COURSE DATA

DATA SUBJECT

Code: 46739
Name: Fieldwork in palaeontology
Cycle: Master's Degree
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
2266 - Master's Degree in Applied Palaeontology	Facultat de Ciències Biològiques	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2266 - Master's Degree in Applied Palaeontology	Study techniques in palaeontology	COMPULSORY

COORDINATION

BOTELLA SEVILLA HÉCTOR

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.

COMPETENCES / LEARNING OUTCOMES

2266 - Master's Degree in Applied Palaeontology

Access information tools from other areas of knowledge and use them appropriately.

Apply critical reasoning and argumentation based on rational criteria.

Apply the knowledge acquired and problem-solving abilities in new or unfamiliar situations within broader (or multidisciplinary) contexts related to the field of study.

Apply the research experience acquired to initiate the research phase of a PhD programme on biodiversity-related topics.

Apply the research experience acquired to tasks specific to the profession, both in the private sector and in public institutions.

Assess the need to complement their scientific, historical, language, IT, literature, social and human ethics education by attending lectures or courses and/or carrying out complementary activities, self-evaluating the contribution that these activities make to their overall education.

Assume an ethical commitment and sensitivity towards environmental problems and natural and cultural heritage.

Be familiar with, develop and manage georeferenced databases of elements from the geological and palaeontological record, as well as the software used for the spatial representation and analysis of these elements.

Collect, represent and analyse data for the interpretation and production of geological maps and/or other forms of representation (stratigraphic columns, geological cross-sections, etc.) with a view to their inclusion in reports, scientific publications or other outputs.

Communicate and popularise scientific ideas.

Communicate conclusions and the knowledge and rationale supporting them to specialised and non-specialised audiences clearly and unambiguously.

Conduct studies, applying the methods and techniques needed to preserve and manage palaeontological heritage.

Continue the learning process in a manner that is largely self-directed or independent.

Demonstrate intellectual curiosity and encourage responsibility for one's own learning.

Develop experimental skills in the handling of laboratory material and equipment in palaeontology.

Have an in-depth knowledge and understanding of the nature of biodiversity and its ecosystemic relationships both now and in the past.

Have an in-depth knowledge and understanding of the regional geology of Spain and surrounding areas, particularly the Valencian Community, with detailed knowledge of the main palaeontological sites found in the Iberian Peninsula and North Africa.

Integrate knowledge and confront the complexity of making judgements based on information that, although incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of knowledge and judgements.

Interpret environmental and ecological variables of the past from the study of organism traces in the fossil record.

Know, understand and draw conclusions, applicable to the present time, about the crises of biological diversity, and their causes and consequences within the framework of actualism.

Know and confidently handle the divisions of the geological time scale and the biostratigraphic scales constructed from different groups of biota in the fossil record.

Know and understand past biological events, as well as the zonations, in time and space, of biota in order to establish the relative stratigraphic position of sedimentary rocks from different geographical areas.

Make quick and effective decisions in complex situations in their professional or research work, by developing new and innovative work methodologies adapted to the scientific/research, technological or professional field in which they carry out their activity.

Plan and manage available resources, taking into account the basic principles of quality, risk prevention, safety and sustainability.

Prepare, write and present reports and projects in public in a clear and coherent manner, defend them with rigour and tolerance and respond satisfactorily to any criticism that may arise from the presentation.

Produce all types of reports related to palaeontological matters clearly and concisely at an official or professional level (reports, grants, heritage impact reports, research projects, etc.)

Skillfully handle the field, laboratory and office techniques for the extraction, preparation, cataloguing, digital reconstruction, study and dissemination of microfossils and macrofossils.

Understand the fundamental principles of facies analysis in continental, transitional and marine depositional systems, and the use of fossils for palaeoenvironmental interpretation of the stratigraphic record.

Understand the nature of the fossil record in relation to the sedimentary process, the biostratinomic and phosildiagenetic phases of the process and the mechanisms of fossilisation.

Understand the nature of the stratigraphic record, its discontinuities, cycles and events, the different types of sedimentary basins, the factors controlling their infilling, the resulting three-dimensional geometries and stratigraphic correlations.

Use acquired knowledge as a basis for originality in the development or application of ideas, often in a research context.

Work efficiently in a professional or research team, acquiring the ability to participate in research projects and scientific or technological collaborations.

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. Sampling in Quaternary Pets

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

Descritpion 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.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	6,00
Laboratory	54,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	10,00
Individual or group project	20,00
Independent study and work	60,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**90,00**

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

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

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