

## COURSE DESCRIPTION

### COURSE DETAILS

Title (of the course): **FUNDAMENTOS DEL ESTUDIO Y LA EXPERIMENTACIÓN EN BIOLOGÍA**

Code: 100401

Degree/Master: **GRADO DE BIOLOGÍA**

Year: 1

Name of the module to which it belongs: PRINCIPIOS, INSTRUMENTACIÓN Y METODOLOGÍAS BIOLÓGICAS BÁSICAS

Field: BIOLOGÍA

Character: BASICA

Duration: FIRST TERM

ECTS Credits: 6.0

Classroom hours: 60

Face-to-face classroom percentage: 40.0%

Study hours: 90

Online platform: <https://moodle.uco.es/>

### LECTURER INFORMATION

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### PREREQUISITES AND RECOMMENDATIONS

#### Prerequisites established in the study plan

None

#### Recommendations

None specified



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### INTENDED LEARNING OUTCOMES

CB4v1	Developing the ability to analyse, summarise and critically think scientifically; applying basic principles
CB7v1	To be able to draft and present reports and summaries.
CB10v1	Knowing how to manage sources of scientific information and useful resources for biological study and research
CE7v1	To understand the history of biology and its future evolution, Professional and ethical biology.
CE8v1	To understand instrumentation and basic materials from the laboratory and from the countryside and their practical uses.
CE9v1	To understand the rules regarding the operation, hygiene and security of biological experimentation.

### OBJECTIVES

The aim of this course is to familiarize students with the principles and basic tools for the study and experimentation of biology and to demonstrate the acquisition of the following competences:

- Know how to prepare and submit a report.
- Know the history and future projection of biology.
- Know the scientific method and its scope in biology.
- Know how to handle the sources of information and useful resources for the study and research in biology.
- Know the instrumentation and basic laboratory and field material and its practical utility.
- Know the norms of operation, hygiene and security in the biological experimentation.
- Know the fundamentals of codes of good practice and their application in biology.
- Know the profession and ethics of the biologist and develop a critical attitude in this matter.

### CONTENT

#### 1. Theory contents

1. Theory contents

Unit 1. Operating, hygiene and safety standards in biological experimentation. Code of good practices.

Unit 2. Preparation and presentation of reports and reports.

Unit 3. Communication and dissemination of science.

Unit 4. Information sources and resources: libraries, network resources, databases and scientific collections.

Unit 5. Instrumentation and basic laboratory and field material.

Unit 6. Scientific method.

Unit 7. History and projection of biology.

Unit 8. Profession and ethics of the biologist.

#### 2. Practical contents

1. Introduction to the biology laboratory: basic instruments and safety and hygiene standards.

2. Preparation of a scientific report.

3. Preparation of a poster presentation.

4. Introduction to bibliographic reviews.

5. Initiation in the use of material for dissection, preparation and storage of samples in the laboratory.

6. Introduction to sampling and identification of field samples.

7. Application of the method. Design of experiments.

8. Events in Biology. Filling the timeline.



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### SUSTAINABLE DEVELOPMENT GOALS RELATED TO THE CONTENT

Quality education  
Gender equality  
Decent work and economic growth

### METHODOLOGY

#### Methodological adaptations for part-time students and students with disabilities and special educational needs

The methodological adaptations for part-time students will be decided in meetings between the faculty and the interested students in order to personalize the possible cases that are presented.

#### Face-to-face activities

Activity	Large group	Medium group	Total
<i>Assessment activities</i>	3	-	3
<i>Lab practice</i>	-	9	9
<i>Lectures</i>	30	-	30
<i>Workshop</i>	-	18	18
<b><i>Total hours:</i></b>	<b>33</b>	<b>27</b>	<b>60</b>

#### Off-site activities

Activity	Total
<i>Exercises</i>	20
<i>Information search</i>	25
<i>Reference search</i>	15
<i>Self-study</i>	30
<b><i>Total hours</i></b>	<b>90</b>

### WORK MATERIALS FOR STUDENTS

Dossier  
Exercises and activities  
Oral presentations  
References

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## EVALUATION

Intended learning	Exams	Placement reports	Problem solving
CB10v1	X	X	X
CB4v1	X	X	X
CB7v1	X	X	
CE7v1	X	X	X
CE8v1	X	X	X
CE9v1	X	X	
<b>Total (100%)</b>	<b>50%</b>	<b>40%</b>	<b>10%</b>
<b>Minimum grade</b>	<b>4</b>	<b>4</b>	<b>0</b>

(\*)Minimum mark (out of 10) needed for the assessment tool to be weighted in the course final mark. In any case, final mark must be 5,0 or higher to pass the course.

**Attendance will be assessed?:**

No

**General clarifications on instruments for evaluation:**

The student must obtain a grade 4 out of 10 in "Exams" and "Placement reports". Only in this case, the final grade will be the average of the grades obtained with the different evaluation methods, as indicated in the evaluation table.

There is no minimum grade for the "Problem solving" activity. These activities will be carried out in the classroom, during the large group sessions, and will be delivered before the end of that session, so they can only be carried out by those students who attend class.

Those students who do not obtain the minimum grade in the evaluation tool "Placement reports" will be able to repeat it before the second examination call. To do this, they should deliver all the activities included in s such evaluation tool within the indicated period.

In any case, the final average grade must be at least 5 to pass the subject, as explained in the note at the bottom of the evaluation table.

**Clarifications on the methodology for part-time students and students with disabilities and special educational needs:**

The methodological adaptations for part-time students will be decided in meetings between the faculty and the interested students in order to personalize the possible cases that are presented.

Repeat students will be given the same evaluation methodology as new enrollment students.

