UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course:	MONITORING AND MANAGEMENT OF LANDSCAPES AND NATURE RESERVES	**Code:**	310729
Type:	ELECTIVE	**ECTS credits:**	6
Degree:	2335 - Master Degree Program in Environmental Sustainability in the Local and Territorial	**Academic year:**	2022-23
Center:		**Group(s):**	40
Year:	Sin asignar	**Duration:**	C2
Main language:	Spanish	**Second language:**	
Use of additional languages:	Bibliography in English	**English Friendly:**	Y
Web site:		**Bilingual:**	N

Lecturer: **ROCIO ARANZAZU BAQUERO NORIEGA** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
Sabatini/0.26	CIENCIAS AMBIENTALES	5466	rocio.baquero@uclm.es	Tuesday, Wednesday and Thursday from 11:00 to 13:00. Request appointment by email for attendance at other time.

Lecturer: **JOSE MARIA BODOQUE DEL POZO** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
Sabatini/02	INGENIERÍA GEOLÓGICA Y MINERA	5445	josemaria.bodoque@uclm.es	

Lecturer: **FEDERICO FERNANDEZ GONZALEZ** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
Edificio Sabatini, Despacho 0.24	CIENCIAS AMBIENTALES	925265753	federico.fdez@uclm.es	Tuesday, Wednesday and Thursday from 1:00 p.m. to 3:00 p.m. Request appointment by email for attendance at other time.

Lecturer: **ALFONSO RODRIGUEZ TORRES** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
	CIENCIAS AMBIENTALES		alfonso.rodriguez@uclm.es	

Lecturer: **TERESA ITZIAR RODRIGUEZ URBIETA** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
ICAM/ 0.33	CIENCIAS AMBIENTALES	5763	itziar.rodriguez@uclm.es	Monday, Wednesday and Thursday from 12:00 to 14:00 (contact by email beforehand)

Lecturer: **IVAN TORRES GALAN** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
Sabatini/0.35	CIENCIAS AMBIENTALES	5472	ivan.torres@uclm.es	Tuesday to Thursday, 11:00 to 14:00 (contact by email beforehand)

Lecturer: **MARIA OLGA VIEDMA SILLERO** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
ICAM (Lab Teledeteccion y SIG)	CIENCIAS AMBIENTALES	96874	olga.viedma@uclm.es	Tuesday and Thursday from 12:00 to 2:00 p.m. Request appointment by email for attendance at other time.

Lecturer: **GONZALO ZAVALA ESPIÑEIRA** - Group(s): **40**

Building/Office	Department	Phone number	Email	Office hours
Edificio Sabatini/0.32	CIENCIAS AMBIENTALES	926051551	gonzalo.zavala@uclm.es	Monday, Wednesday and Thursday from 12:00 to 14:00 (contact by email beforehand)

2. Pre-Requisites

Pre-requisites not established

3. Justification in the curriculum, relation to other subjects and to the profession

Within the framework of monitoring and evaluation of the conservation status of natural heritage (biodiversity and geodiversity), this subject is dedicated to monitoring those processes that operate at broader spatial scales. The subject is structured in three parts. The first deals with the monitoring of landscape dynamics and develops quantitative techniques for analyzing changes in the landscape structure. The second focuses on wildfire as one of the modeling factors of changes in the landscape, particularly important in Mediterranean areas, and deals with aspects such as fire risk assessment, fire behavior modeling and monitoring of the impacts of wildfires. The third is dedicated to the monitoring of protected areas, a basic and classic tool for in situ conservation strategies for natural heritage, that currently, after the consolidation of the Natura 2000 Network, is being applied to 27% of the Spanish territory, and which will be substantially expanded with the future areas incorporated into the European Strategy for Green Infrastructure and Ecological Connectivity. The importance of this kind of monitoring for the assessment of the management of protected areas is analyzed, as well as its interest as a tool for evaluating the impacts of global change, especially when applied to networks of protected areas. Current monitoring programs in national parks, biosphere reserves and sites of the Natura 2000 Network will be studied. Private land conservation is also discussed as a management alternative to strictly public management for natural and semi-natural areas. This

set of topics is closely connected with the management of natural areas and the associated socio-economic activities, which are professional sectors offering interesting employment prospects for graduates in this Master.

