VNIVERSITAT ID VALÈNCIA

COURSE DATA

Data Subject

Code	43456
Name	Introduction to investigation
Cycle	Master's degree
ECTS Credits	4.5
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2210 - Master's Degree in Research in Molecular, Cellular and Genetics Biology	Faculty of Biological Sciences	1	First term
3102 - PhD in Biomedicine and Biotechnology	Doctoral School	0	First term
3173 - PhD in Biomedicine and Biotechnology	Doctoral School	0	First term

Subject-matter

Degree	Subject-matter	Character
2210 - Master's Degree in Research in Molecular, Cellular and Genetics Biology	1 - Introduction to investigation	Obligatory

Coordination

Name	Department
FERRE MANZANERO, JUAN	194 - Genetics

SUMMARY

This subject includes a series of activities designed to introduce those aspects of scientific activity that are not normally covered either in other subjects on the degree or in postgraduate subjects. In particular it is intended that students know cross curricular aspects related to research that are different from those relating to the body of knowledge in the area of research activity. These range from knowing the different phases of writing a paper, until the final dissemination of research results, going through the correct standards of experimental design and statistical analysis of the results. The presentation of scientific results shall be addressed in oral and written format. Since scientific communication in the areas of Molecular Biology, Cell and Gene is mostly in English, the correct communication of research results in this language will be emphasized.

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 (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

2210 - Master's Degree in Research in Molecular, Cellular and Genetics Biology

- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Be able to make quick and effective decisions in professional or research practice.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- 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.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

1. To be able to access the necessary information (databases, books, articles, websites, databases of patents, etc.) and be critical enough to interpret and use them appropriately.

2. To learn how to properly apply mathematical knowledge to design experiments properly.

3. To apply the appropriate statistical criteria to analyze the results.

4. To be able to handle scientific English fluently as a basic tool in oral and written communication.

5. To know the different phases a manuscript goes through from the moment it is finished until it is finally published.

6. To learn how to criticize a scientific text from the point of view of the reviewers of scientific journals.

7. To learn the basics of communication issues and scientific results to a non-specialist audience clearly and unambiguously.

DESCRIPTION OF CONTENTS

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

Experimental design. Data analysis. Hypothesis tests. Power test.
PRÁCTICA Inf-2. MATHEMATICAL AND STATISTICAL CRITERIA FOR DESIGNING AND ANALYSING RESULTS.

2. ENGLISH FOR SCIENCE: ORAL SKILLS

Presenting research at a conference. Body language. Facts and figures. Structure: Introduction, body and conclusion.
PRÁCTICA 2. ORAL SKILLS IN ENGLISH FOR SCIENCE: PRESENTING RESEARCH IN ENGLISH.

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 reviewers role. Critical aspects of the review process. Manuscript edition and review.
PRÁCTICA 3. EDITING AND REVIEWING OF SCIENTIFIC PAPERS.

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

ACTIVITY	Hours	% To be attended
Theory classes	25,00	100
Computer classroom practice	9,00	100
Classroom practices	9,00	100
Other activities	2,00	100
Development of individual work	33,00	0
Preparation of evaluation activities	20,00	0
Preparing lectures	15,00	0
TOTAL	**113,00**	

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 subject will be evaluated following this procedure:
• An individual test consisting on the review of a scientific paper. The value of the test shall be 30% of the total.
• Written work: An assessment of the student's ability to confront and solve practical problems will be done by setting exercises to be done in class or at home. The value of all these tests shall be 50% of the total.
• Oral Presentations in English: The skills acquired to deliver oral presentations in English will be assessed by giving a talk to the class in which learners will have to evaluate both the content of the talk and the performance, highlighting possible mistakes. The mark of the oral presentations will consider both the delivery and the active participation in class; its value will be 20% of the total.

Other considerations:
The final grade will be the sum of the grades achieved in the different sections. To pass the subject it is necessary to obtain an overall grading equal or higher than 5 out of 10.
For students who do not pass the course in the first call, the mark of the different sections will be saved for the second call, only if it is higher than 5 out of 10, unless the student renounces them (sitting himself/herself in the second call and presenting the relevant section in the examination).

REFERENCES

Basic

-   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

- Recursos informáticos:

1.   San Francisco Edit: Scientific, Medical and General Proofreading and Editing
www.sfedit.net
Proporciona una colección de fichas sobre las instrucciones detalladas para la buena práctica de escribir artículo

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 a

4.   WEB of Science
https://apps.webofknowledge.com/UA_GeneralSearch_input.do?product=UA&search_mode=GeneralSearch&SI

Incluye índices de citas como Science Citation Index Expanded, Social Science Citation Index, Art & Humanitie
Index (Science y Social Science & Humanities), índices químicos como Index Chemicus y Current Chemical Rea
Citation Index (ESCI); Current Contents Connect (7 series), Derwent Innovations Index, MEDLINE, Korean Jour

Base de datos con diferentes entradas (tema, título, autor, año, nombre de la publicación). Permite también sab 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-
f L c q 3 k E B B U g v n v n O M q I M Z U q d 2 x B D 5 t y 9 -
OJfMGRiF9uzMzW0ATCA9nZHc6IYNTI0Qeyw0rG7FCB1L6qJ6NjuHwuppoIC6q0o-
9vvmzcndpRgQCGPd1c2qPQx3Dx3D-wx2BJQh9GKVmtdJw3700KssQx3Dx3D

Herramienta que ofrece datos para establecer ránkings de investigadores, instituciones, países y revistas

7.   Programari informàtic: The R Project for Statistical Computing: https://www.r-project.org/

-