**Clarifications on the evaluation of the extraordinary call and extra-ordinary call for completion studies:**

The grades obtained in the different evaluation methods will be valid in the current academic year. For the extraordinary call for the 2023/24 academic year, the grades obtained by the student in the evaluation tests

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passed through the different evaluation methods in the 2023-2024 academic year will be kept. For those students who have not passed the evaluation tool "placement reports" the extraordinary call exam will include a section related to these activities.

For the extraordinary call for completion of studies, the grades obtained by the student in the tests passed through the different evaluation instruments in the last year in which said grades are available will be kept. For those students who have not passed the evaluation tool "placement reports" the extraordinary call exam will include a section related to these activities.

### Qualifying criteria for obtaining honors:

*As established by Reglamento de Régimen Académico of the University of Cordoba*

## BIBLIOGRAPHY

### 1. Basic Bibliography

- AA. VV. Percepción social de la ciencia y la tecnología en España, 2004. Ed. FECyT, Madrid, 2005.
- ASIMOV I. Introducción a la Ciencia. Ed. Plaza y Janes, Barcelona, 1979.
- CALVO HERNANO, M. Divulgación y Periodismo científico: entre la claridad y la exactitud. Ed. UNAM, México, 2003.
- CASADESÚS J., RUIZ-BERRAQUERO F. (Eds) Descifrar la vida. Universidad de Sevilla, 1994.
- COOKSON W. Cazadores de genes. La aventura del genoma. Ed. Pirámide. 1994.
- DAY R.A., GASTEL B. Cómo escribir y publicar trabajos científicos. 4ª ed. Ed. Organización Panamericana de la Salud, Washington, 2008.
- de KRUIF P. Cazadores de microbios. Ed. Mexicanos Unidos, México, 1978.
- GALINDO ESTRADA, S. Prevención de riesgos laborales básico. Ed. Innova, Antequera, 2006.
- GUTIÉRREZ RODILLA, B.M. El lenguaje de las ciencias, Madrid, Gredos, 2005.
- HOOVER H. Essentials for the scientific and Technical Writer. Dover Publications, Inc. New York, 1980.
- JESSO N. Teoría y problemas de zoología. Invertebrados. Ed. Interamericana-McGraw-Hill, 1990.
- KELLER E.F. A feeling for the organism. The life and work of Barbara McClintock. Ed. Freeman, 1983.
- KORNBERG A., HORECKER B.L., CORNUDELLA L., ORÓ J. Reflections on Biochemistry. Pergamon Press. 1976.
- KUHN T.S. La estructura de las revoluciones científicas. Fondo Cultura Económica. México, 1971.
- LAKATOS Y. La metodología de los programas de investigación científica. Ed. Alianza Universidad, Madrid, 1983.
- MATHEWS J.R., BOWEN J., MATHEWS R.W. Successful Scientific Writing. A Step-by-Step Guide for the Biological and Medical Sciences, 3rd edition. Ed. Cambridge University Press, New York, 2007.
- MONTSERRAT J. Epistemología evolutiva y teoría de la ciencia. Ed. Publ. Univ. Pont. Comillas, Madrid, 1987.
- MORGAN J.G, BROWN M.E. Investigating Biology. A laboratory manual for biology. Ed. The Benjamin/Cummings Publishing Company, Inc, 1993.
- Natural history collections management at the Royal Ontario Museum - 140.247.98.87 [PDF] - J Waddington - Collection fbrunv, 1989 - 140.247.98.87 - [BRO] - Herpetological collecting and collections management-JE Simmons - 1987 - bcin.ca
- NELKIN D. La ciencia en el escaparate. Ed. Fundesco, Madrid, 1990.
- OCHOA S. Escritos. Ed. Bibliot. Caja Ahorros Asturias, 1989.
- POPPER K.R. La lógica de la investigación científica, 2a ed., Ed. Tecnos, Madrid, 1980.
- RUIZ-FRUTOS C., GARCÍA A.M., DELCLÓS J. BENAVIDES F.G. Salud laboral. 3a ed. Ed. Elsevier-Masson, Barcelona, 2007.
- SÁNCHEZ M.I., PALOMAR A. El laboratorio de ciencias naturales. Ed. Penthalon, 1991.
- SANZ B. Huellas y rastros de los mamíferos ibéricos.
- [http://www.barbastella.org/mastozoologia/rastros\\_mamiferos.htm](http://www.barbastella.org/mastozoologia/rastros_mamiferos.htm) Servicios de Biblioteca de la Universidad de Córdoba. <http://www.uco.es/servicios/biblioteca/>
- ZIMAN J. M. ¿Qué es la ciencia? Ed. Cambridge University Press, Madrid, 2003

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### 2. Further reading

None

## COORDINATION CRITERIA

Common evaluation criteria

Common learning outcomes

Tasks deadlines

### Clarifications

The teaching staff will coordinate to establish common evaluation criteria and common learning outcomes. It will also do so to establish tasks deadlines.

## SCHEDULE

Period	Assessment activities	Lab practice	Lectures	Workshop
1# Fortnight	0,0	3,0	4,0	0,0
2# Fortnight	0,0	6,0	5,0	3,0
3# Fortnight	0,0	0,0	5,0	3,0
4# Fortnight	0,0	0,0	4,0	3,0
5# Fortnight	0,0	0,0	4,0	0,0
6# Fortnight	0,0	0,0	4,0	6,0
7# Fortnight	3,0	0,0	4,0	3,0
<b>Total hours:</b>	<b>3,0</b>	<b>9,0</b>	<b>30,0</b>	<b>18,0</b>

The methodological strategies and the evaluation system contemplated in this Course Description will be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required.