Biology and Diversity in Terrestrial Vertebrates

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Use of Languages
Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers
Francesc Muñoz Muñoz

Prerequisites
To have passed the subjects of "Zoology" and "Extension of Zoology" of the Degree of Biology or the Degree of Environmental Biology.

Objectives and Contextualisation
Objectives
In this subject, the students will acquire theoretical and practical knowledge on the anatomy, diversity and evolution of the main groups of tetrapods (see Theory section). They will also know the most relevant biological aspects and, in particular, the adaptations to the environment and life strategies of the most diversified groups.

The specific training aims are the following:
- To consolidate and to expand the knowledge on the general morphological characteristics of the main tetrapod lineages.
- To know the diagnostic features of the main taxa.
- To know the appearance in the fossil record of the main lineages and the essential factors involved in their subsequent diversification.
- To obtain an overview of the internal phylogenetic relationships of the main lineages.
- To understand the adaptations to the environment of representative taxonomic groups.
- To know essential aspects about the biology and the ecological importance of representative taxonomic groups.

Competences
• Analyse and interpret the origin, evolution, diversity and behaviour of living beings.
• Be able to analyse and synthesise
• Be able to organise and plan.
• Control processes and provide services related to biology.
• Develop a sensibility towards environmental issues.
• Develop independent learning strategies.
• Obtain, manage, conserve and observe specimens.

Learning Outcomes

1. Analyse and interpret animal diversity and the phylogenetic lines of the metazoa.
2. Apply dissection methods to observe and analyse the internal anatomy of representative samples of the principal animal groups.
3. Apply methods for handling and conserving animal specimens.
4. Apply techniques for the study of animal anatomy.
5. Be able to analyse and synthesise.
6. Be able to organise and plan.
7. Develop a sensibility towards environmental issues.
8. Develop independent learning strategies.
9. Provide services related to zoology.

Content

Theory

Topic 1. The transition to terrestrial life by the vertebrates. Origin and radiation of the tetrapods.


Topic 7. Origin and diversification of birds.

Topic 8. Adaptations of birds.


Practical classes

Practice 1. Comparative study of the tetrapod skeleton I.

Practice 2. Comparative study of the tetrapod skeleton II.

Practice 3. Identification of amphibians and sauropsids.

Practice 4. Identification of mammals.

Field practices
Field trips to identify bird species in the natural environment and/or visits to research or conservation centers.

**Methodology**

The methodology used to achieve the learning process is based on the combination of lectures, seminars, personal study, and individual and group work.

**Theory**

With these classes the students acquire the basic theoretical knowledge of the subject, which must be complemented with the personal study of the topics explained by the teacher. These classes highlight and address the essential points of each teaching unit. Subsequently, the student will have to supplement the conceptual map established during the classes with the information from different sources that will be provided to them. Classes last 50 minutes and in them audiovisual material prepared by the teacher will be used.

**Seminars**

The aim of the seminars is to promote the capacity for analysis and synthesis, critical reasoning, and the capacity to solve problems. In the seminars, one or some of the following activities may be developed: oral and written presentation of works, resolution of issues related to topics of the theory, and analysis and discussion of articles, cases or problems. Seminars are designed for students to work in small groups and acquire mainly the skills associated with this type of teaching. Working groups will be set up that will deal with specific topics, which once developed and prepared will be presented orally in class. Afterwards, relevant aspects of each topic will be discussed in common.

**Practices**

During the lab sessions students will work on zoological material and will complement their knowledge with the study and the response of the issues raised by the teacher. The field practices will allow the students learn techniques of observation and identification of species. The objective of the practical classes is to complete and reinforce the zoological knowledge acquired in the master classes and seminars. Practical sessions will stimulate and develop specific skills, such as the ability to observe, analyze and interpret anatomical structures, detect adaptive characters or phylogenetic importance, and taxonomic identification of individuals. For its correct execution, students will be provided with a script for each of the established sessions.

