FACULTAD DE CIENCIAS

GRADO DE BIOLOGÍA

2024/25 YEAR

FUNDAMENTOS DEL ESTUDIO Y LA EXPERIMENTACIÓN EN BIOLOGÍA

Course details

Course name: FUNDAMENTOS DEL ESTUDIO Y LA EXPERIMENTACIÓN EN BIOLOGÍA
Code: 100401
Degree/Master: GRADO DE BIOLOGÍA **Year:** 1
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/

Coordinating teacher

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Brief description of the contents

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.

Prerequisites

Prerequisites established in the study plan

None

Recommendations

This is a course designed for first-year students, so students coming from higher grades may find it too basic.

Study programme

1. Theory contents

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

Concept of risk. Biological and chemical risk. Safety signalling and labelling. Personal protective equipment. Safety laboratory equipment. Basic safety rules in the laboratory. Code of good practices.

Unit 2. Preparation and presentation of reports.

Concept of report. The laboratory notebook. The scientific-technical report. Communication tools.

Unit 3. Communication and dissemination of science.

Characteristics of scientific discourse. Structure of the scientific text. Forms of communication: congress, original scientific and review article. Oral communication. Ethical, regulatory and legal aspects of the use of information. Use of tools based on artificial intelligence. Dissemination of science. Scientific journalism.

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

Initiation to bibliographic reviews. Search for scientific information. Bibliographic search in scientific journals. Elaboration of bibliographic lists. Working with online databases. Management and study of scientific collections.

Unit 5. Instrumentation and basic laboratory and field material.

Introduction to working material and techniques in the laboratory and in the field. Obtaining samples, data, and experimental design. Selection of materials and tools.

Unit 6. Scientific method.

Concept of science and scientific method. History of the scientific method. Hypotheses, theories, and laws. The hypothetico-deductive method. The demarcation criterion.

Unit 7. History and projection of biology.

Overview of the History of Biology. History of the main disciplines in Biology: Botany, Zoology, Cell Biology, Biochemistry. Projection of Biology in the present time. The new paradigm of Systems Biology.

Unit 8. Profession and ethics of the biologist.

Context of the European Higher Education Area (EHEA). Professional competences of the biologist: Legal bases of the profession and professional competences. Specific competences of the graduate in biology and adaptations to the EHEA: The degree in biology at UCO: Ethics and deontology of the profession. Job search: writing and presentation of the curriculum vitae.

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.

Bibliography

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Methodology

General clarifications on the methodology (optional)

All work material is available on the Moodle platform.

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.
Part-time students will be placed in the group that best suits their needs.
In the case of students with special educational needs, the teacher will follow the indications of the report issued by the Inclusion Area of the University of Cordoba.

Face-to-face activities

Activity	Large group	Medium group	Total
Assessment activities	3	-	3
Information processing activities	-	27	27
Projects based on the course contents	30	-	30
Total hours:	***33***	***27***	***60***

Off-site activities

Activity	Total
Exercise and problem solving activities	25
Information processing activities	45
Information search activities	20
Total hours	***90***

Results of the training and learning process

Knowledge, competencies and skills

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.

Assessment methods and instruments

Intended learning outcomes	Examination	Means of practical execution	Students assignments
CB10v1	X	X	X
CB4v1	X	X	X
CB7v1	X		X
CE7v1	X	X	X
CE8v1	X	X	X
CE9v1	X		X
Total (100%)	***50%***	***10%***	***40%***
Minimum grade (*)	***4***	***0***	***4***

(*)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.

General clarifications on instruments for evaluation:

The student must obtain a grade 4 out of 10 in "Examination" and "Student assignments". Only in this case, the final grade will be the average of the grades obtained with the different evaluation instrument, as indicated in the evaluation table.

There is no minimum grade for the "Means of practical execution" examination instrument. The activities to be evaluated by means of this evaluation instrument 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 activities evaluated with the evaluation instrument " Student assignments" will not be able to pass the course in that call. To pass, the exam of the second call will include a part related to these activities.

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 to personalize the possible cases that are presented.

Those students that repeat the course will be given the same evaluation methodology as new enrolment 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 2024/25 academic year, the grades obtained by the student in the evaluation tests passed through the different evaluation instrument in the 2023/2024 academic year will be kept. For those students who do not pass the activities evaluated with the evaluation instrument " Student assignments" 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 such grades are available will be kept. For those students who have not passed the evaluation instrument " Student assignments" 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

Sustainable development goals

Quality education
Gender equality
Decent work and economic growth

Other Faculty

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The methodological strategies and the evaluation system contemplated in this Teaching Guide will respond to the principles of equality and non-discrimination and must be adapted according to the needs presented by students with disabilities and special educational needs in the cases that are required. Students must be informed of the risks and measures that affect them, especially those that may have serious or very serious consequences (article 6 of the Safety, Health and Welfare Policy; BOUCO 23-02-23).