



Universitat de Lleida

DEGREE CURRICULUM
**GESTIÓ D'ESP AIS URBANS I
PERIURBANS**

Coordination: AMEZTEGUI GONZALEZ, AITOR

Academic year 2023-24

Subject's general information

Subject name	GESTIÓ D'ESPAYS URBANS I PERIURBANS			
Code	102464			
Semester	1st Q(SEMESTER) CONTINUED EVALUATION			
Typology	Degree	Course	Character	Modality
	Double degree: Bachelor's degree in Forest Engineering and Bachelor's degree in Nature Conservation	5	OPTIONAL	Attendance-based
Course number of credits (ECTS)	6			
Type of activity, credits, and groups	Activity type	PRACAMP	PRAULA	TEORIA
	Number of credits	1	2	3
	Number of groups	1	1	1
Coordination	AMEZTEGUI GONZALEZ, AITOR			
Department	AGRICULTURAL AND FOREST SCIENCES AND ENGINEERING			
Important information on data processing	Consult this link for more information.			
Language	Spanish & Catalan			
Distribution of credits	Theory: 3 ECTS Practices: 2 ECTS Field trips: 1 ECTS			

Teaching staff	E-mail addresses	Credits taught by teacher	Office and hour of attention
AMEZTEGUI GONZALEZ, AITOR	aitor.ameztegui@udl.cat	4	By appointment (via email)
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Subject's extra information

The subject "Management of urban and peri-urban spaces" is presented as an introduction to the world of urban forestry. In an increasingly urban world, the availability of quality and accessible green spaces for citizens has been shown to have a very significant impact on people's health and quality of life. The student who passes this subject will acquire knowledge about the specific characteristics and particularities of urban green spaces, with special emphasis on wooded spaces. Knowledge and skills will be acquired in the planning and design of green spaces, their ecology and their role in urban biodiversity. Students will learn to design and implement evaluations and inventories of urban trees and to write tree management plans. They will also learn about the main benefits and ecosystem services provided by urban spaces, and how to quantify and maximize them. In addition, skills will be acquired for the proper management and maintenance of urban trees, including species selection, tree maintenance, and risk assessment. Finally, they will learn to plan and manage peri-urban green spaces and restore degraded urban areas.

Learning objectives

- To know the different aspects of urban forests and urban and peri-urban green infrastructure, their characteristics and the problems they can solve
- To understand the fundamentals of urban ecology and the main impacts of global change on cities
- To understand the particularities of urban biodiversity and its role in the urban environment
- To know the main indicators of quality of urban green infrastructure, how to apply them and calculate them in a practical way
- To know the ecosystem services provided by urban green spaces, and to apply methodologies for their quantification
- To acquire skills in the design and implementation of urban tree inventories and the drafting of management plans
- To know the main elements necessary for proper management and maintenance of urban trees
- To understand the particularities of managing peri-urban forest spaces
- To assess the restoration needs of urban green spaces and implement improvement initiatives.

Subject contents

UNIT 1 INTRODUCTION: URBAN FORESTS AND GREEN INFRASTRUCTURE

1. Green spaces and cities. Presentation of the course

- The importance of green spaces in an urban world

2. Concepts and definitions. History of urban development and urban forests

- History of urban development and urban landscaping
- Radial cities, diffuse cities. The transformation of cities.

