Técnicas de investigación social. Madrid: Paraninfo.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

English version is not available