

**COURSE DATA****DATA SUBJECT****Code:** 43456**Name:** Introduction to investigation**Cycle:** Master's Degree / Doctorate**ECTS Credits:** 4.5**Academic year:** 2025-26**STUDY (S)**

Degree	Center	Acad. year	Period
2210 - Master's Degree in Research in Molecular, Cellular and Genetics Biology	Facultat de Ciències Biològiques	1	First quarter
3173 - PhD in Biomedicine and Biotechnology	Escola de Doctorat		First quarter

**SUBJECT-MATTER**

Degree	Subject-matter	Character
2210 - Master's Degree in Research in Molecular, Cellular and Genetics Biology	Introduction to investigation	COMPULSORY
3173 - PhD in Biomedicine and Biotechnology		

**COORDINATION**

PEIRO RAMADA JUAN JOSE

**SUMMARY**

This course includes a set of activities aimed at presenting those aspects of scientific activity that are not usually addressed in undergraduate courses or other postgraduate ones. In particular, the goal is for students to become familiar with cross-disciplinary aspects related to research that differ from the core knowledge of the research activity area. These aspects include everything from understanding the different stages of planning a paper to the final dissemination of research results, including proper guidelines for experimental design and statistical analysis of the data. The presentation of scientific results will be considered in both oral and written forms. Given that scientific communication in the fields of Molecular, Cellular, and Genetic Biology is predominantly in English, special emphasis will be placed on the correct communication of research findings in this language, with assignments and oral presentations being delivered in English.

**PREVIOUS KNOWLEDGE****RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**

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



## OTHER REQUIREMENTS

## COMPETENCES / LEARNING OUTCOMES

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Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.

Be able to make quick and effective decisions in professional or research practice.

Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.

To be able to assess the need to complete the scientific, historical, language, informatics, literature, ethics, social and human background in general, attending conferences, courses or doing complementary activities, self-assessing the contribution of these activities towards a comprehensive development.

## DESCRIPTION OF CONTENTS

### **1. MATHEMATICAL AND STATISTICAL CRITERIA FOR DESIGNING AND ANALYSING RESULTS.**

Experimental design. Data analysis. Hypothesis tests. Power test.

### **2. ENGLISH FOR SCIENCE: ORAL SKILLS**

Presenting research at a conference. Body language. Facts and figures. Structure: Introduction, body and conclusion.

### **3. DIFFERENT PHASES IN THE PUBLICATION OF SCIENTIFIC PAPERS.**

Organization of research results in a publishable form. Choice of journal. Quality indexes: the impact factor, the relative position, the h index. Steps that a manuscript goes through from the moment it is submitted until it becomes published.

### **4. EDITING AND REVIEWING OF SCIENTIFIC PAPERS.**

The reviewer's role. Critical aspects of the review process. Manuscript edition and review.



## 5. MOST COMMON ERRORS IN WRITING SCIENTIFIC PAPERS

Description of reagents. Use of abbreviations. Units. Use of italics vs. roman. Interpretation of error limits. References.

## 6. DISSEMINATION OF SCIENTIFIC SUBJECTS TO THE NON SPECIALIZED PUBLIC

How to simplify our words. How to deal with the media.

### WORKLOAD

#### PRESENCIAL ACTIVITIES

Activity	Hours
Theory	25,00
Other activities	2,00
Computer classroom practice	9,00
Classroom practices	9,00
<b>Total hours</b>	<b>45,00</b>

#### NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	33,00
Independent study and work	0,00
Preparation of lessons	15,00
Preparation for assessment activities	20,00
Resolution of case studies	0,00
<b>Total hours</b>	<b>68,00</b>

### TEACHING METHODOLOGY

The subject is structured in a semester. It includes lectures, practical lessons in the classroom and practices.

Theory lessons will be lecture-type and they consist of sessions ranging from one to one and a half hour. The total number of contact hours is 27.

Practical lessons can be divided into two types: some will be in the computer lab and will require computer work, and others will take place in the classroom. The latter will consist in solving exercises and questions proposed by the teacher beforehand and an oral presentation in English of a research topic, either his/her own master thesis topic or other topic related to it. The total number of contact hours for practical lessons



18.

The total figure is 45 contact hours.

