

Code: 1315 Spatial Data Analysis**Degree:** 2nd cycle – Mathematics Applied to Biological Sciences**Curricular Year:** 1st/2nd**Semester Course:** 2nd/1st**Credits:** 6 ECTS**Optional****Language:** Portuguese/English**Responsible:** Maria Emília Rodrigues Ferreira Pinto**Other lecturer(s):** -**Web Site:** <http://www.isa.utl.pt/home/node/3899>**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

Identify the main types of spatial data; Understand the main Spatial Analysis techniques, their theoretical basis and practical examples.

3. Programme:

Types of spatial data. Stationarity and isotropy; Spatial dependence. Inferential spatial models. Exploratory spatial data analysis: descriptive statistics; visualization techniques. Geostatistical data: the variogram and the semi-variogram; spatial prediction and kriging. Types of anisotropy. Lattice data: types of spatial variability; spatial neighborhood; global and local spatial auto-correlation. Point patterns: complete spatial randomness; 1st- and 2nd- order properties; intensity and spatial dependence estimators.

4. Bibliography:**Main Bibliography**

Cressie, N. (1993). *Statistics for Spatial Data*. New York: Wiley.

Other Bibliography

Diggle, P.J. (2003), *Statistical Analysis of Spatial Point Patterns*, Oxford University Press.

5. Assessment:

Exam

6. Estimated Workload:

168	Hours
-----	-------

7. Last Update:

15/7/2010
