COURSE DATA

Data Subject	
Code	43279
Name	Limnology
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
2148 - Master's degree in Biodiversity: Conservation and Evolution	Faculty of Biological Sciences	1	First term

Subject-matter

Degree	Subject-matter	Character
2148 - Master's degree in Biodiversity: Conservation and Evolution	13 - Cross-disciplinary optional subject areas 3	Optional

Coordination

Name	Department
ARMENGOL DIAZ, JAVIER	275 - Microbiology and Ecology

SUMMARY

The "Master in Biodiversity: Conservation and Evolution" is a postgraduate programme aimed at training professionals and researchers dedicated to the maintenance of biological diversity. The previous training of the students must have provided them with the knowledge, skills and abilities that serve as a basis for the more specialised developments that are carried out in this Master.

The subject LIMNOLOGY aims to provide students with knowledge about the structure and functioning of aquatic ecosystems that will enable them to understand the ecological processes and their role in the maintenance of biodiversity, as well as to study in depth the problems of these ecosystems in relation to their conservation and biodiversity.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

The student's prior knowledge should include a broad background in Biology, including the basic knowledge of Ecology taught in undergraduate studies or adaptation from an undergraduate degree other than Biology or Environmental Sciences. Environmental Sciences.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

2148 - Master's degree in Biodiversity: Conservation and Evolution

- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- 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.
- Favour intellectual curiosity and encourage responsibility for one's own learning.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

The student should:

- Know the general characteristics of epicontinental aquatic systems.

- Know the important variables in their functioning.

- Know the cycles of the main elements involved in their functioning.

- Identify the main groups of organisms existing in these systems.

- Know the ecological processes that take place in these ecosystems.

- Know the physicochemical and biological elements that disturb the aquatic environment.

DESCRIPTION OF CONTENTS

1. LIMNOLOGY I: Environmental variables.

Hydrological cycle. Hydrographic basin. Morphometry. Light. Temperature. Oxygen. Conductivity. Salinity. pH. Alkalinity. Carbon. Dissolved and total nutrients (N-P). Sediment (organic matter, nutrients...).

2. LIMNOLOGY II: Biological communities.

Typology and diversity of aquatic organisms. Consumers: Zooplankton, Zoobenthos. Aquatic vertebrates. Primary producers: Phytoplankton, periphyton, macrophytes.

3. LIMNOLOGY III: Models of trophic networks and Succession.

Trophic network models. Alternative equilibrium in shallow lakes. Periodicity and succession in plankton.

4. LIMNOLOGY IV: Lotic systems, reservoirs and wetlands.

Rivers: Continuous river model. Nutrient spiral. Riverbank forest. Bioindicators. Reservoirs. Characteristics and zoning. Colonisation, filling effect and age of reservoirs. Environmental impact. Natural and artificial wetlands. Characterisation and typology. Ecology of fluctuating, temporary and permanent ecosystems.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	20,00	100
Laboratory practices	10,00	100
Attendance at events and external activities	6,00	0
Development of group work	6,00	0
Study and independent work	15,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	4,00	0
Preparation of practical classes and problem	4,00	0
Resolution of case studies	5,00	0
TOTAL	**75,00**	

TEACHING METHODOLOGY

The methodology to be used will include:

- Lectures given by the professor to provide the fundamental knowledge and methodology to be used.

- Laboratory practicals for the study and analysis of samples.

- Seminars on theoretical and practical aspects of the syllabus.

EVALUATION

- Written exercise in an undefined proportion of closed-answer multiple-choice questions, short answer questions and/or long answer questions. (30% of grade).

- Elaboration and defence in oral presentation in class of work carried out by the student (workshops-seminars and practicals). (50% of grade).

- Attendance and participation in programmed activities (classes, field trips, practicals, etc.). (20% of grade).

