

COURSE DESCRIPTION

COURSE DETAILS

Title (of the course): **RESPUESTAS DE LA CIENCIA A LAS PREGUNTAS DE LOS NIÑOS Y LAS NIÑAS**

Code: 100771

Degree/Master: **GRADO DE EDUCACIÓN INFANTIL**

Year: 4

Name of the module to which it belongs: OPTATIVIDAD

Field: RESPUESTAS DE LA CIENCIA A LAS PREGUNTAS DE LOS NIÑOS Y NIÑAS

Character: OPTATIVA

Duration: FIRST TERM

ECTS Credits: 6.0

Classroom hours: 60

Face-to-face classroom percentage: 40.0%

Study hours: 90

Online platform: moodle.uco.es

LECTURER INFORMATION

Name: OTEROS MORENO, JOSÉ ANTONIO (Coordinator)

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PREREQUISITES AND RECOMMENDATIONS

Prerequisites established in the study plan

None

Recommendations

The student should possess a sufficient level of English proficiency to comprehend the contents of the course material, as well as to actively participate in debates and oral evaluations. In addition, the student should have the ability to express themselves orally with clarity and confidence.

INTENDED LEARNING OUTCOMES

- | | |
|-------|---|
| CE1 | Knowledge of the objectives, curriculum content and assessment criteria in early childhood education. |
| CE9 | To know Early-childhood Education Schools organization and its processes. To understand that teaching practice requires perfecting and adapting to scientific, social and pedagogical advances through lifelong learning. |
| CE11 | Reflect on classroom practices to innovate and improve teaching. Acquire habits and skills for independent and cooperative learning and promote them in students. |
| CM8.1 | Knowledge of the scientific, mathematical and technological foundations of the curriculum at this stage as well as theories on the acquisition and development of the relevant subject areas. |
| CM8.4 | To know the scientific methodology and promote scientific thinking and experimentation. |
| CM8.7 | To develop educational proposals concerning scientific interaction, techniques, society and sustainable development. |
| CM8.8 | To promote interest and respect for the natural, social and cultural environment through appropriate educational projects. |



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OBJECTIVES

At the end of the course, students must be able to:

- Understand basic scientific concepts and the natural processes responsible for our most immediate environment.
- Use a specific vocabulary regarding basic scientific fields.
- Cite the most relevant milestones and people in the history of scientific knowledge in relation to the natural world and natural processes.
- Infer, from their knowledge of the history of science, the dynamic and mutable nature of scientific knowledge.
- Pose hypotheses and design simple experiments with which to validate hypotheses.
- Compare and evaluate the results of experiments.
- Design didactic resources for early childhood education with a solid scientific base.
- Search for, select and summarize verified scientific information.

CONTENT

1. Theory contents

Unit 1. Introduction to scientific knowledge.

Unit 2. Questions about the universe.

Unit 3. Understanding natural phenomena.

Unit 4. What is life?

Unit 5. The cell in everyday life.

Unit 6. Genetics: why are we the way we are?

Unit 7. Evolution and biodiversity.

2. Practical contents

Practical lesson 1. Tools in the lab. Optical and stereoscopic microscope.

Practical lesson 2. Observation of microscopic life in indoor air. Fungal growth.

Practical lesson 3. Microscopic biodiversity in outdoor air. Airborne pollen.

Practical lesson 4. Microscopic biodiversity in a water drop.

Practical lesson 5. Eukaryotic cell I. The vegetal cell and tissues.

Practical lesson 6. Eukaryotic cell II. The animal cell and tissues.

Practical lesson 7. Eukaryotic cell III. Mitosis.

Practical lesson 8. Plant diversity: mosses, ferns and spermatophytes.

Practical lesson 9. Plant organs I: The leaves.

Practical lesson 10. Plant organs II: The flower.

Practical lesson 11. Plant organs III: The fruit.

Practical lesson 12. The fungi kingdom.

Practical lesson 13. Animal tissues and organs I.

Practical lesson 14. Animal tissues and organs II.

Practical lesson 15. Global view of the practical contents.

SUSTAINABLE DEVELOPMENT GOALS RELATED TO THE CONTENT

Good health and well-being

Climate action

Life on land



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METHODOLOGY

General clarifications on the methodology (optional)

The contents of the program are distributed in 7 theoretical units, supported with 15 practical lessons in the lab.

Each theoretical unit will be tackled by following a common methodology:

1. Diagnostic analysis of **questions** frequently asked by children in relation to the didactic unit. Relation with the contents of the unit. Summary of contents.
2. A conceptual map will be created containing specific **vocabulary** with which to introduce the unit and to improve linguistic wealth.
3. **Master classes**. Some lessons will be enriched with other interactive activities such as debates, analyses of scientific texts and current news, or reinforcement activities.
4. Review of the **key ideas** and skills acquired.

As non-classroom activities, the student will train his/her search and bibliographic management skills, teamwork, and the ability to synthesize and analyze during the execution of group work, all of which will then be defended in class.

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

The student and professor could agree on a flexible tutoring period. But part-time students must have self learning skills.

Group work may be switched to individual work after an agreement has been reached between the student and the professor.

