COURSE DATA

Data Subject

Code	43237
Name	Herpetology
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
2148 - M.D. in Biodiversity: Conservation and Evolution	Faculty of Biological Sciences	1	Annual

Subject-matter

Degree	Subject-matter	Character
2148 - M.D. in Biodiversity: Conservation and Evolution	2 - Biodiversity and conservation of vertebrates	Optional

Coordination

Name	Department
FONT BISIER, ENRIQUE	355 - Zoology
LLUCH TARAZONA, JAVIER	355 - Zoology
NAVARRO GOMEZ, PILAR	355 - Zoology

SUMMARY

Herpetology is the study of the biology of amphibians and reptiles. Although amphibians and reptiles are not a monophyletic group, they are often studied together because they share plesiomorphic physiological traits such as ectothermy and poikilothermy. Herpetology is a multidisciplinary subject that integrates information concerning the morphology, physiology, ecology, behavior, diversity, evolution, phylogenetic relationships, and conservation of these two groups of vertebrates. Amphibians and reptiles are highly diverse (over 8300 known species of amphibians and over 11400 known species of reptiles) and their study provides a different perspective on terrestrial vertebrate biology than that of other groups such as birds and mammals. Understanding how amphibians and reptiles differ from other vertebrate groups is enriching for the training of a biologist. The course has both theoretical (lecture) and practical contents.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

None.

OUTCOMES

2148 - M.D. in Biodiversity: Conservation and Evolution

- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- To acquire basic skills to develop laboratory work in biomedical research.
- Be able to access the information required (databases, scientific articles, etc.) and to interpret and use it sensibly.
- Stimulate the capacity for critical reasoning and for argumentation based on rational criteria.
- Awaken interest in the social and economic application of science.
- Favour intellectual curiosity and encourage responsibility for one's own learning.
- Encourage ethical commitment and environmental awareness.
- Be able to communicate and disseminate scientific ideas.

LEARNING OUTCOMES

Successful completion of Herpetology will allow the student to:

- Understand the nature and objectives of herpetology and its relationships with other disciplines.
- Know the diversity, phylogenetic relationships and evolutionary history of the main groups of amphibians and reptiles.
- Understand and use correctly the technical language of herpetology.
- Know the research techniques and methods that are used in herpetology.

- Know the Iberian herpetological fauna, including the recognition and identification of species.
- Know the problems of conservation (global and local) affecting amphibians and reptiles.
- Know the basic techniques for locating and accessing sources of documentation on a herpetological topic.
- Value, respect and promote the protection of those species of amphibians and reptiles that are the object of their practical work and research.

DESCRIPTION OF CONTENTS

1. Introduction

What is herpetology? General information on the biology of amphibians and reptiles. Importance of herpetology. Ectothermy and thermoregulation.

2. Origin, evolution and diversity of amphibians

Origin and evolution of amphibians. Classification and diversity of amphibians: Lissamphibia, Gymnophiona, Caudata and Anura.

3. Origin, evolution and diversity of reptiles

Origin and evolution of reptiles. Classification and diversity of reptiles. Testudines (Chelonia), Squamata, Crocodylia and Sphenodontidae.

4. Reproduction and life cycles of amphibians

Reproduction and life cycles of amphibians. Courtship, mating and fertilization. Hybridogenesis. Parental care.

5. Reproduction and life cycles of reptiles

Reproduction and life cycles of reptiles. Courtship, mating and fertilization. Parental care. Viviparity. Parthenogenesis. Environmental sex determination. Types of reproductive cycles.

6. Iberian Herpetofauna

Systematics and classification of amphibians and reptiles of the Iberian Peninsula, Balearic and Canary Islands. Distribution.

7. Management and conservation of amphibians and reptiles

Management and conservation of amphibians and reptiles. Declining populations. Human impact (habitat alteration, introduction of exotic species, unsustainable trade and trafficking of species, etc.). International, state and regional legislation.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	20,00	100
Laboratory practices	10,00	100
Development of group work	17,50	0
Study and independent work	17,50	0
Preparation of evaluation activities	10,00	0
TOTAL	**75,00**	

TEACHING METHODOLOGY

The course will be taught during the two semesters of the academic year. The time required to teach each of the proposed topics is variable. Some theoretical sessions may be complemented with audiovisual support sessions that include a subsequent debate (see section 7: "Workload").

