Universitat de Lleida

DEGREE CURRICULUM

ENVIRONMENTAL MANAGEMENT

Coordination: RAMOS MARTIN, MARIA CONCEPCION

Academic year 2022-23

ENVIRONMENTAL MANAGEMENT 2022-23

Subject's general information

Subject name	ENVIRONMENTAL MANAGEMENT
Code	102569
Semester	2nd Q(SEMESTER) CONTINUED EVALUATION
Typology	

Degree	Course	Character	Modality
Bachelor's Degree in Agricultural and Food Engineering	4	COMPULSORY	Attendance-based

Course number of credits (ECTS)	6
Type of activity, credits, and groups	

Activity type	PRACAMP	PRALAB	PRAULA	TEORIA
Number of credits	0.6	0.4	1.2	3.8
Number of groups	1	1	1	1

Coordination	RAMOS MARTIN, MARIA CONCEPCION
Department	ENVIRONMENT AND SOIL SCIENCES
Teaching load distribution between lectures and independent student work	40% classes: classroom and videoconferenes 60% personal work
Important information on data processing	Consult this link for more information.
Language	Catalanish:25% Spanish: 75%
Distribution of credits	1-Ecological principles applicable to environmental management. Basic concepts. Organization and functioning of natural ecosystems and agrosystems. Environmental assessment index. 0.8c 2 -Environmental legislation. 0.2c 3 -Physical environment. Hydrological processes. 1c. 4- Degradation and conservation processes. 3c Soil degradation processes. Management practices and mitigation and conservation measures: physical, social, political and institutional interactions that influence management practices. Erosion and desertification. Pollution 5 - Aquatic ecosystems: operation and management of water resources. Surface water quality. Invasive species. 0.7c 6 -Climate change 0.5c Processes, scenarios and vulnerability. Effects of climate change on degradation processes and agricultural activity. National and international responses: mitigation and adaptation proposals

ENVIRONMENTAL MANAGEMENT 2022-23

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
PALAU IBARS, ANTONIO JUAN	antoni.palau@udl.cat	1,5	
RAMOS MARTIN, MARIA CONCEPCION	mariaconcepcion.ramos@udl.cat	4,5	

Subject's extra information

The course aims to depp on the knowledge and use of techniques of land management and planning as well as on the management of the environment and the landscape. It addresses topics of ecology applied to the management of natural ecosystems and agrosystems, and planning and landscape restoration, with special emphasis on aspects and problems that affect ecosystems such as erosion, pollution, eutrophication, invasive alien species, habitat fragmentation, and climate change.

Learning objectives

The student, to pass the course , must be able to

- Plan and defend arguments environmental management actions

- Manage basic environmental problems associated with aquatic ecosystems

- Planning conservation measures to mitigate erosion and desertification problems

- Planning conservation measures to dremediate contaminated soils

- Plan actions to decrease the effects of climate change on soil and water resources

- Environmental legislation management

Competences

Basic, skills

CB1. That students have demonstrated and understand knowledge in an area of study that starts from the basis of general secondary education, and is usually found at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study.

CB2. That students know how to apply their knowledge to their work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study

CB3. That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant social, scientific or ethical issues

CB4. That students can transmit information, ideas, problems and solutions to both a specialized and non-specialized audience

CB5. That students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

General skills

Competències generals

CG7. Knowledge in basic, scientific and technological subjects that allow continuous learning, as well as a capacity to adapt to new situations or changing environments

CG8. Ability to solving problems with creativity, initiative, methodology and critical reasoning.

S**pecific skills**

CEHJ3. Ability to know, understand and use the principles of: Environmental and landscape engineering. Environmental legislation and management; Principles of sustainable development; Market and practice strategies; Valuation of environmental assets.

CEHJ4: Ability to know, understand and use the principles of: Hydrology. erosion

CEHJ5: Ability to know, understand and use the principles of: Plant material: production, use and maintenance; Ecosystems and biodiversity; Physical environment and climate change.

CEHJ6: Ability to know, understand and use the principles of: Analysis, management and Territorial Planning Plans. Principles of landscaping.

CEHJ7. Ability to know, understand and use the principles of: Specific design tools and graphic expression; Practical development of environmental impact studies; Environmental and landscape restoration projects; Projects and plans for the maintenance of green areas; Development projects. Instruments for the planning of the territory and the landscape; Management and planning of projects and works.

Subject contents

Temari

1-Ecological principles applicable to environmental management. Basic concepts. Organization and functioning of natural ecosystems and agrosystems. Environmental assessment index. 0.8c

T1. Taxonomic and ecosystem organization of the biosphere. ecosystem. Biocenosy and Biotope. community. Ecological niche. Biological types. demography. Habitat (ecological, physical, useful). Biodiversity and ecological diversity. Ecosystem services.

T2. Trophic organization. Flow of matter and energy. Biomass, Production, Productivity. Trophic networks. Renewal fee. Limiting factors. regulation. Trophic waterfalls

2- Physical environment: degradation and conservation. Hydrological processes. 1c

3- Land degradation processes. Management practices and conservation measures.. Physical, social, and institutional interactions affecting management practices. Erosion and desertification. Contamination 3.2c

4- Aquatic ecosystems: operation and management of water resources. Surface water quality. Invasive species. 0,7c

Invasive exotic species: The case of the zebra mussel.

Aquatic ecosystems. Surface water quality. Types, organisation and functioning of aquatic ecosystems. Reservoirs: Regulation of water resources.

