



# UNIVERSIDAD DE CASTILLA - LA MANCHA

## GUÍA DOCENTE

### 1. General information

**Course:** CLIMATE CHANGE

**Type:** CORE COURSE

**Degree:** 2335 - Master Degree Program in Environmental Sustainability in the Local and Territorial

**Center:**

**Year:** 1

**Main language:** Spanish

**Use of additional languages:**

**Web site:**

**Code:** 310727

**ECTS credits:** 6

**Academic year:** 2023-24

**Group(s):** 40

**Duration:** First semester

**Second language:** English

**English Friendly:** Y

**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	Monday and Wednesday from 10:00 to 13:00. Please request an appointment by email.	
Lecturer: ROSA MARIA CARRASCO GONZALEZ - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Sabatini / 07	INGENIERÍA GEOLÓGICA Y MINERA	5437	rosa.carrasco@uclm.es	Wednesday and Thursday from 11 a.m. to 2 p.m. Request an appointment by email.	
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. (Office 0.24, Sabatini Building), previous request by e-mail.	
Lecturer: MIGUEL ANGEL GAERTNER RUIZ VALDEPEÑAS - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Sabatini / 0.18	CIENCIAS AMBIENTALES	926051752	miguel.gaertner@uclm.es	Tuesday from 12 noon to 1 p.m., Thursday from 11 a.m. to 1 p.m. and from 3 p.m. to 6 p.m., by appointment by email.	
Lecturer: CLEMENTE GALLARDO ANDRES - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Sabatini 0.19	CIENCIAS AMBIENTALES	926 05 14 53	clemente.gallardo@uclm.es	Wednesdays from 11:00 a.m. to 2:00 p.m. and from 3:00 p.m. to 6:00 p.m. By appointment by email	
Lecturer: MARIA ROSA PEREZ BADIA - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Sabatini, Despacho 0.25	CIENCIAS AMBIENTALES	ext. 5443	rosa.perez@uclm.es	Tuesday and Thursday from 10 a.m. to 1 p.m. Request an appointment by email.	
Lecturer: ALFREDO RODRIGUEZ SANCHEZ - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
San Pedro / Desp.empresas / Tercera planta	ANÁLISIS ECONÓMICO Y FINANZAS		Teams	alfredo.rodriguez@uclm.es	
Lecturer: ALFONSO RODRIGUEZ TORRES - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
	CIENCIAS AMBIENTALES		alfonso.rodriguez@uclm.es		
Lecturer: ENRIQUE SANCHEZ SANCHEZ - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Sabatini / 0.19	CIENCIAS AMBIENTALES	5461	e.sanchez@uclm.es	Monday and Thursday from 13 to 14h and from 16 to 18h	
Lecturer: FRANCISCO JAVIER TAPIADOR FUENTES - Group(s): 40					
Building/Office	Department	Phone number	Email	Office hours	
Office 0.04, ICAM	CIENCIAS AMBIENTALES	925268800 Ext. 5762	francisco.tapiador@uclm.es		
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	Monday 12:00 to 14:00, wednesday 10:00 to 12:00, thursday 12:00 to 14:00. Emailing in advance for confirmation is advised.	
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	Monday and Thursday from 11-14 h. Please, request an appointment by email.	



Training Activity	Methodology	(only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CE02 CE05 CE06 CE07 CE08	1.28	32	N	-	Theoretical classes corresponding to the syllabus
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	CB07 CG02	0.96	24	N	-	Practical sessions on various elements of the syllabus, which will lead to the preparation of autonomous reports that will be evaluated by the teachers responsible for these sessions
Final test [ON-SITE]	Assessment tests	CB06 CB07 CB09 CE02 CE05 CE06 CE07 CE08 CG01 CG03 CG05	0.16	4	Y	Y	Final exam
Writing of reports or projects [OFF-SITE]	Self-study	CB06 CB07 CB09 CB10 CG03 CG05	1.4	35	Y	N	These reports correspond to the face-to-face practice sessions, which will be non-mandatory, and recoverable in the extraordinary call.
Writing of reports or projects [OFF-SITE]	Guided or supervised work	CB06 CB07 CB09 CG03 CG04 CG05	2.2	55	Y	Y	Bibliographic or analysis works, associated with a worksheet and a teacher / tutor, which are assigned at the beginning of the subject. They will be recoverable in the extraordinary call.
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>				<b>Total class time hours: 60</b>			
<b>Total credits of out of class work: 3.6</b>				<b>Total hours of out of class work: 90</b>			

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
Practicum and practical activities reports assessment	25.00%	0.00%	Reports of practices associated with the activity developed in various parts of the subject.
Theoretical papers assessment	45.00%	50.00%	Individual and/or group assignments, usually bibliographic or analysis, assigned at the beginning of the course by means of an information sheet and a tutor.
Final test	30.00%	50.00%	Eminently theoretical final exam, based on short questions, test or development, on all aspects related to the theoretical classes
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

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:

- For the competences acquired in the theoretical classes: final test (short questions or test questions)
- For those acquired in the practical classes: Delivery of reports of results and analysis carried out in the sessions
- For the work: Assessment of the report submitted for the work assigned by the corresponding tutor.

##### Non-continuous evaluation:

The evaluation will be based on a final test and on theoretical work, both with 50% of the mark. 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 teacher, provided that they have not completed 50% of the evaluable activities.