There will be practical sessions of compulsory attendance, in the laboratory, whose contents (identification and handling of collection material) will be coordinated with the theoretical sessions and with a field trip to sites of herpetological interest where fauna management projects are being developed and where sampling protocols can be demonstrated.

In addition, the preparation and presentation of a seminar will be required. Seminar preparation will be supervised and directed by one of the instructors of the course who will act as tutor of this activity. This activity, including both the preparation of the written report and its presentation to the class during the scheduled seminar sessions, will be assessed and will be a crucial element affecting the student’s final grade. Given that attendance is compulsory, participation in the debate following the presentation of other students' seminars is encouraged and will also be assessed.

EVALUATION

For the assessment of the theoretical contents of the course and the competences acquired in the practical sessions, a 1-hr written exam may be carried out. The quality, both formal and expository, of the work and seminars conducted and the participation in the seminars and in the rest of the programmed activities will also be part of the final grade.

REFERENCES

Basic

- Pough, F. Harvey, Robin M. Andrews, Martha L. Crump, Alan H. Savitzky, Kentwood D. Wells, and Matthew Brandley. 2016. HERPETOLOGY, 4th edition. Sinauer Associates, Sunderland, MA, 591 pp.
- Vitt, Laurie J. and Janalee P. Caldwell. 2014. HERPETOLOGY: AN INTRODUCTORY BIOLOGY OF AMPHIBIANS AND REPTILES, 4th edition. Academic Press, Burlington, MA, 776 pp.

Additional

- Barbadillo, Luis Javier, José Ignacio Lacomba, Valentín Pérez-Mellado, Vicente Sancho, y Luis Felipe López-Jurado. 1999. ANFIBIOS Y REPTILES DE LA PENÍNSULA IBÉRICA, BALEARES Y CANARIAS. Editorial Planeta, Barcelona, 419 pp.
- Cloudsley-Thompson, J.L. 1999. THE DIVERSITY OF AMPHIBIANS AND REPTILES: AN INTRODUCTION. Springer.
- Cogger, Harold, G., and Richard G. Zweifel (Editors) 1998. ENCYCLOPEDIA OF REPTILES & AMPHIBIANS, 2nd edition. Academic Press, San Diego, 240 pp.
- Dodd, C.K. (Editor) 2016. REPTILE ECOLOGY AND CONSERVATION: A HANDBOOK OF TECHNIQUES. Oxford University Press, Oxford, 462 pp.
- Duellman, William E., and Linda Trueb. 1986. BIOLOGY OF AMPHIBIANS. McGraw-Hill, New York, 670 pp.
- Ernst, Carl H., and Roger W. Barbour. 1989. TURTLES OF THE WORLD. Smithsonian Institution Press, Washington, DC, 313 pp.
- Gans, Carl, et al. (Editors) 1969-2010. BIOLOGY OF THE REPTILIA. Various publishers. A continuing series; Vols. 1-22.
- Greene, Harry W. 1997. SNAKES. THE EVOLUTION OF MYSTERY IN NATURE. University of California Press, Berkeley, 351 pp.
- Grigg, G., R. Shine, and H. Ehmann (Editors) 1985. THE BIOLOGY OF AUSTRALASIAN FROGS AND REPTILES. Surrey Beatty, Australia, 543 pp.