Face-to-face activities

Activity	Large group	Medium group	Total
<i>Debates</i>	2	-	2
<i>Group presentation</i>	4	-	4
<i>Group work (cooperative)</i>	2	-	2
<i>Lab practice</i>	-	15	15
<i>Lectures</i>	35	-	35
<i>Text commentary</i>	2	-	2
Total hours:	45	15	60

Off-site activities

Activity	Total
<i>Activities</i>	5
<i>Group work</i>	25

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Activity	Total
Information search	10
Reference search	10
Self-study	40
Total hours	90

WORK MATERIALS FOR STUDENTS

Case studies
Exercises and activities
Oral presentations
Placement booklet
References

EVALUATION

Intended learning	Exams	Laboratory Practice	Oral Presentation	Project	Real and/or simulated tasks
CE1	X	X	X	X	X
CE11			X	X	
CE9	X		X	X	
CM8.1	X	X	X	X	X
CM8.4	X	X			X
CM8.7	X		X	X	
CM8.8		X		X	X
Total (100%)	50%	10%	10%	15%	15%
Minimum grade	0	0	0	0	0

(*)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.

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Attendance will be assessed?:

No

General clarifications on instruments for evaluation:

The evaluation is carried out by weighing several evaluation instruments:

50%: Exam concerning the theory contents. The exam will be based on a combination of multiple choice test questions and several essay questions.

25%: Group project and oral defense. This must be developed throughout the course and must be defended orally. The written project accounts for 15% of the subject and the oral presentation for 10%.

25%: Laboratory practices. Here, the skills acquired during the practical lessons will be evaluated by means of a questionnaire on the "Real and/or simulated tasks" instrument (15% of the subject, evaluated at the end of the practice program). The other 10% of the practices will consist of the evaluation of the practical performance in every practical lesson with 0.075/lesson (out of a maximum of 1 point).

In general, the evaluation will consider the following criteria:

- Level of acquisition and understanding of the knowledge required.
- Spelling and grammar correction.
- Capacity to synthesize.
- Interest in the subject and effort made to develop the different work.

To pass the subject, a good level of linguistic and communicative competence will be essential. A lack of correction in the preparation of oral or written texts may have a negative impact on the final grade. An attitude of respect between men and women will be considered, both in the written texts and in the behavior in the classroom and with the rest of the university community.

NOTE ON PLAGIARISM: Plagiarizing is passing off the texts or ideas of other people as your own without indicating the source from which they were obtained. It is essential to cite all those documents that have been used to produce class work, journal papers, conference presentations, doctoral theses, etc. Plagiarism violates the basic pillars of the university institution and copying violates the main mission of the University. Any kind of plagiarized work will receive a grade of zero (0).

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

Students with recognized disabilities will have adapted assessment tools, thus ensuring the equality of conditions. The evaluation criteria will be the same as for full-time students.

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

The extraordinary call will consist of an exam concerning the theory contents (50% of the subject).

The rest of the marks will remain as those obtained: Lab practices (25% of the subject) and project-oral presentation (25% of the subject).

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Qualifying criteria for obtaining honors:

Those established by the University of Córdoba

BIBLIOGRAPHY

1. Basic Bibliography

- FREEMAN, S. et al. (2016) Biological Science (5th Edition). Pearson Education, Delhi ISBN: 93-3257-591-6
 AUDERSIRK, G. et al. (2016) Biology: Life on Earth with Physiology (10th Edition). Pearson, London ISBN: 01-3392-300-2

2. Further reading

- CURTIS, H. y BARNES, N. (2000). Biología 6ª edición. Editorial Panamericana.
 MURPHY, P. y O'NEILL, L. (1999). La Biología del Futuro. ¿Qué es la vida? Cincuenta años después. Tusquest Editores S.A. Barcelona. ISBN 84-8310-632-9
 PEREZ MERCADER, J. (1997) ¿Qué sabemos del universo? De antes el bigbang al origen de la vida. Temas de debate Madrid ISBN 84-7444-872-7
 CHAM, J. and WHITESON, D. (2017). We have no idea: a guide to the unknown universe. Riverhead Books, New York ISBN 987-0-735-21663-1
 SOLOMON, E.P., BERG, L.R., MARTIN, D.W. y C. VILLEE. 1998. Biología de Villee (4ª ed.). Ed. McGraw-Hill Interamericana.
 MARGULIS, L., and SAGAN, D. (2000). What is life?. University of California Press, California ISBN: 05-2022-021-8

COORDINATION CRITERIA

Tasks performance

SCHEDULE

Period	Debates	Group presentation	Group work (cooperative)	Lab practice	Lectures	Text commentary
1# Fortnight	1,0	0,0	0,0	2,0	5,0	0,0
2# Fortnight	0,0	0,0	0,0	2,0	5,0	1,0
3# Fortnight	0,0	0,0	0,0	2,0	6,0	0,0
4# Fortnight	1,0	0,0	0,0	2,0	5,0	0,0
5# Fortnight	0,0	0,0	0,0	2,0	6,0	0,0
6# Fortnight	0,0	0,0	0,0	2,0	5,0	1,0
7# Fortnight	0,0	4,0	2,0	3,0	3,0	0,0
Total hours:	2,0	4,0	2,0	15,0	35,0	2,0



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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.