

**COURSE DATA****Data Subject**

Code	44298
Name	Fieldwork in palaeontology
Cycle	Master's degree
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2200 - M. U. en Paleontología Aplicada	Faculty of Biological Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
2200 - M. U. en Paleontología Aplicada	2 - Study techniques in palaeontology	Obligatory

Coordination

Name	Department
BOTELLA SEVILLA, HÉCTOR	200 - Geology

SUMMARY

In this subject the student is expected to acquire all the knowledge that allows him to develop the field part of his research and / or professional work. To do this, and from an eminently practical point of view, it must be able to prepare a field trip, including bibliographical search, material organization (geological and topographic maps, aerial photographs, stratigraphic series, etc.). The student will be taught the use of spatial localization tools and techniques using a positioning system (GPS). In addition, once the subject has been taken, it must be able to perform adequate planning, prospecting, extraction, preservation and transport of paleontological remains, as well as learn the different methodologies of existing paleontological excavation. The student will be instructed in the survey of stratigraphic series to locate fossils and fossiliferous levels, developing sampling techniques according to the materials and study objectives. The development of semi quantitative and quantitative indices for the definition of abundance of fossils and sedimentary structures, as well as the organization of cabinet work and the different types of reports (academic, technical and scientific articles) will also be elaborated.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Do not need previous knowledge.

OUTCOMES

2200 - M. U. en Paleontología Aplicada

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Be able to access to information tools in other areas of knowledge and use them properly.
- 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.
- Be able to communicate and disseminate scientific ideas.
- Ser capaces de trabajar en equipo con eficiencia en su labor profesional o investigadora, adquiriendo la capacidad de participar en proyectos de investigación y colaboraciones científicas o tecnológicas
- Ser capaces de realizar una toma rápida y eficaz de decisiones en situaciones complejas de su labor profesional o investigadora, mediante el desarrollo de nuevas e innovadoras metodologías de trabajo adaptadas al ámbito científico/investigador, tecnológico o profesional en el que se desarrolle su actividad.
- Aplicar el razonamiento crítico y la argumentación desde criterios racionales.
- Capacidad para preparar, redactar y exponer en público informes y proyectos de forma clara y coherente, defenderlos con rigor y tolerancia y responder satisfactoriamente a las críticas que pudieren derivarse de su exposición.



- Projectar la inquietud intelectual y fomentar la responsabilidad del propio aprendizaje.
- Asumir el compromiso ético y la sensibilidad hacia los problemas medioambientales, hacia el patrimonio natural y cultural.

LEARNING OUTCOMES

To Prepare a field trip in a geological area of paleontological interest: bibliographic search, material organization (geological and topographic maps, aerial photographs, stratigraphic series, etc.) Methodologies and typology of study according to the purpose of the work. Positioning in the field through positioning systems (GPS). Conduct a prospection, extraction, preservation and transport of paleontological remains of heritage interest. Planning a paleontological excavation. To construct a stratigraphic series with sediment logical information in which palaeontological samples are accurately located. To know the different types of sampling used in palaeontology. Elaborate a field notebook that shows properly all the information and data taken. Development and use in the field of indices that define abundance degrees, as well as sedimentary structures. Organization and digitization of the data taken in the field. Elaboration of technical reports, scientific articles and professional documents.

DESCRIPTION OF CONTENTS

1. Theoretical aspects

There will be 5 hours in the classroom, which will treat several aspects concerning:

- 1º Formal aspects for the preparation of any paleontological prospecting including obtaining permits for the action (current legislation), infrastructure (material, vehicles, personnel ...), financing (research projects, regional organizations, private enterprise ...), deposit of the Fossils
- 2º Basic norms of security in the work
- 3º Presentation in class of each one of the Field-trips. Geographical, geological situation of the work areas, supporting bibliography
- 4º- Classroom presentation of statistical techniques for the treatment of field data for calculation of abundance and diversity indexes

2. Quaternary Turbas of Almenara

In coordination with activities of the subject Cartography for paleontologists, an exit will be made to the area of the province of Castellon, where the students will prevail the techniques for the in situ taking of geological cores. The practice will be done in Quaternary Turbas of Almenara. Given the patrimonial value of the mobs, mob witnesses should be included as material to be preserved within the Spanish Natural Heritage and Biodiversity

**3. Field trip-Paleozoic**

Field trip of 4-5 days, where the Paleozoic stratigraphic sequence will be sequentially visited in the Provinces of Teruel and Zaragoza. With several explanatory stops in Cambrian, Silurian, Lower and Middle Devonian Inferior y Medio and Carboniferous. The field trip is focused in practical exercises concerning Spatial positioning, Paleontological Prospection, Surface sampling, elevation of stratigraphic sections with measurements of directions and dips. Packaged and sample coded, etc.

4. Field trip Tertiary-Quaternary

Description of a stratigraphic log with sedimentological information. The practice is carried out in Villafranqueza (Alicante), where the Eocene record is perfectly exposed, a deep-water environment with a predominance of turbidite sedimentation. Furthermore, the series exceptionally illustrates an angular discordance between Eocene and Tortonian materials.

It is completed with the Paleodiversity and Plant Evolution field trip to the Iberian Mountains.

WORKLOAD

ACTIVITY	Hours	% To be attended
Laboratory practices	54,00	100
Theory classes	6,00	100
Attendance at events and external activities	10,00	0
Development of individual work	20,00	0
Study and independent work	30,00	0
Readings supplementary material	30,00	0
TOTAL	150,00	

TEACHING METHODOLOGY**Theoretical-practical classes**

- Master classes with concepts exposition by computer
- Personal case-based case work
- Elaboration of reports with teacher's guide on practical cases
- Project development
- Discussion on practical cases presented by the teacher
- Preparation of field trips



- Tests and exams

Field trips

- Itineraries guided by different significant enclaves of paleontological interest
- Application of different field techniques.
- Description of a stratigraphic section,
- Recovery of remains depending on the nature of the remains and the rock that includes them; Prospecting, surface collection, excavation, micro paleontological sampling ... Types of Sampling: Cartography Sampling, Qualitative and Biostratigraphy Sampling, Qualitative Sampling in Paleontology
- Registration and sequence of samples
- Discussion of the results
- Various activities (hoisting, positioning, taking of data, sampling, sample packing, mapping)

EVALUATION

Preparation of reports, individually or in groups, during the semester for the continuous evaluation of the technical competences of the subject

- Control in the progression in the acquisition of the aptitudinal competences
- Assistance, use and participation in field practices
- Field notebook
- Elaboration of a final report or questionnaire for each field practice

The weight (percentage on the final grade) of the aspects considered in the evaluation of the subject are reflected in the following table:

Assessment activities Weighting

Attendance and participation of the student 50%



Field Notebook 15%

Memories-Reports-questionnaires 35%

REFERENCES

Basic

- A manual of practical laboratory and field techniques in palaeobiology
OR Green - 2013
- Vertebrate paleontological techniques
P Leiggi, P May - 2005 -

Additional

- <http://natural-history.uoregon.edu/collections/paleontology-fieldwork>
- <http://samnoblemuseum.ou.edu/common-fossils-of-oklahoma/what-do-paleontologists-do/>