Environmental problems (cases). Eutrophization. Irrigation channels: ecological functions and margin management. Barrier effect of channels and nods. Water resources, irrigation and climate change.

Environmental crop management criteria.

5- Climate -Change Processes, scenarios and vulnerability. Effects of climate change on degradation processes and farming. Responses at national and international level: proposals for mitigation and adaptation 0.3c

Practical activities

1- Recognition of degraded areas and conservation measures

2- Design of conservation measures

3- Case studies of contaminated soil rehabilitation

4-. Problems and cases. Calculation of the useful physical hybrid for a specie.

5- Directed activity 1: Prácticas de análisis rápido de la calidad de las aguas superficiales.

6- Directed activity 2: Trabajo por supuesto (in format of scientific article) on a topic to choose between the two serious issues:

Water, energy, biodiversity, production, market, profitability, sustainability in: (i) irrigation vs dry; (ii) irrigated in "blanket" vs pressurized; (iii) organic farming vs traditional.
Irrigation and climate change: (i) extreme weather events; (ii) adaptation and mitigation measures; (iii) impact of DC on irrigation and dry land.

Methodology

Type of activity	Descripion	Classrom activity		Personal work		Grading	Time
		Objectives	Hours	Personal work	Hours	Hours	Hours/ECTS
Lliçó magistral	Master class (Big group)	Explantion of principal concepts	**36**	Study, learn , understand and synthesize knowledges	**40**	**1**	**77h/3.08**
Exercices and case study	Participative class (Medium Group)	Problem and case solving	**16**	Learn to solve problems and cases	**20**	**1**	**37h/1.48**
Field acitivities	Classe participativa (Medium Group)	Understand and discuss problems and solutions in the field	**5**	To prepare a report	**10**		**15h/0.60**

Active learning activities	Laboratory (Medium group) and driven activities	To orient the student on the treball (in time of tutorials)		To prepare a report including informaiton taken from differnet sources and references.	**20**	1	**21h/0.84**

ObservaTions

1 ECTS= 25h

Development plan

Type of activity	Descripion	Classrom activity		Personal work		Grading	Time
		Objectives	Hours	Personal work	Hours	Hours	Hours/ECTS
Lliçó magistral	Master class (Big group)	Explantion of principal concepts	**36**	Study, learn , understand and synthesize knowledges	**40**	**1**	**77h/3.08**
Exercices and case study	Participative class (Medium Group)	Problem and case solving	**16**	Learn to solve problems and cases	**20**	**1**	**37h/1.48**
Field acitivities	Classe participativa (Medium Group)	Understand and discuss problems and solutions in the field	**5**	To prepare a report	**10**		**15h/0.60**
Active learning activities	Laboratory (Medium group) and driven activities	To orient the student on the treball (in time of tutorials)		To prepare a report including informaiton taken from differnet sources and references.	**20**	1	**21h/0.84**

Evaluation

Type of acivitiy	Grading		Weighted rating
	Procedure	Number	(%)

Master class	Writen probes about the theory	2	**30,0**
Exercices and case study	Writen reports and solved problems	3	**20,0**
Active learning activities	Report about case studies	3	**50,0**
Total			**100**

Observations

The evaluation tests will be carried out in person. In case of impossibility, the appropriate procedure will be enabled. The work deliveries will be carried out preferably through a virtual campus.

To pass the subject it will be necessary to have obtained a grade equal to or greater than 5 points (out of 10) as an accumulated result of all the evaluable tests and in each of them (written tests and reports).

Bibliography

Bibliografia bàsica

Ayers, R.S., D.W. Westcot. 1987. La calidad del agua de riego en la agricultura. Estudio FAO Riego y Drenaje., 29 Rev 1. Roma.

Jimenez Ballesta, R. Introdución a la contaminación de suelos. Ed, MundiPrensa. 2017

Margalef, R. (1981): "Ecología". Ed. Omega, S.A. Barcelona. 252 pp.

Morgan, R.P.C. 2005. Soil Erosion and Conservation, 3rd edition. Blackwell Publishing, Oxford. Hudson, N. 1982. Conservación del suelo. Reverté. Barcelona

Pierzynski, G.M., J.T. Sims & G.F. Vance. 1994. Soils and Environmental Quality. LewisPublishers. CRC Press, Boca Raton. Florida

Terradas, J. (1979): "Ecologia d'avui". Ed Teide, S.A. Barcelona. 142 pp

Bibliografia complementària

Ayers, R.S., D.W. Westcot. 1987. La calidad del agua de riego en la agricultura. Estudio FAO Riego y Drenaje., 29 Rev 1. Roma.

Lal, R., Blum, W.H., Valentin, C. (Eds). 1998. Methods for assessment of soil degradation. Springer-Verlag. Berlin.

Margalef, R. (1977): "Ecología". Ed. Omega, S.A. Barcelona. 951 pp.

Margalef, R. (1991): "Teoría de los Sistemas Ecológicos". Ed. Publicacions de la Universitat de Barcelona. (Col. Estudi General 1. Ciències Experimentals i Matemàtiques). Barcelona. 290 pp.

Pimentel, D. (ed.) 1993. World soil erosion and conservation. Cambridge studies in applied ecology and resource management. Cambridge University Press. Cambridge.

Wanielista, M.P.1990. Hydrology and water quantity control. John Wiley and Sons Inc., NewYork, (USA).

Schwab, G.O., Fagmeier, D.D., Elliot, W.J., and Frevert, R.K. 1993. Soil and water conservation engineering. 4 ed. Wiley, New York.