4. Degree competences achieved in this course

Course competences

Code	Description
CB06	Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
CB07	Apply the achieved knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the area of study
CB08	Be able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of knowledge and judgments
CB09	Know how to communicate the conclusions and their supported knowledge and ultimate reasons to specialized and non-specialized audiences in a clear and unambiguous way
CB10	Have the learning skills which allow to continue studying in a self-directed or autonomous way
CE01	Know and correctly apply the legal, economic, institutional, regulatory and planning instruments related to the conservation and sustainable management of natural heritage and environmental quality
CE02	Know the main drivers of global change, their causes, trends, interactions and scales of action, and identify and analyze their impacts on natural heritage and environmental quality
CE05	Know the methodological requirements of the monitoring applied to the evaluation of sustainability and interpret them within the framework of adaptive management
CE07	Identify the mechanisms and processes by which climate change can modify the behavior and distribution of organisms and apply procedures for its projection and monitoring
CE09	Know and apply the conceptual and methodological bases for carrying out environmental inventories and the economic valuation of natural resources
CE10	Know the role of disturbances and ecological restoration for the sustainable management of natural resources and apply it in monitoring designs
CE13	Know the tools for the identification and evaluation of natural and technological risks, understand the social factors that influence their perception and be able to evaluate their potential damages and adopt mitigation actions
CG01	Be able to carry out a critical analysis, evaluation and synthesis of new and complex ideas.
CG02	Use specialized software for environmental management, analysis of environmental problems and environmental research
CG03	Be able to integrate information from various sources and sectors in a critical and relational way, and incorporate it into decision-making processes to identify the most appropriate management options
CG04	Be able to participate in multidisciplinary teams for designing and carrying out plans, projects and monitoring on conservation and sustainable management of natural heritage and environmental quality
CG05	Know how to communicate and discuss proposals, results and conclusions in multilingual, specialized and non-specialized forums
CM05	Identify and analyze qualitatively and quantitatively the spatial and temporal variability of the landscape and the factors that determine it
CM06	Design and carry out monitoring plans for natural areas and interpret their results

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Know the basics that allow assessing the fire risk and their impacts on the landscape, as well as designing programs for monitoring these impacts and management measures to prevent and mitigate them.

Critically analyze and evaluate the Land Custody management agreements and recognize their importance for the Natura 2000 Network.

Analyze, criticize and formulate improvements in case studies of monitoring plans in protected areas.

Analyze the landscape according to those processes (biotic and abiotic) governing its formation, functioning and evolution, connecting it with the analysis of aesthetic and emotional responses.

Contribute to the development and implementation of a monitoring plan in a protected area from a multidisciplinary perspective.

Interpret the results of different types of monitoring of protected areas to evaluate management actions.

Manage geographic information systems and specific software allowing spatio-temporal analysis of landscapes.

Participate and contribute to the design of landscape management projects through the development of environmental indicators based on qualitative and quantitative landscape analysis.

Understand the principles of the design of monitoring plans that can be applied in protected areas, as well as their targets and connections with the management cycle of these areas.

6. Units / Contents

Unit 1: Landscape ecology

Unit 1.1 Landscape structure, function and dynamics

Unit 1.2 Landscape metrics. Temporal analysis of landscape in a chronosequence using FRAGSTATS

Unit 2: Wildfire: risk evaluation and monitoring of impacts

Unit 2.1 Introduction to fire risk assessment and monitoring of fire impacts on species, communities and ecosystems

Unit 2.2 Meteorological fire risk analysis and projections. Practical exercise on Fire Risk Analysis

Unit 2.3 Techniques for preventing and mitigating impacts. Techniques for fire behavior modeling: practical exercises to simulate the spread of fire

Unit 3: Monitoring in the management of protected areas

Unit 3.1 Monitoring in protected areas. Adaptive management and monitoring programs on management actions, public use, and conservation status

Unit 3.2 Monitoring programs in the National Parks Network

Unit 3.3 Monitoring programs in the Network of Biosphere Reserves

Unit 3.4 Monitoring in the Natura 2000 Network. Characteristics of the Natura 2000 Network and monitoring programs required by Directive 92/43. Control factors and structural and functional indicators for monitoring the conservation status of species and habitat types.

