Universidad Zaragoza

Academic Year/course: 2022/23

26406 - General and Marine Palaeontology

Syllabus Information

Academic Year: 2022/23
Subject: 26406 - General and Marine Palaeontology
Faculty / School: 100 - Facultad de Ciencias
Degree: 296 - Degree in Geology
588 - Degree in Geology
ECTS: 9.0
Year: 1
Semester: Second semester
Subject Type: Basic Education
Module:

1. General information

1.1. Aims of the course

The objectives are aligned with the following Sustainable Development Goals of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/):

Goal (13) Climate Action

Goal (14) Life Below Water

2. Learning goals

3. Assessment (1st and 2nd call)

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, laboratory sessions, fieldwork, autonomous work and study and assessment tasks.

4.2. Learning tasks

This course is organized as follows:

- **Lectures** (4 ECTS: 40 hours).
- **Laboratory sessions** (3.5 ECTS: 35 hours). 12 sessions in total. Visu and particular practical cases. Assistance is compulsory.
- **Fieldwork** (1.5 ECTS: 15 hours). Three field trips to different areas ranging from Palaeozoic to Neogene. The thirty hours include the time dedicated to elaborate a report.
- **Autonomous work and study** (70 hours). It includes tutorials.
- **Assessment tasks** (6 hours). It consists of a written exam.

Teaching and assessment activities will be carried out on site for as long and as much as possible. This scenario could change if safety regulations related to the covid19 crisis recommended online activities.

4.3. Syllabus

This course will address the following topics:

Lectures

The designed learning process for the course sets the following assumptions: The course 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.

Section 1. Basic Palaeontology

- **Introduction**: Situation of Palaeontology in the frame of the Geological Sciences.
- **Topic 1**: The fossilization process: Fundamentals of Taphonomy
- **Topic 2**: Fundamentals of Systematics and classification of fossils.
- **Topic 3**: Fundamentals of Biostratigraphy
- **Topic 4**: Fundamentals of Palaeoecology and Palaeobiogeography

Section 2. Marine Palaeontology

- **Topic 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
    - 5.3: Planktonic groups: Graptolites
- **Topic 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
- **Topic 7**. Marine reef environments and their dominant groups
    - 7.1: Introduction. Reef builder groups
    - 7.2: Cnidaria. Their symbiotic relation with algae
    - 7.3: Poriphera
    - 7.4: Briozoans

Laboratory sessions. Twelve practice sessions in total. Visu and particular practical cases. The topics of each 12 sessions are:

Section A: Basic Palaeontology

- **Topic 1**: Fossilization processes (1)
- **Topic 2**: Fossilization processes (2)

Section B: Systematic Palaeontology and Paleoecology

Section B.1: Pelagic groups

- **Topic 3**: Nautiloids and Coleoids
- **Topic 4**: Ammonoids
- **Topic 5**: Graptolites

Section B.2: Flat-environment fossil groups:

- **Topic 6**: Trilobites
- **Topic 7**: Brachiopods
- **Topic 8**: Bivalve Molluscs I
- **Topic 9**: Bivalve Molluscs II
- **Topic 10**: Gastropods
- **Topic 11**: Echinoderms

Section B.3: Reef-building dominant groups

- **Topic 12**: Cnidaria (Corals and related groups)

Fieldwork. Three field trips to different areas ranging from Palaeozoic to Neogene. After each field trip the students will prepare a report adjusted to the template of the publication of Geological Society: Geotemas. The programmed field trips are:

1. Palaeozoic (Ordovician-Devonian): Herrera de los Navarros and Sta Cruz de Nogueras.
2. Mesozoic: The Jurassic of Almonacid de la Cuba (S from Zaragoza).
3. Cenozoic: Paleocene-Eocene-Oligocene of the surroundings of La Peña Reservoir (Huesca).

4.4. Course planning and calendar

This course covers the second semester.

Dates for each field trip will be published at the Earth Sciences Department website.

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Sciences and Earth Sciences Department websites (https://ciencias.unizar.es; https://cienciastierra.unizar.es) and Moodle.

4.5. Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=26406&year=2020