Information about the subject

Degree: Bachelor of Degree in Marine Sciences

Faculty: Faculty of Veterinary Medicine and Experimental Sciences

Code: 270207 **Name:** Assessment of Environmental Impact

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

Module: Optional Itinerary: Marine Environment Management, Optional Itinerary: Water Treatment

Subject Matter: Evaluation of Environmental Impact **Type:** Elective

Department: Oceanography and Environment

Type of learning: Classroom-based learning

Languages in which it is taught: English, Spanish

Lecturer/-s:

OPM1	Jorge Juan Vicedo **(English Responsible Lecturer)**		jorge.juan@ucv.es

Module organization

Optional Itinerary: Marine Environment Management

Subject Matter	ECTS	Subject	ECTS	Year/semester
Marine Environment Geography	6,00	Geography of the marine environment	6,00	3/1
Marine Engineering	6,00	Maritime Engineering	6,00	0/1
Evaluation of Environmental Impact	6,00	Assessment of Environmental Impact	6,00	0, 2, 3, 4/1
Natural and Anthropic Risks in the Marine Environment	6,00	Natural and Anthropic Risks in the marine environment	6,00	2/1
Environmental Education	6,00	Environmental Education	6,00	2, 3, 4/1
Renewable Energies and Marine Mineral Resources	6,00	Renewable energies and marine mineral resources	6,00	This elective is not offered in the academic year 25/26

Optional Itinerary: Water Treatment

Subject Matter	ECTS	Subject	ECTS	Year/semester
Engineering of Water Treatment Systems	6,00	Engineering of water treatment systems	6,00	This elective is not offered in the academic year 25/26
Characterization of Water Quality	6,00	Characterisation of water quality	6,00	This elective is not offered in the academic year 25/26

Water Treatment Systems	6,00	Water treatment systems	6,00	This elective is not offered in the academic year 25/26

Recommended knowledge

None

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 and understands with a critical attitude the concepts that are included in the syllabus/contents of the subject of Environmental Impact Assessment.
R2	The student is able to solve problems related to the assessment of environmental impacts of a specific project in coastal areas
R3	The student seeks bibliographical information from different sources and is able to analyze it with a critical and constructive spirit.
R4	The student is able to elaborate and present works on the basic contents of the subject and to work in a team.

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
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	
CE4	Understanding laws regulating use of marine resources and environment			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
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
CE12	Describing, classifying and mapping sea bottoms and coastal areas				x

CE13	Looking for and assessing different kinds of marine resources			x
CE14	Designing patterns of marine protected areas management		x	
CE15	Identifying and proposing monitoring means for problems of marine pollution		x	
CE16	Proposing management models for endangered species recovery centers		x	
CE17	Developing training programs for marine and coastal areas		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	50,00%	Written test with theoretical and practical questions
R1, R2, R3, R4	35,00%	Delivery of guided assignments, whose objectives and contents will be proposed by the teacher
R1, R2, R3, R4	15,00%	Oral presentation

Observations

This course is not eligible for single evaluation. According to the general evaluation and qualification regulations, the preferred evaluation system will be by means of continuous evaluation. Specifically: Questionnaires will be carried out at the end of each block of content, so that the student has support during the semester to prepare for the final exam. In addition, the preparation of the practical project, which runs parallel to the development of the theoretical contents, has four evaluable deliveries during the semester.
Attendance to all the practical sessions of the subject is compulsory in order to pass that subject. Additionally, to submit a report of practical cases (optional), composed by the resolution of different proposed exercises in both theory and practical lectures, may add up to 0.5 extra points on the final subject mark.
The use of artificial intelligence (AI)-based tools is subject to the discretion of the teacher, who may establish specific limits or conditions depending on the training or assessment activity.

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.

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	R1, R2, R3, R4	18,00	0,72
SEMINAR M4	R2, R3, R4	3,00	0,12
GROUP PRESENTATION OF ASSIGNMENTS M5	R1, R2, R3, R4	4,00	0,16
TUTORIAL M6	R1, R2, R3, R4	3,00	0,12
ASSESSMENT M8	R1, R2, R3, R4	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	30,00	1,20
INDEPENDENT WORK M10	R1, R2, R3, R4	60,00	2,40
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
Didactic Unit 1. Introduction to Environmental Impact Assessment (EIA)	Unit 1.-Development and impact on the environment. Sustainable development. Need for Environmental Impact Studies with emphasis on the problems of the marine and maritime-terrestrial domain.Unit 2.- Historical perspective and concept of EIA. Typology and general characteristics of Environmental Impact Studies. Specific characteristics of the EIA in the marine and maritime-terrestrial ´domain. Environmental Diagnosis.
Didactic Unit 2.- Legislative framework of the EIA	Unit 3.- The European legislation on the environment management and Environmental Impact. Common adaptation of the states. Unit 4.- Legislation on Environmental Impact in Spain. Transference of competences to the regions: practical implications