Unit 3.5 Entities of Private Land Conservation and partnership. Management agreements. Legal, financial and fiscal supports. PLC and Natura 2000 Network. Study cases.

ADDITIONAL COMMENTS, REMARKS

The subject is taught over three consecutive weeks in spring, during which theory and practical sessions, field work visits and reviews of the work carried out in each of the topics will alternate.

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB06 CB07 CB08 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CE13 CG01 CG02 CG03 CM05 CM06	0.96	24	Y	N	Expositions of the subject units, with presentations, bibliography, questions and work protocols and scripts available for the student on the virtual platform. Active participation of the student in the sessions will be considered within the continuous evaluation.
Field work [ON-SITE]	Practical or hands-on activities	CB06 CB07 CB08 CB09 CB10 CE01 CE05 CE09 CE10 CG01 CG03 CG04 CM06	0.24	6	Y	N	Field visits to protected areas framed in supervised work
Computer room practice [ON-SITE]	Practical or hands-on activities	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE07 CE10 CE13 CG01 CG02 CG03 CG04 CM05	0.64	16	Y	N	Application of specific programs for landscape metric analysis, fire risk assessment and fire behavior modeling. Active participation of the student in the practices will be considered as part of the continuous evaluation.
Workshops or seminars [ON-SITE]	Workshops and Seminars	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CG01 CG03 CG04 CG05 CM06	0.32	8	Y	N	Seminars for discussion on practical examples of monitoring designs in protected areas. Active participation of the student in the seminars will be considered as part of the continuous evaluation.
Project or Topic Presentations [ON-SITE]	Case Studies	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CE13 CG01 CG02 CG03 CG04 CG05 CM05 CM06	0.24	6	Y	N	Presentations of works and discussion on the results obtained. Active participation of the student in these sessions will be considered as part of the continuous evaluation.
Practicum and practical activities report writing or preparation [OFF-SITE]	Guided or supervised work	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CE13 CG01 CG02 CG03 CG04 CM05	1.2	30	Y	Y	Preparation and delivery of the reports on the practical exercises with computer programs on landscape dynamics analysis, fire risk assessment and fire behavior modeling. The delivery of these reports is compulsory to pass the subject and recoverable in the resit/retake calls
Writing of reports or projects [OFF-SITE]	Guided or supervised work	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CE13 CG01 CG02 CG03 CG04 CM05 CM06	1.6	40	Y	Y	Preparation and delivery of the reports on monitoring in National Parks and monitoring and evaluation of the conservation status of habitat types. Delivery of these works is compulsory to pass the subject and recoverable in the resit/retake calls.
Study and Exam Preparation [OFF-SITE]	Self-study	CB06 CB07 CB08 CB09 CB10 CE01 CE02 CE05 CE07 CE09 CE10 CE13 CG01 CG02 CG03 CG04 CM05 CM06	0.8	20	N	-	Autonomous work of the student: review and study of presentations, complementary readings before and after the theory and practice sessions, and preparation of his/her own presentations and reports.
		Total:	**6**	**150**			
		Total credits of in-class work: 2.4					**Total class time hours: 60**
		Total credits of out of class work: 3.6					**Total hours of out of class work: 90**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of active participation	10.00%	0.00%	Active participation and initiative in topic sessions, team working, seminars, field work and presentations will be evaluated, as well as the clarity, correctness and originality of the interventions.

Practicum and practical activities reports assessment	35.00%	50.00%	The correctness, originality and clarity in writing, the presentation of the results obtained, the organization of the report and the conclusions will be assessed.
Theoretical papers assessment	35.00%	50.00%	The adequacy of the structure of the reports to the established scripts, the completeness of the sources of information consulted, the correctness and scientific and technical foundation of the actions and protocols proposed, as well as the coordination of teamwork will be assessed.
Oral presentations assessment	20.00%	0.00%	Technical and content quality, clarity of the exposition and adequacy of the answers to the questions raised will be assessed.
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The qualifications of the practical works and reports should not be less than 4 out of 10 so that the subject can be passed through weighted compensation between the four types of evaluation. The subject will only be considered passed if the weighted set of all evaluable activities results in a grade of at least 5 out of 10.

