Information about the subject

Degree: Bachelor of Arts Degree in Primary School Education

Faculty: Faculty of Teacher Training and Education Sciences

Code: 1160203 **Name:** Fundamentals of Natural Sciences

Credits: 6,00 **ECTS Year:** 2 **Semester:** 2

Module: Teaching and learning Experimental Science

Subject Matter: Experimental Sciences and their Didactics **Type:** Compulsory

Field of knowledge: Social and Legal Science

Department: Mathematics, Natural Sciences, and Social Sciences applied to Education

Type of learning: Classroom-based learning / Online

Languages in which it is taught: Spanish

Lecturer/-s:

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Module organization

Teaching and learning Experimental Science

Subject Matter	ECTS	Subject	ECTS	Year/semester
Experimental Sciences and their Didactics	12,00	Fundamentals of Natural Sciences	6,00	2/2
		Teaching of Natural Sciences	6,00	3/1

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1 Interprets and applies the processes through which scientific knowledge is constructed.

R2 Explains the basic principles and fundamental laws of Natural Sciences (Physics, Chemistry, Biology, and Geology) studied in the subject, necessary for the exercise of a Primary Education teacher, applying them in everyday life situations.

R3 Recognizes the different aspects that characterize the interdisciplinary nature of the contents of this subject and interprets, from a systemic perspective, the relationships between science, technology, society, and the environment, in a way that develops a critical spirit and attitudes of respect, appreciation, and commitment towards life and the environment, as well as the desire to transmit it to primary school students.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

GENERAL		Weighting			
		1	2	3	4
CG1	Understand the curricular areas of Primary Education, the interdisciplinary relationship between them, the evaluation criteria, and the body of didactic knowledge around the respective teaching and learning procedures.	x			
CG4	Design and regulate learning spaces in diverse contexts that address gender equality, equity, and respect for human rights, which form the values of citizenship education.		x		
CG8	Maintain a critical and autonomous relationship with knowledge, values, and public and private social institutions.				x
CG9	Value individual and collective responsibility in the attainment of a sustainable future.				x
CG10	Reflect on classroom practices to innovate and improve teaching work. Acquire habits and skills for autonomous and coopoerative learning and promote it among students.		x		

SPECIFIC		Weighting			
		1	2	3	4
CE23	Comprehend the basic principles and fundamental laws of experimental sciences (Physics, Chemistry, Biology, and Geology).				x
CE24	Know the school curriculum of these sciences.	x			
CE25	Pose and solve problems associated with sciences in daily life.				x
CE26	Value sciences as a cultural fact.				x
CE27	Recognize the mutual influence between science, society, and technological development, as well as relevant civic behaviors to promote a sustainable future.				x

Assessment system for the acquisition of competencies and grading system

In-class teaching

Assessed learning outcomes	Granted percentage	Assessment method
	0,00%	Oral presentation of group and individual works: Self-assessment systems (oral, written, individual, in groups). Oral tests (individual, in groups, presentation of topics or works).
R1, R2, R3	10,00%	Active participation in theoretical-practical sessions, seminars, and tutorials: Attitude scale (to gather opinions, values, social and managerial skills, interaction behaviors).
R1, R2, R3	60,00%	Written tests: Objective tests with short and extended responses.
R1, R2, R3	20,00%	Projects. Development and/or design works.
R1, R2, R3	10,00%	Reports/Practice reports.

Observations

The evaluation includes several well differentiated instruments. The final grade will be the weighted average of the results obtained in each one of them, provided that all of them have been passed with a minimum grade of 5.
All assignments will have a specific date for completion and delivery.

Exam composed of the following parts:
- Objective test of multiple choice or true/false questions, with a penalty for incorrect answers, related to theoretical content and questions of scientific reasoning.
- Development questions, related to theoretical content and questions of scientific reasoning.
- Questions related to the practical knowledge acquired in the laboratory.

