Code: 1604 **Theory and Methods of Landscape Ecology**
Degree: 1st cycle - Landscape Architecture
Curricular Year: 3rd **Semester Course: 1st**
Credits: 7.5 ECTS **Compulsory**
Language: Portuguese/English
Responsible: Francisco Manuel Cardoso de Castro Rego
Other lecturer(s): Paulo Godinho
Web Site: http://www.isa.utl.pt/home/node/3937

1. Contact hours:
Lectures 42 **Praticals/Laboratory** 42 **Others** 21 **Total** 105

2. Objectives:

The main objective is to have students acquainted with the main concepts of Landscape Ecology and with the most important quantitative methods for measuring landscapes, their elements (points, lines, and patches), and their dynamics.
It is also foreseen that the students will be able, through working examples, to understand in depth the meaning of the computed indices, and to establish the relationships between landscape patterns and processes.

3. Programme:

1. Theory and methods in Landscape Ecology
   The concepts and approaches in Landscape Ecology
   The importance of scale, grain and landscape extent

2. Quantification of the distribution of elements in the landscape.
   Distribution of points
   Characteristics and distribution of linear elements
   Characteristics and distribution of habitat patches in a landscape

3. Ecological theories: percolation, island biogeography, metapopulations

4. Landscape structure.
   Indices of landscape heterogeneity: the Hill series
   Indices of landscape configuration: contagion

5. Landscape function: patterns and processes

6. Landscape dynamics: transition matrices

4. Bibliography:

Main Bibliography

Gergel, S.A., and M.G. Turner (eds.). 2002.Learning Landscape Ecology. A practical guide to concepts and techniques. Springer.
McGarigal, K., and B.J. Marks. 1995. FRAGSTATS: spatial pattern analysis program for quantifying landscape structure. Gen. Tech. Rep. PNW-GTR-351. Portland, Oregon; Department of Agriculture, Forest Service, Pacific Northwes Research Station.

Other Bibliography

Leitão, A.B., Miller, J., Ahern, J., and K. McGarigal. 2006. Measuring Landscapes. A Planner´s Handbook. Island Press.
Turner, M.G., R.H. Gardner, and R.V. O´Neill. 2001. Landscape Ecology in Theory and Practice. Pattern and Process. Springer.

5. Assessment:

The students may obtain admission to examination through the presentation of 75% of the solutions of the worked examples presented in the classroom.
Two tests are given, including solving practical quantitative problems and interpretation questions, and

the students may replace the final examination by the average classification obtained in the two tests, provided that they are admitted to examination.
Final examinations are given to the students that apply for it, as it is established in the general regulations for evaluation at ISA.

6. Estimated Workload:	210	Hours
7. Last Update:	7/7/2010	