



Information about the subject

Degree: Bachelor of Science Degree in Marine Sciences

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 270223 **Name:** Aquariology

Credits: 6,00 **ECTS Year:** The course is not offered this academic year **Semester:** 1

Module: Optional Itinerary: Marine Biology

Subject Matter: Aquariology **Type:** Elective

Department: Oceanography and Environment

Type of learning: Classroom-based learning

Languages in which it is taught:

Lecturer/-s:



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	This elective is not offered in the academic year 20/21
Ichthyology	6,00	Ichthyology	6,00	2, 3, 4/1
Aquariology	6,00	Aquariology	6,00	This elective is not offered in the academic year 20/21
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, 2, 3, 4/1



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 meaning and importance of aquariology and its evolution in society to the present day.
- R2 The student distinguishes the different types of aquariums.
- R3 The student knows the different physicochemical parameters influencing the biological and chemical processes which happen in the aquarium.
- R4 The student knows the necessary equipment for any type of aquarium, as well as the species suitable for them.
- R5 The student knows the start-up of an aquarium, regardless of their type.
- R6 The student is able to take physicochemical data from water, discern whether they are correct and act accordingly.
- R7 The student can draw up a report on the condition and possible evolution of the biotic and abiotic parameters of a closed system.
- R8 The student is able to work in a team.
- R9 The student argues with rational criteria from his/her work.
- R10 The student is able to write a comprehensible and organized text on various aspects of biological sciences.



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
CB2	Students are able to apply knowledge to their work in a professional way and have the competences enabling them to state and defend views and opinions as well as perform problem-solving tasks in their field of study.			X	
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
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

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		
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	
CE10	Knowing how to use planning, designing and implementing research tools while surveying and assessing results		X		
CE11	Knowing how to do fieldwork and laboratory experiments in a safe and responsible way, promoting teamwork			X	
CE19	Deeply understanding operating systems of maritime orientated companies, identifying their problems and proposing solutions		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, R9, R10	50,00%	Written test with theoretical and practical questions
R7, R8, R9, R10	30,00%	Delivery of guided assignments, whose objectives and contents will be proposed by the teacher
R4, R5, R6, R7, R8, R9	20,00%	Laboratory test

Observations

MENTION OF DISTINCTION:

According to Article 22 of the Regulations governing the Evaluation and Qualification of UCV Courses, the mention of "Distinction of Honor" may be awarded by the professor responsible for the course to students who have obtained, at least, the qualification of 9 over 10 ("Sobresaliente"). The number of "Distinction of Honor" mentions that may be awarded may not exceed five percent of the number of students included in the same official record, unless this number is lower than 20, in which case only one "Distinction of Honor" may be awarded.

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	30,00	1,20
PRACTICAL CLASSES M2	R5, R6, R8, R9	10,00	0,40
LABORATORY M3	R4, R5, R6, R7, R8, R9	12,00	0,48
SEMINAR M4	R7, R8, R9, R10	2,00	0,08
GROUP PRESENTATION OF ASSIGNMENTS M5	R7, R8, R9, R10	2,00	0,08
TUTORIAL M6	R1, R2, R3, R4, R7, R9, R10	2,00	0,08
ASSESSMENT M8	R9, R10	2,00	0,08
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
GROUP WORK M9	R5, R6, R7, R8, R9	20,00	0,80
INDEPENDENT WORK M10	R1, R2, R3, R4, R7, R9, R10	70,00	2,80
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
UD. 1.- INTRODUCTION TO ACUARIOLOGY	Unit 1. Introduction: definition; Relationship with other disciplines: Aquaculture, acuarofilia and ichthyology.
UD. 2.- VITAL SUPPORT OF AQUATIC ORGANISMS IN CAPTIVITY.	Unit 2. Water: physical-chemical parameters in artificial aquatic systems. Unit 3. Technologies for the design and management of aquatic systems in recirculation. Equipment for water treatment, systems Control and regulation of physical-chemical parameters.
UD. 3.- BIOLOGY, MANAGEMENT AND ECOLOGY OF AQUATIC ORGANISMS IN CAUTIVITY.	Unit 4. Origin, transport, acclimatization and quarantine of aquatic organisms. Unit 5. Maintenance of aquatic organisms in captivity: feeding, management, health status. Unit 6. Reproduction, breeding of larvae and juveniles. Unit 7. Ecology and ethology of aquatic organisms in captivity: artificial recreation of natural biotopes.
UD. 4.- ARTIFICIAL AQUATIC SYSTEMS.	Unit 8. Research aquariums: ecotoxicology, physiology, genetics, ichthyology, etc.. Unit 9. Public conservation and exhibition aquariums (large aquariums). Unit 10. Domestic exposure aquariums. Unit 11. Exhibitors of bivalves and large crustaceans.



Organization of the practical activities:

	Content	Place	Hours
PR1.	VITAL SUPPORT OF AQUATIC ORGANISMS IN CAPTIVITY.	Laboratory	2,00
PR2.	BIOLOGY, MANAGEMENT AND ECOLOGY OF THE AQUATIC ORGANISMS IN CAPTIVITY.	Laboratory	2,00
PR3.	ARTIFICIAL AQUATIC SYSTEMS.	Laboratory	8,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
UD. 1.- INTRODUCTION TO ACUARIOLOGY	2,00	4,00
UD. 2.- VITAL SUPPORT OF AQUATIC ORGANISMS IN CAPTIVITY.	8,00	16,00
UD. 3.- BIOLOGY, MANAGEMENT AND ECOLOGY OF AQUATIC ORGANISMS IN CAUTIVITY.	12,00	24,00
UD. 4.- ARTIFICIAL AQUATIC SYSTEMS.	8,00	16,00



References

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- OUNAÏS, N. & THÉRON, D. (2001). *Fifth international aquarium congress. Proceedings Vol I & Vol II*. Monaco: Musée océanographique.
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- SMITH, M., WARMOLTS, D., THONEY, D. & HUETER, R. (2004). *Elasmobranch husbandry manual: captive care of sharks, rays, and their relatives*. Ohio: Ohio Biological Survey, Inc.
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