**Activities**

<table>
<thead>
<tr>
<th>Title</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type: Directed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field practices</td>
<td>12</td>
<td>0.48</td>
<td>1, 9, 7, 5</td>
</tr>
<tr>
<td>Laboratory practices</td>
<td>16</td>
<td>0.64</td>
<td>1, 2, 3, 4, 9, 7, 5, 6</td>
</tr>
<tr>
<td>Lectures</td>
<td>18</td>
<td>0.72</td>
<td>1, 7</td>
</tr>
<tr>
<td>Seminars</td>
<td>6</td>
<td>0.24</td>
<td>1, 7, 5, 6</td>
</tr>
<tr>
<td><strong>Type: Autonomous</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of works and resolution of issues</td>
<td>34</td>
<td>1.36</td>
<td>1, 4, 8, 5, 6</td>
</tr>
<tr>
<td>Study and resolution of issues</td>
<td>53</td>
<td>2.12</td>
<td>1, 8, 5, 6</td>
</tr>
</tbody>
</table>
Assessment

The evaluation of this subject will be carried out by means of the following procedures:

1. Evaluation of the theoretical contents

The theoretical knowledge acquired will be evaluated individually. This evaluation will be carried out by means of two midterm exams (each with a weight of 37% of the final mark) that will contain test-type questions and/or short or medium development questions. Students who do not pass any of these exams (minimum mark: 5 out of 10) will have to recover them in a final exam that will contain questions of the same type as those of the midterm exams. Likewise, students who wish to improve the mark of any of these exams may take a final exam, but the previously obtained mark will be lost. The evaluation of the theoretical contents has an overall weight of 74% (corresponding to the sum of the percentages of each midterm exam) of the final mark. It is essential to pass the theory (minimum score: 5 out of 10) to be able to count the marks of the seminar and the practical exam. To participate in the final exam, students must have been previously evaluated in a set of activities, which weight equals a minimum of two thirds of the total mark of the subject. Therefore, the students will obtain the "Not Evaluable" qualification when the evaluation of the activities performed have a weight lower than 67% in the final mark.

2. Evaluation of the seminars

The content and quality of the works, and the answers to the questions that arise during the seminars will be evaluated. The corresponding mark has an overall weight of 10% of the final grade. To be able to count the seminar mark in the final mark of the subject, it is essential to have passed the theoretical exam (minimum score: 5 out of 10).

3. Evaluation of practices

An individual exam will be conducted on the content of laboratory and field practices. The students could increase the mark by doing a practical work that will be specified during the first practice session. The mark corresponding to the practices has a global weight of 16% of the final grade. In order to be able to count the mark of the practices in the final mark of the subject, it is essential to have passed the theoretical exam (minimum score: 5 out of 10).

Final considerations

Who, due to justified cause (illness, death of a first degree relative or accident, etc.), can not attend an individual exam and provides the corresponding official documentation to the Grade Coordinator, will have the right to perform this exam in another date.

Assessment Activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Weighting</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual evaluation (first midterm exam)</td>
<td>37% of the final mark</td>
<td>2.5</td>
<td>0.1</td>
<td>1, 8, 5</td>
</tr>
<tr>
<td>Individual evaluation (segon midterm exam)</td>
<td>37% of the final mark</td>
<td>2.5</td>
<td>0.1</td>
<td>1, 8, 5</td>
</tr>
<tr>
<td>Laboratory and field practices</td>
<td>16% of the final mark</td>
<td>2.008</td>
<td>0.08</td>
<td>1, 2, 3, 4, 9, 7, 5</td>
</tr>
<tr>
<td>Seminars</td>
<td>10% of the final mark</td>
<td>4.000</td>
<td>0.16</td>
<td>1, 9, 7, 5, 6</td>
</tr>
</tbody>
</table>

Bibliography

Basic bibliography


Some web sites of general interest

Animal Diversity Web: [http://animaldiversity.ummz.umich.edu/](http://animaldiversity.ummz.umich.edu/)


Natural History Museum, Londres: [http://www.nhm.ac.uk/](http://www.nhm.ac.uk/)


Sociedad Española para La Conservación y Estudio de los Mamíferos: [http://www.secem.es/](http://www.secem.es/)

