Land Management

Educational subject description sheet

Basic information

Field of study Joint Bachelor in Sustainability	**Education cycle** 2025/26
Speciality Environmental & Life Sciences	**Subject code** UJ.WPAJBSELSS.8100.16552.25
Organizational unit Faculty of Law and Administration	**Lecture languages** english
Study level first cycle (joint degree programme)	**Subject related to scientific research** Yes
Study form full-time degree programme	**Disciplines** Earth sciences and the environment, Socio-economic geography and spatial
Education profile General academic	**ISCED classification** 0521 Environmental sciences
Mandatory obligatory	**USOS code**

Subject coordinator	Piotr Szwedo
Lecturer	David Garcia Álvarez, Ignacio Zapico Alonso, Miguel Ángel Casermeiro Martinez, Sergio González Ubierna

Period Semester 5	**Examination** exam **Activities and hours** Discussion class: 45	**Number of ECTS points** 5.0

Goals

C1	Equip students with a comprehensive understanding of the concepts, strategies and legal framework required for conducting land management projects within the European Union.
C2	Enable students to proficiently navigate open-access databases and utilize associated tools to conduct diagnostic analyses pertaining to land management issues at both regional and local scales.
C3	Provide students with foundational knowledge of best practices in land managent, empowering them to propose effective solutions to land management conflicts.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the most important concepts related to land, its use, value and management	JBS_K1_W01, JBS_K1_W07	written exam, project
W2	the agents involved in the use of the land and their competing interests.	JBS_K1_W03, JBS_K1_W04, JBS_K1_W06, JBS_K1_W07	written exam, project, essay, presentation
W3	the different scales at which land use can be managed and the potential policies, tools, and solutions that can be applied at each scale	JBS_K1_W03, JBS_K1_W04, JBS_K1_W05, JBS_K1_W06, JBS_K1_W07	written exam, presentation
W4	specific real case studies of land management	JBS_K1_W03, JBS_K1_W04, JBS_K1_W06, JBS_K1_W07	project, essay, presentation
Skills – Student can:			
U1	critically assess the sustainability of land use practices in a specific study area, identifying the role of each agent and use in the adequate management of the land	JBS_K1_U02	project, essay, presentation
U2	identify and propose good practices and strategies for land management that lead to a sustainable use of the land in a specific area	JBS_K1_U02, JBS_K1_U03	project, essay
U3	contribute to the creation of a land use or urban plan that fosters the sustainable land management of a specific study area	JBS_K1_U02, JBS_K1_U03, JBS_K1_U04	project
Social competences – Student is ready for:			
K1	to have and share an informed and critical opinion on the sustainability of specific land management practices	JBS_K1_K01, JBS_K1_K03, JBS_K1_K05	essay, presentation
K2	to encourage the practice of sustainable land management when taking part in specific projects or missions	JBS_K1_K01, JBS_K1_K02, JBS_K1_K03, JBS_K1_K05	project

Calculation of ECTS points

Activity form	Activity hours*
Discussion class	45
preparation for classes	40
preparation for the exam	30
essay preparation	20

preparation of a multimedia presentation	15	
Student workload	**Hours** 150	**ECTS** 5.0

* hour means 45 minutes

Study content

No.	Course content	Subject's learning outcomes
1.	Introduction to land management I • Land, land use and land cover • Land and its agents • The utility of land: multi-functionality • Land ownerships and rights to land: land tenure, land administration and land transaction • The land value: a relevant issue • Historic use of the land • Definition of land management	W1, W2
2.	Introduction to land management II • The scales of land management: from local to regional and national land management practices • Land resources and its management • Protection, conservation, and land management • Land and landscape management • Land management and urban planning • The land management tools: an introduction	W1, W3, W4
3.	The land management context • Land conflicts • Challenges for land management • Sustainable Land Management and its approaches • Sustainable Land Management and the Sustainable Development Goals • Citizen participation in land management	W1, W2, W3, W4, U1, K1

No.	Course content	Subject's learning outcomes
4.	Net positive land uses and Natural-based solutions • Introduction to Net Positive principles applied to land management • Introduction Natural-based solutions applied to land management • Examples in agriculture • Examples in forestry • Examples in mining • Examples in urban and industrial areas	W3, W4, U1, K1
5.	Ecological rehabilitation practices based on geomorphic principles • Limitations of traditional rehabilitation practices based on terraces • Importance of the channel network • Introduction of Geomorphic-based ecological restorations • Examples in Europe • Examples in other countries	W3, W4, U1, K1
6.	Land suitability assessment • Land suitability • Tools to assess land suitability: multi-criteria evaluation • Optimal location of services and infrastructures based on land suitability assessments • Soil quality models for different uses: agriculture, forestry…	W3, U1, K1
7.	Managing land use/cover change I • Land change and land change science • Sources for land change assessment • Measuring and analyzing land change • Mapping land change	W3, U1, K1
8.	Managing land use/cover change II • Geographical contexts for land change: rural/urban interactions, country profiles… • Drivers of land change • Simulation tools for land use change analysis	W3, U1, K1

