COURSE DATA

DATA SUBJECT

Code: 47001
Name: Introduction to research
Cycle: Doctorate / Master's Degree
ECTS Credits: 3
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2280 - Master's Degree in Advanced Optometry and Vision Sciences	Facultat de Física	1	First quarter
3144 - PhD in Optometry and Vision Sciences	Escola de Doctorat		First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2280 - Master's Degree in Advanced Optometry and Vision Sciences 3144 - PhD in Optometry and Vision Sciences	Introducción a la investigación	COMPULSORY

COORDINATION

ESTEVE TABOADA JOSE JUAN

GONZALEZ TERUEL AURORA M

SUMMARY

This course is designed to provide students with the basic skills to design, develop, and analyze scientific studies in the field of optometry. It covers the search and management of scientific information, as well as the fundamentals of biostatistics and data analysis. Key concepts of scientific communication and academic writing are also introduced.

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 recommended to have basic knowledge of scientific methodology, critical reading, and basic notions of descriptive statistics.

COMPETENCES / LEARNING OUTCOMES

2280 - Master's Degree in Advanced Optometry and Vision Sciences

Act autonomously in learning, make informed decisions in different contexts, issue judgements based on experimentation and analysis and transfer knowledge to new situations.

Analyse data obtained from the statistical tests used.

Apply quantitative and qualitative research methods to collect, analyse and interpret data related to optometry and eye health.

Apply search filters to select relevant information on a specific topic.

Be able to communicate effectively, both orally and in writing, adapting to the characteristics of the situation and audience.

Collaborate effectively in work teams, taking on responsibilities and leadership roles and contributing to collective improvement and development.

Compare information from different sources and studies, analyse it critically and synthesise the most relevant information.

Contribute to the design, development and implementation of solutions that respond to social demands, considering the Sustainable Development Goals as a reference.

Convey scientific knowledge in the field of optometry.

Demonstrate critical and self-critical reasoning in the field of the degree, considering aspects such as professional ethics, moral value and the social implications of the different activities carried out.

Know and understand, within the area of the degree, inequalities based on sex and gender in society; integrate different needs and preferences based on sex and gender into the design of solutions and problem-solving.

Organise information obtained from different bibliographic sources.

Plan and carry out research projects that contribute to the production of knowledge in the field of optometry.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge to respond to diverse professional and social needs.

Understand how to design an experiment and clinical research projects in optometry.

Understand methods for searching and accessing scientific information in bibliographic databases related to optometry.

Understand the main statistical tests used in optometric research.

DESCRIPTION OF CONTENTS

Topic 1. Literature Search in the Context of a Systematic Review of Scientific Literature

This topic explores literature searches in the context of a systematic review, a type of study that rigorously collects, evaluates, and synthesizes the available scientific evidence. The key steps in the process are addressed: formulating the question, defining inclusion and exclusion criteria, developing search strategies, selecting and evaluating studies, data extraction, and analyzing results.

Topic 2. Exploiting Information Sources in Health Sciences and Multidisciplinary Sources

Use and exploitation of the main bibliographic databases such as PubMed and Web of Science (WoS) to conduct efficient and accurate bibliographic searches. This topic explores how to formulate search strategies using Boolean descriptors and operators, and reviews various generative artificial intelligence tools to optimize the process.

Topic 3. Scientific Communication: Writing Scientific Articles

The scientific writing process, from its initial stages to final publication. The different types of scientific articles and the structure of the original article are analyzed, as well as the main tools that can support writing. In addition, citation standards are reviewed to appropriately incorporate other authors' ideas, and ethics in scientific publication are reflected upon.

Topic 4. Introduction to the Research Process

The complete cycle of scientific research is presented: from the formulation of questions to the publication of results, with special emphasis on the clinical-optometric context.

Topic 5. Key Biostatistical Concepts for the Critical Reading of Research Results

Fundamental notions of biostatistics necessary to correctly interpret the results of scientific studies. Concepts such as statistical significance, confidence intervals, p-values, and effect sizes will be addressed to enable students to engage in a critical and reasoned reading of the scientific literature.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	18,00
Seminar	12,00
Total hours	**30,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	15,00
Independent study and work	25,00
Preparation of lessons	0,00
Preparation for assessment activities	5,00
Resolution of case studies	0,00
Total hours	**45,00**

TEACHING METHODOLOGY

The course combines lectures and seminars that aim to promote both knowledge acquisition and active student participation.

Lectures:
The lecture method is used with the support of projected audiovisual material (images, videos, and diagrams), facilitating the understanding of concepts and techniques.

Seminars:
Questions are presented and exercises are completed based on the content taught, encouraging discussion and the practical application of the procedures studied.

EVALUATION

The assessment for this course will be continuous and will consist of:

1) Non-recoverable continuous assessment activities (30% of the grade)

Students must complete and submit the proposed practical activities, via the virtual classroom and on the indicated dates, as well as pass the quizzes given at the end of each topic. These quizzes will contain both theoretical and practical questions related to the content covered in each topic.

As these are non-recoverable continuous assessment activities, the grade obtained in these activities during the first semester will be carried over to the second session of the course.

Completion and submission of these practical activities will be an essential requirement for taking the final exam for the course.

2) Final theoretical-practical exam (70% of the grade)

A comprehensive assessment test that combines theoretical questions and practical exercises with the aim of assessing both conceptual knowledge and its application to real-life situations or problems related to the subject.

The submission of exercises, questions, activities, reading sheets, and other assessed exercises that were not completed directly by the student or that are directly copied from other similar assignments will be considered sufficient reason for failing the course, regardless of any other disciplinary actions that may be required.

REFERENCES

Basic references:

- José A. Cordón García, Julio Alonso Arévalo, Raquel Gómez Díaz, Jesús López Lucas. *Las nuevas fuentes de información: información y búsqueda documental en el contexto de la Web 2.0.* Pirámide, 2012. ISBN 978-8436826579.

- Nigel Ford. *The Essential Guide to Using the Web for Research.* Sage Publications Ltd, 2012. ISBN 978-0857023643.

- José Antonio Salvador Oliván, Gonzalo Marco Cuenca. *Fundamentos de búsqueda y recuperación de la información en bases de datos.* Aula Magna McGraw Hill, 2023. ISBN 978-8419786258

Complementary references:

- R. A. Day. *Cómo escribir y publicar trabajos científicos.* Organización Panamericana de la Salud, 2005.

- José M. Estrada. *La búsqueda bibliográfica y su aplicación en PubMed-MedLine.*

SEMERGEN. Medicina de Familia. 2007; 33(4): 193-199.

- Roberto Hernández Sampieri, Cecilia Fernández Collado, Pilar Baptista Lucio. *Metodología de la investigación.* McGraw-Hill, 2010 (5.ª ed.).

- José Jiménez Villa, José M. Argimón Pallás, A. Martín Zurro. *Publicación científica biomédica: cómo escribir y publicar un artículo de investigación.* Elsevier Science, 2010.