

26437 - Vertebrate and Human Palaeobiology

Syllabus Information

Academic Year: 2020/21

Subject: 26437 - Vertebrate and Human Palaeobiology

Faculty / School: 100 - Facultad de Ciencias

Degree: 296 - Degree in Geology
588 - Degree in Geology

ECTS: 5.0

Year: 4

Semester: First semester

Subject Type: Optional

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

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, practice sessions and tutorials.

This course is focused on publicizing a course that is of little development during the Geology degree, so the agendas are novel for the student. Therefore the proposed activities are focused on understanding the anatomy of vertebrates, conservation and formation of deposits of fossil vertebrates and systematics of major groups, especially hominins.

4.2.Learning tasks

This course is organized as follows:

- **Lectures** (1.7 ECTS: 17 hours). 17 one-hour sessions. In support to face-to-face lectures, basic reference material will be posted on the web www.aragosaurus.com such as the syllabus of the course, the teaching guide, summaries of the theoretical topics, scripts practices and diverse complementary material.
- **Laboratory sessions** (1.8 ECTS: 18 hours). Nine two-hour sessions. Lectures are complemented with laboratory sessions so that the student will learn and demonstrate methods and analysis used and the results of their application. A report of each practice session must be elaborated.
- **Seminars** (0.7 ECTS: 7 hours). The student must elaborate an assignment in which he/she must demonstrate the ability to work with the literature, orally present and defend the report on issues related Vertebrate Paleobiology.

This includes 17 hours of autonomous work for doing bibliographical research, attending tutorials, and preparing multimedia presentation. In the first session bibliographic research work and the teacher responsible for their supervision is assigned.

- **Tutorials.** For a better monitoring of the learning process students will be encouraged to attend tutorials with different methods: conventional tutorials, more specific tutorials related to practical work-type seminar and the possibility of carrying out telematic tutorials will also be offered.
- **Autonomous work and study** (60 hours).
- **Fieldwork** (0.8 ECTS: 8 hours, 2 field-trip days with report. Analysis, classification and vertebrates paleobiological reconstruction of dinosaur tracks from the Early Cretaceous of the Iberian Range.
- **Written test** (4 hours).

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:

Theory topics

- **Topic 1.** The skeleton of vertebrates
 - 1.1. The mineralized tissues of vertebrates
 - 1.2. Orientation of the skeleton of vertebrates
 - 1.3. Parts of the skeleton of vertebrates
- **Topic 2.** Main events in the history of vertebrates
 - 2.1. Craniata, the origin of the head in vertebrates
 - 2.2. Swimming and predation
 - 2.3. Adaptations to terrestrial environment. The egg amniota
 - 2.4. Permian reptiles and plate tectonics
 - 2.5. Dawn of the Dinosaurs
 - 2.6. Saurischia
 - 2.7. Ornithischia
 - 2.8. Adaptations to flight: avian dinosaurs, flying reptiles and mammals
 - 2.9. Locomotion vertebrate through their icnitas
 - 2.10. Mesozoic mammals and origin of mammals
 - 2.11. Tertiary mammals. The strange case of South American mammals.
 - 2.12. Quaternary mammals. Adaptations to cold.
 - 2.13. Micromammals and climatic reconstructions in the Quaternary
 - 2.14. Hominids: bipedalism, sexual dimorphism, life in the savannah
 - 2.15. African hominids
 - 2.16. human dispersal in Eurasia: georgicus Homo, Homo antecessor, Homo heidelbergensis
 - 2.17. Neanderthals and early modern humans in Europe
 - 2.18. The conquest of the New World
 - 2.19. Human language in communication of hominids
 - 2.20. Emergence of art and symbolic mind

Practice sessions

- Topic 1. Orientation of a vertebrate and body regions of vertebrates
- Topic 2. The cranial and postcranial skeleton.
- Topic 3. Muscle attachments, joints, biomechanics
- Topic 4. The teeth of vertebrates and diet
- Topic 5. Dinosaur Fossils
- Topic 6. Fossil remains of microvertebrates, biostratigraphy and environmental reconstructions
- Topic 7. Comparative anatomy of the major groups of mammals.
- Topic 8. Human Fossils and recognition of the hominid characters.

Seminar topics (assignment)

- Topic 1. Large aquatic vertebrates. Sharks.
- Topic 2. Large Marine Mesozoic vertebrates acuáticos. Reptiles.
- Topic 3. Large aquatic vertebrates. Cetaceans Paleogene and modern whales.
- Topic 4. Evolution of vertebrates on the islands.
- Topic 5. Polar dinosaurs.
- Topic 6. Large predators. theropod dinosaurs.
- Topic 7. Large predators. carnivorous mammals.
- Topic 8. The "sails" of the Permian reptiles.
- Topic 9. The first humans in Europe and Atapuerca.
- Topic 10. Neanderthals on the Iberian Peninsula.

4.4.Course planning and calendar

The start time and duration of theoretical exam of each call will be placed one week in advance on the bulletin board Palaeontology and teaching section of the website www.aragosaurus.com. Each notice shall include a theoretical and practical exam.

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://cienciatierra.unizar.es>) and Moodle.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=26437&year=2020