- From landscaping to "urban forestry"

3. Urban and peri-urban forests. Green infrastructure.

- Green and blue infrastructure verde y azul
- Legislative framework
- The Cataland and Spanish Green Infrastructure Strategy

UNIT 2. URBAN ECOLOGY AND BIODIVERSITY

1. Urban Ecology. Concepts and importance

- Concepts of urban ecology
- Ecology in urban and periurban environments

PRACTICE: URBANFUN organic matter decomposition

- Ecosystem functions: consumptions, emissions, energy and material fluxes

2. Biodiversity in the cities

- Urban biodiversity: naturation vs. naturalization
- Particularities of urban biodiversity
- Individual species and urbanization
- Management of habitats for biodiversity

UNIT 3. CHARACTERIZING GREEN SPACES: INDICATORS AND VARIABLES

1. Indicators of forest cover

- Number of trees vs. land cover vs. tree cover
- Methods for determination of tree cover

PRACTICE: Determination of land cover in the neighborhoods of Lleida

PRACTICE: Determination of tree cover using aerial LiDAR

2. Diversity indicators

- Species and functional richness
- Santamour's rule
- Urban Green Governance Index.

PRACTICE: Tree species diversity at ETSEAFIV campus

3. Indicators of quality and sustainability of green areas and cities

- Singapur Index, RECITAL
- Other indicators

UNIT 4. FUNCTIONS AND BENEFITS OF URBAN FORESTS

1. Urban forests and the provision of ecosystem services

- Concept and types of ecosystem services
- Ecosystem services and cities
- Urban forests and carbon fixation
- Urban forests and air pollution
- Urban forests and hydrological regime
- Urban forests and environmental comfort: temperature and noise
- Urban forests and human health
- Urban forests and disservices

PRACTICE: Determination of heat islands and climate refuges

2. Valuation of urban trees. Quantification of ecosystem services in urban spaces

- Valuation of individual trees
- Quantification of forest attributes: inventory of urban trees
- Design and characteristics of an urban tree inventory
- Quantification of service provision: the i-tree Eco platform

PRACTICE: Inventory of ETSEA trees

PRACTICE: Quantification of tree services on the ETSEAFIV campus

UNIT 5. MANAGEMENT OF URBAN FORESTS AND TREES

1. Principles of urban tree management

- Objectives of urban tree management
- Phases of urban tree management

2. Evaluation of planting site and species selection

- Evaluation of planting site: availability of space, soil, and other constraints.
- Plantable space and planting frame.
- Species selection: climate, temperament, environment, services, costs, aesthetic values

3. Planting and maintenance of urban trees

- Types of plants and quality of plant material.
- Planting season
- Planting: Preparation of planting hole. Drainage and aeration. Stabilization of the tree. Tree pits.
- Maintenance of urban trees: initial care, irrigation, pruning, weeding...
- Nature-based solutions

UNIT 6. PLANNING AND RESTORATION OF PERI-URBAN AND URBAN SPACES

1. Degradation of urban areas

- Types of degradation in urban environments
- Do we need to restore?

2. Principles of planning and restoration

- Human-nature interactions in urban environments
- Objectives of urban restoration
- Phases of urban restoration

PRESENTATION OF THE FINAL PROJECT

Field trips:

- Management of an urban green space: the Mitjana park
- Towards the naturalization of cities: the UrbanNat project
- Management of urban trees and green spaces: the example of the city of Lleida.

Methodology

The subject is based on the combination of classes of different types:

- **Theory:** the main theoretical concepts necessary to understand the proposed topics will be introduced
- **Practices:** guided practical sessions in which we will apply the concepts to real data, producing a data

analysis that we will interpret

- **Reading club:** presentation/discussion of some reference works in the world of urban forests
- **Field trips:** we will visit some of the main green spaces in the city of Lleida.
- **Guest lectures:** talks/workshops by some of the country's leading experts on the topics covered
- **Exams:** two partials. The knowledge acquired during the rest of the sessions (including lectures and field trips) will be evaluated

Likewise, students must develop a final project to improve an urban or peri-urban green space, which will consist of:

1. Choose an urban space (from Lleida or your town/city) *
2. Make a diagnosis
3. Make a series of improvement proposals, with one or more objectives
4. Write a document that collects the main elements of the proposal
5. Present it to your classmates.

Development plan

According to the schedule and timetable established by the ETSEA Studies Directorate.

