Information about the subject

Degree: Bachelor of Degree in Marine Sciences

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 270224 **Name:** Cetaceans Biology

Credits: 6,00 **ECTS Year:** 0, 2, 3, 4 **Semester:** 1

Module: Optional Itinerary: Marine Biology

Subject Matter: Biology of Cetaceans **Type:** Elective

Department: Oceanography and Environment

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

OPM8	Maria Garcia Sanz **(Responsible Lecturer)**	m.garcia@ucv.es

Module organization

Optional Itinerary: Marine Biology

Subject Matter	ECTS	Subject	ECTS	Year/semester
R+D in Marine Sciences	6,00	R&D in Marine Sciences	6,00	0, 2, 3, 4/1
Biology of Cetaceans	6,00	Cetaceans Biology	6,00	0, 2, 3, 4/1
Ichthyology	6,00	Ichthyology	6,00	0/1
Aquariology	6,00	Aquariology	6,00	0/1
Bioindicators	6,00	Bioindicators	6,00	0, 2, 3, 4/1
Protected Areas and Recovery of Species	6,00	Protected Areas and Recovery of Species	6,00	2, 3, 4/1
Clinic and Health of Aquatic Animals	6,00	Clinical Treatment and Healthcare of Aquatic Animals	6,00	0, 3, 4/1

Recommended knowledge

It is not contemplated

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1 The student knows the evolutionary theories on the phylogeny of cetaceans.

R2 The student knows morphological, anatomic and physiological adaptations of cetaceans to the aquatic environment.

R3 The student identifies the main species of cetaceans in each taxonomic group, and knows its biology and ecology.

R4 The student knows and applies the principal techniques for studying cetaceans in the wildlife.

R5 The student reports issues and valid judgments on various aspects of the biology of cetaceans.

R6 The students relates the theoretical and practical contents through tasks and works.

R7 The student conceptually understands and appreciates the importance of studying the biology of cetaceans in the context of science and society, and oceanography in particular.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB3	Students are able to collect and interpret relevant data (generally in their field of study) and give opinions that involve reflection on relevant social, scientific or ethical issues.				x
CB4	Command of a foreign language				x
CB5	Students develop the necessary learning skills to undertake further studies with a high level of autonomy.			x	

GENERAL		Weighting			
		1	2	3	4
CG1	Capacity to analyze and synthesize				x
CG2	Capacity to organize and plan			x	
CG3	Mastering Spanish oral and written communication			x	
CG5	Knowing and applying Basic ITC skills related to marine science			x	
CG6	Capacity to manage information (capacity to look for and analyze information coming from different types of sources)				x
CG7	Decision making	x			
CG8	Capacity to work in interdisciplinary and multidisciplinary team			x	
CG10	Critical and self-critical capacity		x		
CG11	Capacity to learn				x

CG12	Capacity to adapt to new situations	x			
CG16	Capacity to apply theoretical knowledge			x	
CG17	Research skills			x	
CG18	Sensibility to environmental issues.				x

SPECIFIC		Weighting			
		1	2	3	4
CE1	Knowing and understanding contents, principles and theories related to Oceanography		x		
CE2	Knowing basic sampling techniques of water column, organisms, sediment and sea-bottoms as well as basic techniques of dynamic and structural variable measurement	x			
CE5	Applying marine environment use planning techniques as well as resource sustainable management			x	
CE6	Applying marine instrument techniques			x	
CE7	Collecting, assessing, processing and interpreting oceanographic data, following the most recent theories			x	
CE8	Identifying and analyzing new problems and proposing solution strategies			x	
CE9	Knowing how to carry out experiments and measurements both in the laboratory and during sample collection	x			
CE11	Knowing how to do fieldwork and laboratory experiments in a safe and responsible way, promoting teamwork		x		
CE22	Practical experience of methods of marine environmental impact assessment		x		

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R6, R7	50,00%	Written test with theoretical and practical questions
R1, R2, R3, R4, R5, R6, R7	35,00%	Delivery of guided assignments, whose objectives and contents will be proposed by the teacher
R1, R2, R3, R4, R5, R6, R7	15,00%	Oral presentation

Observations

According to the general evaluation and qualification regulations, the preferred evaluation system will be by means of continuous evaluation. Specifically:
The evaluation item “Delivery of guided assignments, whose objectives and contents will be proposed by the professor” will be evaluated following a continuous evaluation system by means of deliveries in which the evolution of the work will be reviewed.

The final grade is calculated using the average obtained between the different percentages of each evaluation system. To obtain more than a 4 over 10 in the final grade, a minumum of 5 over 10 must have been obtained in each of the different evaluation systems.

