Code: 1777 **Vegetation in the Urban Space**
Degree: 2nd cycle – Landscape Architecture; Forestry and Natural Resources
Stream: Forestry and Natural Resources - Arboriculture and Urban Forestry
Curricular Year: 1st (LA) / **2nd** (FNR) **Semester Course: 1st**
Credits: 6 ECTS **Compulsory**
Language: Portuguese/English
Responsible: Ana Luísa Brito dos Santos de Sousa Soares Ló de Almeida
Other lecturer(s): Nuno Joaquim Costa Cara de Anjo Lecoq
Web Site: http://www.isa.utl.pt/home/node/3749

1. **Contact hours:**
Lecture/Practicals 70 **Others** 14 **Total** 84

2. **Objectives:**

Green Spaces in the urban landscape can minimize many of the environmental impacts of urban growth by improving the chemical and physical environment: moderating urban heat islands; improving urban hydrology and air quality; reducing noise levels and the energy requirements of the city. Trees in the urban context can increase biodiversity and afford numerous other benefits of an aesthetic, psychological and socio-economic nature.
The aim of this course is to learn how to use the plant material in the various areas of the country and in different ecological requirements, as well as acquiring knowledge about the maintenance and management of urban green spaces. The acquaintance of knowledge and abilities by the students will be done by the development of a landscape architecture project (concept and vegetation plans).

3. **Programme:**

1. The importance of ecological urban structure: the role played by vegetation, its assessment and benefits. Models to quantify trees benefits.
2. Roof gardens.
3. Vertical Green walls.
4. Biological swimming pools.
5. Principal flora of Portugal Continental. Areas of occupation, More common trees and shrubs. Climatic characteristics. Its use in landscape architect projects.
6. Hedges: Functions and types. Windbreaks. Factors to observe in the establishment of curtains. plant criteria to use.
7. Slope: definition, stabilization techniques, plants and the erosion control, plant selection.
8. Stabilization and construction Biophysics. Use of plant material. Construction techniques.
9. Trees in Urban Landscape: what functions do plants serve in the urban environment, plant selection, planting and transplanting specification, site preservation and management Transplantation of trees. Remarkable Trees.
10. Lawns and Grassland. Anatomy and morphology of plants. Physiology. Adaptations to the environment and to use. Creating lawns and meadows. Maintenance.
11. Sustainable use of water in green spaces (criteria for the selection of vegetation).
12. Green spaces and cultural Operations. Means and resources needed for the implementation of cultural operations. Maintenance plans.
13. Criteria for planting plans, specifications and costs estimate. Availability of plants in nurseries. Practical application of landscape architecture projects.
14. Plant Health Care (Ana Paula Ramos e Filomena Caetano)
Basic concepts: pest, disease, damage, symptom. How do pests and diseases affect plants in urban landscape? Key-pests of most common ornamental species in urban landscapes in Portugal. Pest management and tree management: integrated pest management, tree care profiles and guiding principles.

4. Bibliography:

Main Bibliography

Asociación Española de Parques y Jardines Públicos, 1999. Método para valoración de árboles y arbustos ornamentales, Norma de Granada revisión 1999. Imprenta Ramos, S. L., Madrid, 71 pp.
VIÑAS, F.N., 1995. El arbol en Jardineria y Paisagismo. Guia de aplicación para España y paises de clima mediterráneo y templado. Ediciones Omega, S.A., Barcelona.
Mailliet, L.; Bourgery, C., 1993. L' Arboriculture Urbaine. Institut pour le Dévelopment Forestier, Paris, 318 pp.
Ferrari, M. Menta, A., Marcon, E.& Montermini. Malattie e parassiti della piante da fiore, ornamentali e forestali. Vols. 1/2. Edagricole, Bologna: 1807 pp.
Harris, R.W.; Clark, J.R. ; Matheny, N.P. 2004. Arboriculture. Integrated Management of Landscape Trees, Shrubs and Vines. 4th ed., Prentice Hall, New Jersey, USA, 580 pp.
Tattar, T.A. 1989. Diseases of Shade Trees. Rev. ed., Academic Press, Inc. San Diego, California, USA, 391 pp.

Other Bibliography

Notes and Bibliography supplied throughout the lessons.

5. Assessment:

Written test + practical works

6. Estimated Workload:	168	Hours
7. Last Update:	21/7/2010	