Evaluation

Continuous evaluation

THEORY BLOCK (50%): Two partial exams will be carried out on the dates defined in the subject's planning. To pass the subject, a minimum of 4.0 must be obtained in the theoretical part and in each of the 2 partials. These two exams are recoverable (see "Recovery" section).

PRACTICE BLOCK (20%): Continuous evaluation of the exercises carried out during practical classes or reports related to field trips (20% of the grade). Each practice or field trip will have a specific delivery date. Unjustified delay in delivery will be penalized with a -30% in the grade. Non-attendance at practical classes could result in a penalty on the grade of the corresponding practice. To opt for the subject's average, the minimum grade for this block must be 5.0. This block is recoverable (see "Recovery" section).

FINAL PROJECT (30%): It will consist of writing a final project to improve an urban or peri-urban green space (see Methodology section). Minimum grade 5.0. This project is recoverable (see "Recovery" section).

Block	Weight	Minimum grade
First partial exam (02-Nov-2023)	25%	4
Second partial exam (18-Jan-2024)	25%	4
Practice reports	20%	5
Final project	30%	5

Recovery

Each of the three blocks (theory, practices and final project) are recoverable:

- Theory block: each of the partials can be recovered in the final exam scheduled on the calendar (30-Jan-2024).
- Practice block: if the overall grade of the block is less than 5, the revised practices must be submitted within the recovery period defined by the center, limiting the maximum grade that can be obtained (it will not be higher than 5)
- Final project: in case of failing the final report (grade less than 5), the opportunity to review it will be given, limiting the maximum grade that can be obtained (it will not be higher than 5).

Plagiarism or copying

Law 2/2022 on university coexistence regulates what is considered academic fraud: any premeditated behavior aimed at falsifying the results of an exam, one's own or someone else's, carried out as a requirement to pass a subject or accredit academic performance. The offenses can be serious or very serious. You can consult UdL's in the [University Coexistence Regulations](#). In case of detecting copying or plagiarism:

- If copying or plagiarism is done with fraudulent means, the evaluation activity will be withdrawn (therefore it will be suspended) and a report and evidence will be sent to the coordination of the degree and to the heads of study to initiate a disciplinary file. The applicable sanctions include, among others and depending on the seriousness of the offense, loss of the right to be evaluated in the subject, loss of enrollment for a semester or a course or expulsion for up to three years.
- If it is spontaneous copying between students (behaviors such as talking during an exam, looking at a classmate's exam, etc.), measures will be applied that may lead to withdrawal of activity (therefore, it is suspended). A report will also be made to the coordination of the degree and to the heads of study in case it is considered appropriate to open a disciplinary file.

Alternative evaluation

Students who combine their studies with full-time work and/or for family reconciliation have the right to request alternative evaluation at the beginning of the semester. The alternative evaluation test will consist of delivering the final project (50% of the grade) and taking a final exam (50% of the grade). Both tests are recoverable.

Bibliography

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- Coello J, Guitart L, Cervera T, Rovira J, Piqué M. 2021. *Políticas locales, cambio climático y gestión forestal en bosques periurbanos: una integración necesaria*. CTFC, Solsona. 56 pp.
- FAO (2016) *Guidelines on urban and peri-urban forestry*
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- Llorens, J. (2021) *EL ARBOL EN LA CIUDAD: Guía para su diseño, gestión, mantenimiento y conservación*. Asociación española de arboricultura. Madrid. 472 páginas
- Miller, R. W., Hauer, R. J., Werner, L. P. (2015) *Urban forestry: Planning and managing urban greenspaces*, 3rd edn, Waveland Press, Long Grove, Il.
- Roloff, A. (2016). *Urban Tree Management: For the Sustainable Development of Green Cities*. Wiley, London. 288 páginas
- Trowbridge PJ, Bassuk NL. (2004) *Trees in the Urban Landscape: Site Assessment, Design, and Installation* Wiley. London. 232 páginas.
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