No.	Course content	Subject's learning outcomes
9.	Natural hazards and risk management • Introduction of natural hazards in Europe • Methodologies for risk management • Examples of flood management	W3, W4, U1
10.	Basic topographic concepts and CAD platforms introduction • Introduction to topographic principles • Methods and tools for surveying • Introduction of CAD platforms • Examples of uses CAD platforms in land management projects	W3, W4, U1
11.	Methods and tools for surveying and Geomorphic change detection methodology and software • Geomorphic change detection methodology • Geomorphic change detection tools • Examples of use in land management of mines, rivers and civil engineering	W3, W4, U1
12.	Policies for land management • Land policy and land governance • Ideologies and land policies • Global initiatives for the promotion of Sustainable Land Management • The European policy context • National, regional and local regulations	W2, W3
13.	The Land Use planning process (4 hours) • Formulation of a Land Use or Urban plan • Implementation of a Land Use or Uban plan • Citizen participation in Land Use and Urban planning • Monitoring a Land Use or Uban plan	W2, W3, U2, U3
14.	Field trip (5 hours) Study area of Madrid, where the students can apply in the field the knowledge and skills acquired with the subject	W2, W4, U1, U2, K1, K2

Course advanced

Teaching methods :

text analysis, brainstorming, conversation lecture, discussion, case study, solving tasks

Activities	Examination methods	Credit conditions
Discussion class	written exam, project, essay, presentation	Written exam: Written exam based on open questions. Project: Course project in groups utilizing the methods and knowledge that have been explained in class. Presentation & class participation: Active participation in class and oral presentations on specific case studies, texts, or other working documents. Field trip report: An essay reflecting on the land management context and conflicts of the study area, along with a student's reflection on potential solutions or the way forward.

Entry requirements

None

Literature

Obligatory

1. Jefferson, A. J., Wegmann, K. W., & Chin, A. (2013). Geomorphology of the Anthropocene: Understanding the surficial legacy of past and present human activities. Anthropocene, 2, 1-3.
2. Cooke, S. J., Heger, T., Murphy, S. D., Shackelford, N., Febria, C. M., Rochefort, L., & Higgs, E. S. (2023). Ecological Restoration in Support of Sustainability Transitions: Repairing the Planet in the Anthropocene. In Introduction to Designing Environments: Paradigms & Approaches (pp. 93-112). Cham: Springer International Publishing.
3. García-Álvarez, D., Camacho Olmedo, M. T., Paegelow, M., & Mas, J. F. (2022). Land Use Cover Datasets and Validation Tools: Validation Practices with QGIS.
4. GIZLU Planning (2011). Land Use Pllaning. Concepts, Tools and Applications. German Ministry of Economic Cooperation and Development.
5. Invasive, W. C. W. L. (2023). Rethinking Evidence Practices for Environmental Decision-Making in the Anthropocene. EVIDENCE CONTESTATION, 101.
6. Liniger, H., Mekdaschi-Studer, R., Hauert, C., Gurtner, M., Terrafrica, M., & WOCAT, B. S. (2011). Sustainable land management in practice. Guidelines and best practices for Sub-Saharan Africa.
7. Baddipudi, V. (2023). Net Positive: How Courageous Companies Thrive by Giving More Than They Take.
8. Thomas, J. A. (Ed.). (2022). Altered earth: Getting the Anthropocene right. Cambridge University Press.
9. Weith, T., Barkmann, T., Gaasch, N., Rogga, S., Strauß, C., & Zscheischler, J. (2021). Sustainable land management in a European context: A co-design approach (p. 347). Springer Nature.

Effects

Code	Content
JBS_K1_K01	The graduate can encourage sustainability-driven practices in the workplace and appraise sustainability of own values, perceptions, roles, and actions, with a special focus on environmental wellbeing.
JBS_K1_K02	The graduate can demonstrate considerable entrepreneurial initiative, autonomy, and readiness to act in complex and changing environments, especially in the context of supporting, undertaking, and co-organising activities beneficial for a sustainable society.
JBS_K1_K03	The graduate can consider different visions of the future and develop own evidence-based opinions in reference to the balance of values linked to economic development, social welfare, and environmental protection.
JBS_K1_K05	The graduate can defend the importance of scientific data and methods as a basis for decision-making.
JBS_K1_U02	The graduate can present and report knowledge, methodologies, ideas, problems and solutions, clearly and comprehensively, in different forms destined for different audiences – including discussions and debates which require defending a substantiated opinion, as well as conversations in a foreign language at the CEFR B2 level.
JBS_K1_U03	The graduate can apply adequate methods and tools, including selected IT tools, to solve problems related to data collection, analysis, and management in the context of sustainability.
JBS_K1_U04	The graduate can plan and effectuate simple sustainability-related projects under supervision and in the context of personal lifelong learning, both individually and in a team, using appropriate transversal skills and taking shared responsibility for the outcome.
JBS_K1_W01	The graduate can describe the concept of sustainability and recognize the differences in relevant definitions, models and approaches.
JBS_K1_W03	The graduate can give examples of sustainability-related dilemmas and hypothesize on the optimal course of action.
JBS_K1_W04	The graduate can identify sustainability-related problems specific to selected cultural, geographical, and political contexts.
JBS_K1_W05	The graduate can identify essential international instruments and institutions related to sustainability and explain their potential role in resolution of a given problem.
JBS_K1_W06	The graduate can describe interconnections between various aspects of sustainability and identify their significance in the context of natural and social sciences, with a special focus on disciplines included in the selected specialisation track (law and politics; chemistry and physics; chemistry and biology; economics and geography; economics, management and engineering; humanities).
JBS_K1_W07	The graduate can apply the theory and methodology of disciplines included in the selected specialisation track to sustainability-related problems, taking into consideration practical limitations such as protection of intellectual property.