The modality assigned by default to the student will be the continuous evaluation. Any student may request the change to the non-continuous evaluation modality before the end of the class period by sending an email to the professor, provided that the student has not completed 50% of the evaluable activities.

Non-continuous evaluation:

In the case of absence of qualification in the non-compulsory continuous evaluations, the corresponding percentage will be incorporated into that of the deliverable reports. The scores of both types of reports should not be less than 4 out of 10 so that the subject can be passed by means of weighted compensation between the two tests. The subject will only be considered passed if the weighted set of both evaluable activities results in a grade of at least 5 out of 10.

Specifications for the resit/retake exam:

The same as those indicated in the ordinary call. Evaluations that have obtained a score equal to or greater than 5 out of 10 may be kept in the resit/retake call.

Specifications for the second resit / retake exam:

The same as those indicated in the ordinary call. Evaluations that have obtained a score equal to or greater than 5 out of 10 may be kept in the second resit/retake call.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	**hours**

Unit 1 (de 3): Landscape ecology

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Computer room practice [PRESENCIAL][Practical or hands-on activities]	4
Project or Topic Presentations [PRESENCIAL][Case Studies]	1
Practicum and practical activities report writing or preparation [AUTÓNOMA][Guided or supervised work]	15
Study and Exam Preparation [AUTÓNOMA][Self-study]	5

Unit 2 (de 3): Wildfire: risk evaluation and monitoring of impacts

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Computer room practice [PRESENCIAL][Practical or hands-on activities]	12
Project or Topic Presentations [PRESENCIAL][Case Studies]	1
Practicum and practical activities report writing or preparation [AUTÓNOMA][Guided or supervised work]	15
Study and Exam Preparation [AUTÓNOMA][Self-study]	5

Unit 3 (de 3): Monitoring in the management of protected areas

Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	16
Field work [PRESENCIAL][Practical or hands-on activities]	6
Workshops or seminars [PRESENCIAL][Workshops and Seminars]	8
Project or Topic Presentations [PRESENCIAL][Case Studies]	4
Writing of reports or projects [AUTÓNOMA][Guided or supervised work]	40
Study and Exam Preparation [AUTÓNOMA][Self-study]	10