MENTION OF DISTINCTION:
In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1 Teacher presentation of contents, analysis of competences, explanation and in-class display of skills, abilities and knowledge.

M2 Group work sessions supervised by the professor. Case studies, diagnostic tests, problems, field work, computer room, visits, data search, libraries, on-line, Internet, etc. Meaningful construction of knowledge through interaction and student activity.

M3 Activities carried out in spaces with specialized equipment.

M4 Supervised monographic sessions with shared participation.

M5 Application of multidisciplinary knowledge.

M6 Personalized and small group attention. Period of instruction and/or guidance carried out by a tutor to review and discuss materials and topics presented in classes, seminars, readings, papers, etc.

M8 Set of oral and/or written tests used in initial, formative or additive assessment of the student.

M9 Group preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical , practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es)

M10 Student's study: Individual preparation of readings, essays, problem-solving, seminars, papers, reports, etc. to be presented or submitted in theoretical, practical and/or small-group tutoring sessions. Work done on the university e-learning platform (www.plataforma.ucv.es).

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
ON-CAMPUS CLASS M1	R1, R2, R3, R4, R5, R6, R7	30,00	1,20
PRACTICAL CLASSES M2	R1, R2, R3, R4, R5, R6, R7	18,00	0,72
SEMINAR M4	R1, R2, R3, R4, R5, R6, R7	3,00	0,12
GROUP PRESENTATION OF ASSIGNMENTS M5	R1, R2, R3, R4, R5, R6, R7	4,00	0,16
TUTORIAL M6	R1, R2, R3, R4, R5, R6, R7	3,00	0,12
ASSESSMENT M8	R1, R2, R3, R4, R5, R6, R7	2,00	0,08
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
GROUP WORK M9	R1, R2, R3, R4, R5, R6, R7	10,00	0,40
INDEPENDENT WORK M10	R1, R2, R3, R4, R5, R6, R7	80,00	3,20
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
UNIT 1. EVOLUTIVE HISTORY OF THE CETACEANS	Topic 1 Systematic and classification: Order Cetacea. Suborder Mysticeti. Suborder Odontoceti.Topic 2 Evolution of cetaceans: Introduction. Adaptive Challenges during evolution.
UNIT 2. EVOLUTIVE BIOLOGY: ADAPTATIONS TO THE AQUATIC ENVIRONMENT	Topic 3. Tegument and sense organs. Topic 4. Musculoskeletal system Topic 5. Locomotion mechanisms. Bioenergetics and Thermoregulation. Topic 6. Breathing and immersion physiology. Topic 7. Sound production and echolocation Topic 8. Food: search strategies. Anatomy and physiology of digestion. Topic 9 Reproductive biology. Anatomy and physiology of the reproductive system. Reproductive cycles Reproductive strategies
UNIT 3.- STRUCTURE AND POPULATION DYNAMICS.	Topic 10. Population structure and dynamics: age and growth. Displacement patterns and migrations. Social structure and behavior. Topic 11. Techniques for the study of natural populations. Determination of abundance. Captive studies
UNIT 4.- EXPLOITATION AND CONSERVATION.	Topic 12. Commercial exploitation. By-catch. Strandings. Ecotourism. Maintenance in captivity: show, socio-sanitary therapies, scientific research. Topic 13. Conservation: flag species; fishing moratorium; Climate change and pollution.

Organization of the practical activities:

	Content	Place	Hours
PR1.	Practice 1	Field visit	6,00
PR2.	Practice 2	Boat	6,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
UNIT 1. EVOLUTIVE HISTORY OF THE CETACEANS	6,00	12,00
UNIT 2. EVOLUTIVE BIOLOGY: ADAPTATIONS TO THE AQUATIC ENVIRONMENT	13,00	26,00
UNIT 3.- STRUCTURE AND POPULATION DYNAMICS.	6,00	12,00
UNIT 4.- EXPLOITATION AND CONSERVATION.	5,00	10,00

References

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*EVANS P.G.H., RAGA J.A. (2001). Marine mammals: biology and conservation. Ed. Kluwer Academic. New York. 630pp. ISBN: 978-0-306-46573-4
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*JEFFERSON, T.A., (2008). Marine mammals of the world: a comprehensive guide to their identification. Ed. Academic Press. Amsterdam/London.573pp. ISBN: 978-0-12-383853-7
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*RICHARDSON W.J., GREENE C.R., MALME C.I., THOMSON D.H. (1995). Marine mammals and noise. Ed. Academic Press. San Diego (California). 576pp. ISBN: 978-0-12-588441-9
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