## EVALUATION

The evaluation of the course, in accordance with the Master's Verification Report, will be carried out as follows:

- Individual tests (theory exams), accounting for 35% of the total grade.
- Written assignments, both individual and group-based, aimed at assessing the student's ability to address and solve practical problems through in-class or take-home exercises. These tasks will account for 25% of the total grade.
- Oral presentations through the delivery of seminars to classmates, who will critique both the topic and any presentation errors. This component will represent 35% of the total grade.
- Attendance and participation, accounting for 5% of the total grade.

## REFERENCES

- American Society of Microbiology. Guidelines for reviewers for ASM Journals. 2015 Armer, T. Cambridge English for Scientists. Cambridge University Press. 2015. Anónimo. Tutorial for reviewers for Elsevier Journals. Elsevier; 2015 Escorsa, P., Valls Pasola, J. & Universitat Politècnica de Catalunya. (2003) Tecnología e innovación en la empresa. Barcelona : Edicions de la Universitat Politècnica de Catalunya. Nowotny, H., Scott, P. & Gibbons, M. (2003). Mode 2' revisited: The new production of knowledge Introduction. *Minerva*, 41(3), 179-194. Primo Yúfera, 1918-2007.(1994). Introducción a la investigación científica y tecnológica. Madrid : Alianza, 399 pp. Sánchez Tamés, R. Sánchez Sotres, R., & Universidad de Oviedo. (2004). Cómo publicar. Oviedo: Universidad de Oviedo Fundamentos de estadística para las ciencias de la vida, Samuels, M. [http://trobes.uv.es/record=b2160247~S1\\*val](http://trobes.uv.es/record=b2160247~S1*val)
- Recursos informáticos: 1. San Francisco Edit: Scientific, Medical and General Proofreading and Editing [www.sfedite.net](http://www.sfedite.net) Proporciona una colección de fichas sobre las instrucciones detalladas para la buena práctica de escribir artículos científicos. 2. SciWrite: Writing in the Sciences <https://class.stanford.edu/courses/Medicine/SciWrite/Fall2013/about> Cursillo gratuito on line sobre cómo escribir y revisar artículos científicos. 3. PUBMED <https://www.ncbi.nlm.nih.gov/pmc/> Contiene MEDLINE y otras revistas científicas en el campo de la Biomedicina. Acceso al texto completo de los artículos. 4. WEB of Science [https://apps.webofknowledge.com/UA\\_GeneralSearch\\_input.do?product=UA&search\\_mode=GeneralSearch&SID=D1eNwA6dZky3aXDzReX&preferencesSaved=](https://apps.webofknowledge.com/UA_GeneralSearch_input.do?product=UA&search_mode=GeneralSearch&SID=D1eNwA6dZky3aXDzReX&preferencesSaved=) Incluye índices de citas como Science Citation Index Expanded, Social Science Citation Index, Art & Humanities Citation Index, Conference Proceedings Citation Index (Science y Social Science & Humanities), índices químicos como Index Chemicus y Current Chemical Reactions; la colección de revistas Emerging Sources Citation Index (ESCI); Current Contents Connect (7 series),



Derwent Innovations Index, MEDLINE, Korean Journal Database (KCI) y Scielo Base de datos con diferentes entradas (tema, título, autor, año, nombre de la publicación). Permite también saber el índice de impacto de las diferentes revistas y el lugar que ocupan en el ranking según el área.

- 5. Journal Citation Reports <http://links.uv.es/h3VnnDN> Datos estadísticos de las principales revistas científicas a nivel internacional (unas 7.000), basados en el análisis de las citas que emiten y reciben las publicaciones. JCR es considerada como una herramienta para la evaluación de las publicaciones y ofrece información sobre el factor de impacto de las revistas, su ranking mundial, su vida media, etc. Contiene dos series: Ciencias y Ciencias sociales 6. Essential Science Indicators <http://esi.incites.thomsonreuters.com/IndicatorsAction.action?Init=Yes&SrcApp=IC2LS&SID=H3-fLcq3kEBBUgvnvnOMqIMZUqd2xBD5ty9-OJfMGRiF9uzMzW0ATCA9nZHc6IYNTI0Qeyw0rG7FCB1L6qJ6NjuHwuppoIC6q0o-9vvmzcn dpRgQCGPd1c2qPQx3Dx3D-wx2BJQh9GKVmtdJw3700KssQx3Dx3D> Herramienta que ofrece datos para establecer rankings de investigadores, instituciones, países y revistas 7. Programari informàtic: The R Project for Statistical Computing: <https://www.r-project.org/>
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