Didactic Unit 3.- Structure, content and general methodology in environmental impact studies (EIA)	Unit 5.-The EIA as a technical document. Structure of the EIA. Unit 6.- Project definition. Unit 7.-The environmental inventory I: Definition and Objective. Project Environment. Contents of the environmental inventory. Unit 8.-The environmental inventory II: Abiotic environment. Characterization, data collection and indicators. Unit 9.-The environmental inventory III: Biotic environment. Characterization, data collection and indicators. Unit 10.-The environmental inventory IV: Socioeconomic environment. Characterization, data collection and indicators. Unit 11.-Identification and assessment of impacts. Synthesis methodology. Valuation criteria. Qualitative and quantitative assessment. Integration of information and documentation. Social acceptance of the project. Unit 12.-Mitigation of Environmental Impact. Proposal of preventive, corrective and compensatory measures of Environmental Impact. Synthesis document. Environmental Vigilance Plan. Contents and scope. Unit 13.- The Strategic Environmental Assessment (SEA). Conceptual bases, objectives and differential characteristics. Community and national legislation. SEA in the marine and maritime-terrestrial domain.
Didactic Unit 4.- Environmental problems and specific actions in the maritime and maritime-terrestrial domain	Unit 14.- Population and industrial development in coastal areas: problems, management and impacts on the marine and maritime-terrestrial domain. Unit 15.- Tourist and urban development in coastal areas: problems, management and impacts in the marine and maritime-terrestrial domain.

Organization of the practical activities:

	Content	Place	Hours
PR1.	Preliminary analysis of previous EIAs: identification and description of impacts	Lecture room	2,00
PR2.	Critical analysis of previous EIAs: incidences in the environmental inventory and valuation.	Lecture room	2,00
PR3.	Critical analysis of previous EIA: proposal of alternatives and reformulation of preventive, corrective and compensatory measures.	Lecture room	2,00
PR4.	Search for information related to environmental legislation and its inclusion in the ESIA.	Computer	2,00
PR5.	Elaboration of the EIAs. Characterization of the abiotic and biotic environment: integration of geographical, geological, edaphological, climatic, floristic and vegetation, faunistic and ecological data in the EIA.	Computer	2,00
PR6.	Elaboration of the EIA II. Characterization of the socioeconomic environment: integration of local development data, infrastructures, economic indicators and artistic-cultural heritage. Identification and assessment of impacts. Qualitative, semi-quantitative and quantitative techniques for impact assessment. Modelling.	Computer	2,00
PR7.	Elaboration of the EIAs III. Proposal of measures to mitigate environmental impact and establishment of a monitoring plan.	Computer	2,00

PR8.	Field trip (to be determined). Objective: to visit various activities and discuss the usefulness of Environmental Impact Assessment as a procedure to integrate the environmental variable in decision making.	Field visit	4,00

Temporary organization of learning:

Block of content	Number of sessions	Hours
Didactic Unit 1. Introduction to Environmental Impact Assessment (EIA)	4,00	8,00
Didactic Unit 2.- Legislative framework of the EIA	4,00	8,00
Didactic Unit 3.- Structure, content and general methodology in environmental impact studies (EIA)	18,00	36,00
Didactic Unit 4.- Environmental problems and specific actions in the maritime and maritime-terrestrial domain	4,00	8,00

References

1.- Garmendia Salvador, A.; Salvador Alcaide, A.; Crespo Sánchez, C. Y Garmendia Salvador, L. Evaluación de Impacto Ambiental. Pearson: Prentice Hall 2005

2. Gómez Orea, D. Evaluación del Impacto Ambiental. Un Instrumento Preventivo para la Gestión Ambiental. Ediciones Mundi-Prensa y Editorial Agrícola Española 2003

Law 9/2018, of December 5, which modifies Law 21/2013, of December 9, on environmental evaluation

Law 21/2015, of July 20, which modifies Law 43 / 2003, of November 21, of Montes and Law 1/2005, of March 9, which regulates the greenhouse gas emission rights trading regime.

Gwendolyn Blue, Kelly Bronson, Alana Lajoie-O'Malley, 2021. Beyond distribution and participation: A scoping review to advance a comprehensive environmental justice framework for impact assessment. Environmental Impact Assessment Review, Volume 90, https://doi.org/10.1016/j.eiar.2021.106607.

Tadhg O'Mahony, 2021. Cost-Benefit Analysis and the environment: The time horizon is of the essence. Environmental Impact Assessment Review, Volume 89, https://doi.org/10.1016/j.eiar.2021.106587.

Mehul Vora, Steinar Sanni, Roger Flage, 2021. An environmental risk assessment framework for enhanced oil recovery solutions from offshore oil and gas industry, Environmental Impact Assessment Review, Volume 88, https://doi.org/10.1016/j.eiar.2020.106512.

Kahlil Hassanali, 2021. Internationalization of EIA in a new marine biodiversity agreement under the Law of the Sea Convention: A proposal for a tiered approach to review and decision-making, Environmental Impact Assessment Review, Volume 87, https://doi.org/10.1016/j.eiar.2021.106554.

Shaoqing Shi, Jianhua Yin, 2021. Global research on carbon footprint: A scientometric review, Environmental Impact Assessment Review, Volume 89, https://doi.org/10.1016/j.eiar.2021.106571.

Commission notice Guidance document regarding application of exemptions under the Environmental Impact Assessment Directive (Directive 2011/92/EU of the European Parliament and of the Council, as amended by Directive 2014/52/EU) – Articles 1(3), 2(4) and 2(5) - 2019/C 386/05

Council Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

Hyman, E.L., Stiftel, B., Moreau, D.H., & Nichols, R.C., 2019. Combining Facts and Values in Environmental Impact Assessment: Theories and Techniques (2nd ed.). Routledge. https://doi.org/10.4324/9780429035708

Conesa, V. Guía metodológica para la elaboración de estudios de impacto ambiental. 3ª Edición. Editorial Mundiprensa 2010. 4.- Oñate, J.J et al. Evaluación ambiental estratégica. La evaluación ambiental de políticas, planes y programas. Ediciones Mundi-Prensa 2001.