

## 26406 - General and Marine Palaeontology

### Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	296 - Degree in Geology
ECTS	9.0
Course	1
Period	Second semester
Subject Type	Basic Education
Module	---

### 1. Basic info

#### 1.1. Recommendations to take this course

#### 1.2. Activities and key dates for the course

### 2. Initiation

#### 2.1. Learning outcomes that define the subject

#### 2.2. Introduction

### 3. Context and competences

#### 3.1. Goals

#### 3.2. Context and meaning of the subject in the degree

#### 3.3. Competences

#### 3.4. Importance of learning outcomes

### 4. Evaluation

### 5. Activities and resources

#### 5.1. General methodological presentation

The designed learning process for the subject sets on the following assumptions: The subject sets on a series of fundamental principles of marine fossil groups and fossilization processes. Hence, the main principles and contents will deal on marine fossil groups, fossilization processes and their use as indicators of environmental, palaeoclimatic and environmental reconstructions. It is also worth noting their use as age indicators. All these data are relevant as primary information and real competencies for future geologists.

#### 5.2. Learning activities

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The elaborated programme for the students to help them reach the proposed results includes the following parts:

-Participative Theoretical sessions: 40 hours of compulsory attendance; they totalize a whole of 4 ECTS.

-Laboratory Practices: A whole of 13 practical sessions. *Visu* and particular practical cases. 40 hours (compulsory attendance). 4 ECTS.

-Field excursions: 3 Fieldtrips to different areas ranging from Palaeozoic to Neogene. The fieldtrips, including the time for the preparation of the report totalize a whole of 30 hours (1,2 ECTS).

-Study and required Knowledge for the written proof: 70 non-presential hours.(= Autonomous work of the students plus tutorials).

-Evaluation Proof: A written proof about the spent theoretical and practical sessions. 4 presential hours.

### 5.3.Program

**1. The programme of the Participative Theoretical sessions** includes the following topics:

Basic Palaeontology

Introduction: Situation of Palaeontology in the frame of the Geological Sciences.

1: The fossilization process: Fundamentals of Taphonomy

2: Fundamentals of Systematics and classification of fossils.

3: Fundamentals of Biostratigraphy

4: Fundamentals of Palaeoecology and Palaeobiogeography

Marine Palaeontology

5: Pelagic marine environments and the dominant fossil groups

5.1: Introduction

5.2: Nectonic groups: Cephalopods and their relation with marine reptiles and fishes

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5.3: Planktonic groups: Graptolites

6: Flat-bottom marine environments and their dominant fossil groups.

6.1: Introduction. Benthic organisms and their relation with the substrate

6.2: Trilobites

6.3: Brachiopods

6.4: Bivalves

6.5: Gastropods

6.6: Echinoderms

7. Marine reef environments and their dominant groups

7.1: Introduction. Reef builder groups

7.2: Cnidara. Their symbiotic relation with algae

7.3: Poriphera

7.4: Briozoans

**2. Laboratory Practices:** A whole of 13 practical sessions. *Visu* and particular practical cases. The topics of each 13 sessions are.

A: Basic Palaeontology

1: Fossilization processes (1)

2: Fossilization processes (2)

3: Palaeoecological processes and reconstructions (1)

4: Palaeoecological processes and reconstructions (2)

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B: Systematics and Palaeontology

B.1: Pelagic groups

5: Graptolites

6: Nautiloids and Coleoids

7: Ammonoids

B.2: Flat-environment fossil groups:

8: Trilobites

9: Brachiopods

10: Bivalve Molluscs

11: Gastropods

12: Echinoderms

B.3: Reef-building dominant groups

13: Cnidaria (Corals and related groups)

**3. Field excursions:** 3 Fieldtrips to different areas ranging from Palaeozoic to Neogene. After each fieldtrip the students will prepare a report adjusted to the template of the publication of Geological Society: *Geotemas*. The programmed fieldtrips are:

(1) Palaeozoic (Ordovician-Devonian): Herrera de los Navarros and Sta Cruz de Nogueras.

(2) Mesozoic: The Jurassic of La Almunia de D<sup>a</sup> Godina; Ricla and Aguilón (S from Zaragoza).

(3) Caenozoic: Palaeocene-Eocene-Oligocene of the Surroundings of La Peña (Huesca).

### 5.4.Planning and scheduling

### 5.5.Bibliography and recommended resources

## 26406 - General and Marine Palaeontology

- BB** Clarkson, E.N.K.. Invertebrate palaeontology and evolution / E.N.K. Clarkson . - 2nd ed. London [etc.] : Allen & Unwin, cop. 1986
- BB** Clarkson, E.N.K.. Paleontología de invertebrados y su evolución / E.N.K. Clarkson ; [traducido por Ignacio Meléndez Hevia ; revisado por Bermudo Meléndez] Madrid : Paraninfo, 1986
- BB** Domènech, Rosa. Introducción a los fósiles / Rosa Domènech, Jordi Martinell ; con la colaboración de Carles Martín-Closas Barcelona [etc.] : Masson, D.L. 1996
- BB** Enay, R.. Paléontologie des Invertébrés Dunod, 1990
- BB** Fossil invertebrates / senior editor Richard S. Boardman ; editors Alan H. Cheetham, Albert J. Rowell . - [1st published] Palo Alto [etc.] : Blackwell Scientific Publications, 1987
- BB** Meléndez, Bermudo. Tratado de paleontología / Bermudo Meléndez. Tomo I, [Cuestiones generales de paleontología] / Bermudo Meléndez; [con la colaboración de Sixto Fernández López...(et al.)] . - 3a. ed. amp. y rev., por Guillermo Meléndez Hevia Madrid : Consejo Superior de Investigaciones Científicas, 1999
- BB** Paleontología de invertebrados / editores, M. Luisa Martínez Chacón y Pascual Rivas Madrid [etc.] : Sociedad Española de Paleontología [etc.] , 2009
- BB** Paleontología. T. 1, Parte general e invertebrados / [coordinada y dirigida por] Bermudo Meléndez . - 3a. ed. rev. y ampl. Madrid : Paraninfo, 1982