- Halliday, Tim R., and Kraig Adler (Editors) 1986. THE ENCYCLOPEDIA OF REPTILES AND AMPHIBIANS. Facts on File, New York, 160 pp.
- Heatwole, Harold et al. (Editors) 1994-2000. AMPHIBIAN BIOLOGY, Vols. 1-4. Surrey Beatty and Sons, Australia.
- Heatwole, Harold. 1989. REPTILE ECOLOGY. University of Queensland Press, St. Lucia, 178 pp.
- Huey, R.B., E.R. Pianka, and T.W. Schoener (Editors) 1983. LIZARD ECOLOGY: STUDIES OF A MODEL ORGANISM. Harvard University Press, Cambridge.
- Lillywhite, Harvey B. 2014. HOW SNAKES WORK: STRUCTURE, FUNCTION AND BEHAVIOR OF THE WORLDS SNAKES. Oxford University Press, Oxford, 241 pp.
- Losos, J.B. 2009. LIZARDS IN AN EVOLUTIONARY TREE: ECOLOGY AND ADAPTIVE RADIATION OF ANOLES. University of California Press, Berkeley, 507 pp.
- Montori, Albert, Mario García-París, y Pilar Herrero (Coordinadores) 2004. AMPHIBIA (LISSAMPHIBIA). En: FAUNA IBÉRICA, Vol. 24, M.A. Ramos et al. (Editores). Museo Nacional de Ciencias Naturales, CSIC, Madrid, 639 pp.
- Murphy, James B., Kraig Adler, and Joseph T. Collins (Editors) 1994. CAPTIVE MANAGEMENT AND CONSERVATION OF AMPHIBIANS AND REPTILES. Society for the Study of Amphibians and Reptiles, 408 pp.
- Pianka, Eric R., and Laurie J. Vitt. 2003. LIZARDS: WINDOWS TO THE EVOLUTION OF DIVERSITY. The University of California Press, Berkeley, 333 pp.
- Rhodin, A.G.J., and K. Miyata (Editors) 1983. ADVANCES IN HERPETOLOGY AND EVOLUTIONARY BIOLOGY. Museum of Comparative Zoology, Cambridge, Massachusetts.
- Salvador, Alfredo (Coordinador) 1997. REPTILES. En: FAUNA IBÉRICA, Vol. 10, M.A. Ramos et al. (Editores). Museo Nacional de Ciencias Naturales, CSIC, Madrid, 705 pp.
- Seigel, Richard A., and Joseph T. Collins (Editors) 1993. SNAKES: ECOLOGY AND BEHAVIOR. McGraw-Hill, New York, 414 pp.
- Stebbins, Robart C., and Nathan W. Cohen. 1997. A NATURAL HISTORY OF AMPHIBIANS. Princeton University Press, Princeton, New Jersey, 332 pp.
- Vitt, Laurie J., and Eric R. Pianka (Editors) 1994. LIZARD ECOLOGY: HISTORICAL AND EXPERIMENTAL PERSPECTIVES. Princeton University Press, Princeton, New Jersey, 403 pp.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

1. Contenidos

Las únicas actividades que quedarían por realizar en esta asignatura son las salidas al campo, aunque los contenidos derivados del estudio de ejemplares y especies ibéricas si se llevó a cabo en el laboratorio. Así pues, dado que la actual situación de formación no presencial impide llevar a cabo estas actividades, estas salidas al campo son los únicos contenidos eliminados.

2. Volumen de trabajo y planificación temporal de la docencia

Como ya se ha comentado, las únicas actividades que quedarían por realizar son las salidas al campo que no pueden llevarse a cabo de forma alguna en las actuales circunstancias. Dado que el resto de las actividades ya desarrolladas representan la mayor parte de la carga de trabajo de la asignatura, la solución propuesta consistiría en eliminar las salidas al campo e incorporar su carga a las prácticas de laboratorio ya realizadas.

3. Metodología docente

Dadas las características de esta asignatura en la que la casi totalidad de la docencia ya ha sido impartida (con la única salvedad de las salidas al campo), no procede ninguna propuesta de modificación de la metodología docente.

4. Evaluación

Ya que la evaluación de esta asignatura ya ha sido realizada, a falta únicamente del suplemento correspondiente a las salidas al campo, la propuesta es realizar este suplemento de forma proporcional a la calificación obtenida en el resto de los apartados valorables y que en conjunto representan el 90% de la calificación final.

5. Bibliografía

No procede, toda la bibliografía ya fue incorporada a la información a los estudiantes al inicio de la asignatura.