

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

<b>Code</b>	44298
<b>Name</b>	Fieldwork in palaeontology
<b>Cycle</b>	Master's degree
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2021 - 2022

**Study (s)**

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

**Subject-matter**

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

**Coordination**

<b>Name</b>	<b>Department</b>
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.



- Proyectar 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

### Learning results

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, ect

The Pyrenean palaeozoic sequences in conjunction with Biostratigraphy will fill the general view of palaeozoic sequences

4.

**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
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

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.
- lifting 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://samnoble-museum.ou.edu/common-fossils-of-oklahoma/what-do-paleontologists-do/>

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

### 1. Contents

The contents of the subject are maintained, however, due to the eminently practical nature (field-work) this subject, the exits will be conditioned to the conditions of restriction due to pandemic existing at the time, thus: the date of field-activities will be adapted to conditions as far as possible.

In the case of TOTAL impossibility of making field trips in a group, it will be chosen to carry out individual work in nearby field work areas preceded by virtual theory classes and video tutorials.

In case that it will be even impossible to carry out individual field trips, a bibliographic work will be carried out about field methodologies in palaeontology and the student will be provided with the bibliography to be studied in order to carry out a theoretical exam on Techniques of work in palaeontology.



This solution would not be much less the ideal one, but if the situation required it, it is a solution to avoid the loss of the course by the students, but the essential concepts for acquiring most of the competences are maintained.

## 2. Volume of work and temporary planning of teaching

The weight of the different activities (dedication in ECTS) marked in the original teaching guide is maintained. However, in some teaching sections and especially in the practical part (laboratory and field practices), face-to-face practices would be transformed into virtual sessions

## 3. Teaching methodology

In the case of non-face-to-face teaching, the face-to-face classes will be replaced by videoconference by creating tasks "Videoconference" in the virtual classroom and execution of these by Blackboard Collaborate the day and time of class face-to-face.

The subject has an eminently practical part, so like the theoretical classes, these practices will be replaced by pdfs, powerpoints, or videos with explanations of the practical contents that will be posted in the virtual classroom. In addition, those topics that require a complementary or supporting bibliography will be made available to students through the classroom (in pdf), in the corresponding topic.

Group field trips may be replaced by individual field trips under the supervision of the teacher

Attention to students is maintained through the Virtual Classroom and email, to solve possible problems.

The face-to-face classes of block 1 that could not be taught in person are taught through the Blackboard and Microsoft Teams tools.

Upload of additional materials to the Virtual Classroom (Block 3)

Tutorials are implemented through videoconference

## 4. Evaluation

The weight of each section of the evaluation remains intact.

Assessment activities Weighting

Attendance and participation of the student 50%



Field book 15%

Memories-Reports-questionnaires 35%

The weight is maintained in the evaluation of each field practice (depending on its duration in ECTS).

## 5. Bibliography

Most of the recommended basic bibliography is accessible.