#### Specifications for the resit/retake exam:

The same criteria of the ordinary call will be applied. The work and the reports of practices are recoverable, and therefore they can be carried out again in this call, in coordination with the professors responsible for these activities of practices. The non-continuous evaluation will be done through a theoretical exam (50%) and a theoretical work (50%), as in the ordinary call.

#### Specifications for the second resit / retake exam:

The mark of this call will coincide with the one obtained in the corresponding final test.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
<b>Hours</b>	<b>hours</b>
Final test [PRESENCIAL][Assessment tests]	4
<b>Unit 1 (de 2):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	16
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	6
<b>Unit 2 (de 2):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	16
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	18

Global activity	
Activities	hours
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	24
Final test [PRESENCIAL][Assessment tests]	4
Class Attendance (theory) [PRESENCIAL][Lectures]	32
<b>Total horas: 60</b>	

## 10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)	IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change <a href="https://ipcc-wg2.gov/AR5/report/">https://ipcc-wg2.gov/AR5/report/</a>	Cambridge University Press			2014	
Benn, D.I., Evans, D.A.	Glaciers & Glaciation	Hodder Arnold Publication		10: 0340905794	2010	802 pp
Chuvieco, E.	Fundamentos de teledetección espacial	Rialp	Madrid		1996	568pp
Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)	IPCC, 2014: Climate Change 2014: Mitigation of climate change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change <a href="http://www.ipcc.ch/report/ar5/wg3/">http://www.ipcc.ch/report/ar5/wg3/</a>	Cambridge University Press			2014	
Eggleston H.S., Buendia L., Miwa K., Ngara T. y Tanabe K. (eds)	IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme <a href="http://www.ipcc-nggip.iges.or.jp/public/2006gl/spanish/index.html">http://www.ipcc-nggip.iges.or.jp/public/2006gl/spanish/index.html</a>	IGES, Japon			2006	
Ehlers, J., Gibbard, P.L.	Quaternary Glaciations Extent and Chronology. Part I: Europe	Elsevier	Amsterdam	0 444 51462 7	2004	488 pp
Elachi, C., Jakob J. van Zyl	Introduction To The Physics and Techniques of Remote Sensing	John Wiley & Sons			2006	
Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)	IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change <a href="http://www.ipcc.ch/report/ar5/wg2/">http://www.ipcc.ch/report/ar5/wg2/</a>	Cambridge University Press			2014	
Gaertner, M. A., J. M. Gutiérrez y M. Castro	Escenarios regionales de cambio climático <a href="http://revistadefisica.es/index.php/ref/article/view/1331">http://revistadefisica.es/index.php/ref/article/view/1331</a> ; <a href="http://digital.csic.es/bitstream/10261/93845/1/Escenarios%20regionales%20de%20cambio%20clim%C3%A1tico.pdf">http://digital.csic.es/bitstream/10261/93845/1/Escenarios%20regionales%20de%20cambio%20clim%C3%A1tico.pdf</a>			0213-862X	2012	
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Knight, P.G.	Glacier Science and Environmental Change	John Wiley & Sons	Oxford	1 4051 0018 4	2007	544 pp
Lillesand, T. M.; Kiefer, R. W.; Chipman, J. W	Remote sensing and image interpretation				2004	763pp
Meier, U	Growth stages of mono and dicotyledonous plants	Federal Biological Research Centre for Agriculture and Forestry			2001	
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Nakicenovic, N., and R. Swart (eds.)	Special Report on Emissions Scenarios. A Special Report of Working Group III of the Intergovernmental Panel on Climate Change <a href="https://www.ipcc.ch/pdf/special-reports/spm/sres-en.pdf">https://www.ipcc.ch/pdf/special-reports/spm/sres-en.pdf</a>	Cambridge University Press		2007	
Pearson, R.G.	Distribution Modeling for Conservation Educators and Practitioners. Synthesis  <a href="http://ncep.amnh.org">http://ncep.amnh.org</a>	American Museum of Natural History		2007	
Peterson A.T., Soberón J., Pearson R.G., Anderson R.B., Martínez-Meyer E., Nakamura M. & Araújo M.B.	Ecological niches and geographical distributions	Princeton Univ. Press.		2011	
Rummukainen, M.	State-of-the-art with regional climate models <a href="http://onlinelibrary.wiley.com/doi/10.1002/wcc.8/abstract">http://onlinelibrary.wiley.com/doi/10.1002/wcc.8/abstract</a>	Wiley		2010	
Schowengerdt, R.A.	Remote Sensing: Models and Methods for Image Processing	Academic Press		1996	
Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)	IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change  <a href="http://www.ipcc.ch/report/ar5/wg1/">http://www.ipcc.ch/report/ar5/wg1/</a>	Cambridge University Press	978-1-107-66182	2013	
van Vuuren DP, Edmonds J, Kainuma MLT, Riahi K, Thomson A, Matsui T, Hurtt G, Lamarque J-F, Meinshausen M, Smith S, Grainer C, Rose S, Hibbard KA, Nakicenovic N, Krey V, Kram	Representative concentration pathways: An overview  <a href="http://link.springer.com/article/10.1007%2Fs10584-011-0148-z">http://link.springer.com/article/10.1007%2Fs10584-011-0148-z</a>	Springer		2011	doi:10.1007/s10584-011-0148-z
	Bilan Carbone, Guide des facteurs d'émission	ADEME		2009	
	PAS 2050:2008 - Specification for the assessment of the life cycle greenhouse gas emissions of goods and services	BSI		2008	
	Skepticalscience  <a href="http://www.skepticalscience.com/">http://www.skepticalscience.com/</a>				Explaining climate change science & rebutting global warming misinformation