Global activity

Activities	**hours**
Field work [PRESENCIAL][Practical or hands-on activities]	6
Computer room practice [PRESENCIAL][Practical or hands-on activities]	16
Workshops or seminars [PRESENCIAL][Workshops and Seminars]	8
Project or Topic Presentations [PRESENCIAL][Case Studies]	6
Practicum and practical activities report writing or preparation [AUTÓNOMA][Guided or supervised work]	30
Class Attendance (theory) [PRESENCIAL][Lectures]	24
Writing of reports or projects [AUTÓNOMA][Guided or supervised work]	40
Study and Exam Preparation [AUTÓNOMA][Self-study]	20
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Bond W.J. & van Wilgen B.W.	Fire and Plants	Chapman & Hall	London		1996	
Burel, F. & Baudry, J.	Ecología del paisaje. Conceptos, métodos y aplicaciones	Mundi-Prensa			2002	
Dudley N. (Ed.)	Guidelines for applying protected area management categories	IUCN	Gland (Switzerland)		2013	
EUROPARC-España	Anuario 2016 del estado de las áreas protegidas en España	Fundación Fernando González Bernáldez	Madrid		2017	
EUROPARC-España	Diseño de planes de seguimiento en espacios naturales protegidos. Manual para gestores y técnicos	Fundación Fernando González Bernáldez	Madrid		2005	
European Commission (EC)	Assessment, monitoring and reporting under Article 17 of the Habitats Directive: explanatory notes and guidelines	European Commission	Brussels		2006	
Forman R.T.T. & Godron M.	Landscape Ecology	Wiley & Sons	New York		1986	
García Fernández-Velilla S.	Guía metodológica para la elaboración de los planes de gestión de los lugares Natura 2000 en Navarra	Gestión Ambiental, Viveros y Repoblaciones de Navarra S.A.	Pamplona		2003	
Gergel S.E. & Turner M.G.	Learning landscape ecology: A practical guide to concepts and techniques. Springer	Springer			2001	
Oficina Técnica del Programa MaB en España	Guía de las Reservas de la Biosfera españolas	Organismo Autónomo Parques Nacionales (OAPN)	Madrid		2011	
Oficina Técnica del Programa MaB en España	Plan de Acción de Ordesa-Viñamala (PAOV)	Organismo Autónomo Parques Nacionales (OAPN)	Madrid		2017	
Organismo Autónomo Parques Nacionales (OAPN)	Boletín de la red de seguimiento del Cambio Global en Parques Nacionales	OAPN	Madrid		2020	
VV.AA.	Bases ecológicas preliminares para la conservación de los tipos de hábitats de interés comunitario en España	Ministerio de Medio Ambiente y Medio Rural y Marino	Madrid		2009	
Vélez, R.	La defensa contra incendios forestales: fundamentos y experiencias	McGraw-Hill			2000	
Whelan, R.	The Ecology of Fire	Cambridge University Press	Cambridge		1995	
	Web de la Agencia Ambiental Europea (EEA) y Red Natura 2000					
	http://www.eea.europa.eu/themes					
	Web de Europarc-España					
	http://www.redeuroparc.org/que_es_europarc.jsp					
	Web sobre la red de espacios protegidos de Castilla-La Mancha					
	http://pagina.jccm.es/medioambiente/espacios_naturales/indexrapcm.htm					
	Web del Organismo Autónomo Parques Nacionales (OAPN)					
	http://www.magrama.gob.es/es/parques-nacionales-oapn/default.aspx					
	Web de las Reservas de la Biosfera españolas					
	http://rerb.oapn.es/					
	Web sobre biodiversidad del Ministerio de Transición Ecológica					
	http://www.magrama.gob.es/es/biodiversidad/temas/default.aspx					
	Web de la UNESCO sobre Reservas de Biosfera					
	http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves					
UNESCO	Plan de Acción de Lima para el Programa sobre el Hombre y la Biosfera (MAB) de la UNESCO y su Red Mundial de Reservas de		Lima		2016	

	Biosfera (2016-2025)			
UNEP-WCMC, IUCN & NGS	Protected Planet Report 2018	UNEP-WCMC, IUCN & NGS	Cambridge, Gland, Washington	2018
Organismo Autónomo Parques Nacionales	La Red de Parques Nacionales en la sociedad. Estudio explicativo sobre la percepción social de la Red de Parques Nacionales	Organismo Autónomo Parques Nacionales	Madrid	2011
Brawata R., Stevenson B. & Seddon J.	Conservation Effectiveness Monitoring Program: an overview	Environment, Planning and Sustainable Development Directorate, ACT Government	Canberra	2017
Organismo Autónomo Parques Nacionales (OAPN)	Plan de seguimiento y evaluación de la Red de Parques Nacionales	OAPN	Madrid	2016
Organismo Autónomo Parques Nacionales (OAPN)	Tercer Informe de situación de la Red de Parques Nacionales (2011-2013)	Organismo Autónomo Parques Nacionales	Madrid	2017
Muñoz Santos M. & Benayas J.	El uso público en la Red de Parques Nacionales de España	OAPN	Madrid	2012
IUCN	Guidelines for the application of IUCN Red List of Ecosystems categories and criteria, version 1.0		Gland, Switzerland	2016
Janssen J.A.M. et al.	European Red List of Habitats. Part 2. Terrestrial and freshwater habitats	European Union	Brussels	2016
Ministerio para la Transición Ecológica y el Reto Demográfico	Estrategia nacional de Infraestructura Verde y de la Conectividad y Restauración ecológicas		Madrid	2020