REFERENCES

Basic

- Bronmark, C. & Hansson, L. 2010. The biology of lakes and ponds. Ed. Oxford University Press.
-Casado, S. & Montes, C. Guía de los lagos y humedales de España. Ed. J..M. Reyero.
-Closs, G. Downes, B., Boulton, A. 2004. Freshwater ecology. Blackwell Publishing.
-Dodds W. K. 2003. Freshwater Ecology. Academic Press.
-Frid, C. L. & Dobson, M. 2002. Ecology of Aquatic Management: Aquatic Resources, Pollution and Sustainability. Prentice Hall.
-Horne A. J. & Goldman Ch. 1994. Limnology. Mac Graw Hill.
-Kalff, J. 2002. Limnology. Prentice Hall.
-Kumagai M. & Vicent W.F. 2003. Freshwater management. Global versus local perspectives. Springer.
-Lampert W. & Sommer, U. 1997. Limnology. Ecology of lakes and streams. Ed. Oxford University Press.
-Maitland P.S. & Morgan N.C. 1997. Conservation and management of freshwater habitats: lakes, rivers and wetlands. Chapman & Hall-Kluwer. New York.
-Margalef, R. 1981. Limnología. Omega. Barcelona.
-Miller, G. T. 2002. Introducción a la ciencia ambiental.Thomson
-Moss, B. 1998. Ecology of fresh waters. Man and medium, past to future. Blackwell. Oxford.
-Petts, G. & Calow, P. 1996. River biota. Diversity and dinamics. Blackwell Science.
-Scheffer, M. 1998. Shallow lakes. Chapman & Hall.

-Wetzel, C. 2001. Limnology. Elsevier.
-Wetzel R.G. & Likens G.E. 2000. Limnological analyses. Springer-Verlag, New York.

ADDENDUM COVID-19

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

English version is not available

1. Contenidos

Se mantienen los contenidos inicialmente recogidos en la guía docente.

2. Metodología docente

(a) Clases de teoría: En caso de no presencialidad, todas las sesiones se sustituirán por archivos de vídeo y/o lecciones locutadas puestos a disposición del alumnado a través de Aula Virtual para sustituir la lección magistral. Se realizarán ejercicios y cuestionarios *on line*, asistidos con la aplicación *chat* de Aula virtual."

(b) Tutorías individuales: Por correo electrónico, excepcionalmente, por videoconferencia a través de conexión *on line* con *Blackboard Collaborate* (BBC).

(d) Prácticas de laboratorio: En caso de no presencialidad, se sustituyen por sesiones a distancia donde se analizarán datos similares a los que se habrían obtenido en el laboratorio. Se facilitarán guiones adaptados para las prácticas.

(e) Prácticas de campo: En caso de no presencialidad, se sustituyen por estudios de casos prácticos guiados por el profesor. La documentación se subirá a Aula Virtual en forma de archivos pdf (distintos para distintos grupos de trabajo formados por los estudiantes), que se complementarán con material audiovisual subido a aula virtual.

3. Evaluación

Se mantiene el peso de las distintas actividades evaluables. En caso de no presencialidad:

"las tareas podrán tener plazo de presentación, para facilitar su evaluación. Los trabajos individuales de seminarios, prácticas y otros se evaluarán a distancia, pudiéndose presentar a través de videoconferencia (con un peso de hasta el 50% de la calificación final).

En caso de no poder realizarse el examen escrito en esta modalidad (con un peso de hasta el 30% de la calificación final), se realizará en línea, con tiempo limitado a través del módulo cuestionarios del Aula Virtual, en función de las posibilidades técnicas. Si por causas técnicas, debidamente justificadas, algún estudiante no puede realizar algún examen, se estudiará la posibilidad de realizar una prueba alternativa que, en todo caso, será de tipo interactivo (combinando parte oral y escrita).

La asistencia y participación se evaluará en base la asistencia y participación en las actividades *on line* propuestas.”

Las evaluaciones correspondientes a la primera y segunda convocatoria tendrán los mismos fundamentos.

4. Bibliografía

La bibliografía básica recomendada es accesible.