Single evaluation: Exceptionally, those students who, in a justified and accredited manner, cannot undergo the continuous evaluation system and request it within the first month of each semester from their teacher, may opt for this evaluation system.
In this case, it will be evaluated as follows:
·Written tests (objective short answer, developmental tests) 60%
·Projects, development and/or design work 20%

·Reports/practice reports 10%
·Active participation in tutorials 10%

Online teaching

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3	60,00%	Written tests: short-answer objective tests, developmental tests. Projects. Reports/Practical reports. Design work, development
	0,00%	Exposición oral de trabajos grupales e individuales: sistemas de autoevaluación (oral, escrita, individual, en grupo). Pruebas orales (individual, en grupo, presentación de temas-trabajos)
R1, R2, R3	10,00%	Active participation in theoretical-practical sessions, seminars, and tutorials: Attitude scale (to gather opinions, values, social and managerial skills, interaction behaviors).
R1, R2, R3	30,00%	Projects. Development and/or design works.

Observations

The evaluation includes several well differentiated instruments. The final grade will be the weighted average of the results obtained in each one of them, provided that all of them have been passed with a minimum grade of 5.
All assignments will have a specific date for completion and delivery.

Exam composed of objective test of multiple choice or true/false questions, with a penalty for incorrect answers, related to theoretical content and questions of scientific rea.

CRITERIA FOR THE AWARDING OF HONOURS:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1 Participatory Master Class

M3 Project-based Learning

M4 Learning Contracts

M5 Seminar Work

M7 Cooperative/Collaborative Work

M9 Group and Individual Tutoring

M10 Individual Tutoring

M11 Participatory Master Class

M13 Seminar Work

M15 Project-based Learning

M16 Learning Contracts

M18 Cooperative/Collaborative Work

M19 Individual Tutoring

M20 Group and Individual Tutoring

IN-CLASS LEARNING

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Group Work Presentation M7	R1, R2, R3	7,00	0,28
Theoretical Class M1, M5	R1, R2, R3	34,00	1,36
Practical Class M5, M7	R1, R2, R3	10,00	0,40
Tutoring M9, M10	R1, R2, R3	6,00	0,24
Evaluation M1, M5, M7, M9, M10	R1, R2, R3	3,00	0,12
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group work M7	R1, R2, R3	20,00	0,80
Individual work M10	R1, R2, R3	70,00	2,80
TOTAL		**90,00**	**3,60**

ON-LINE LEARNING

SYNCHRONOUS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical class (e-learning mode) M11	R1, R2, R3	41,00	1,64
Practical class (e-learning mode) M18	R1, R2, R3	5,00	0,20
Individual tutoring (e-learning mode) M19	R1, R2, R3	1,50	0,06
Evaluation (e-learning mode) M11, M18, M19	R1, R2, R3	2,50	0,10
TOTAL		**50,00**	**2,00**

ASYNCHRONOUS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Individual work Activities (e-learning mode) M11, M18	R1, R2, R3	71,25	2,85
Group Work (e-learning mode) M18	R1, R2, R3	17,50	0,70
Asynchronous Tutoring (e-learning mode) M19	R1, R2, R3	1,25	0,05
Theoretical-Practical Class (distance mode) M11, M18	R1, R2, R3	10,00	0,40
TOTAL		**100,00**	**4,00**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
Concept and processes of Science	- Natural Sciences in the global framework of sciences. - System concept. - Science, technology, society and environment interaction. - Characteristics of scientific knowledge. - Research and scientific methodology.
Matter and energy	- Concept of matter. - Properties of matter. - Pure substances and mixtures. - Atom and atomic structure. - Chemical reactions. - States of aggregation of matter. - Energy concept. - Forms of energy.
Planet Earth	- General structure of the Earth. - Atmosphere. - Hydrosphere. - Geosphere. Structure and dynamics. Volcanoes. Earthquakes. Mineral matter: rocks.
Living beings	- Characteristics of living beings. The cell. - Vital functions. - Diversity of living beings.

Temporary organization of learning:

Block of content	Number of sessions	Hours
Concept and processes of Science	12,00	24,00
Matter and energy	9,00	18,00
Planet Earth	4,00	8,00
Living beings	5,00	10,00

References

Basic references

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