



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Spatial Statistics M

2122-2-F8204B010

Learning objectives

The course aims at providing students with a set of methodologies to deal with the estimation and prediction of spatial data.

Contents

Exploratory spatial data analysis; analysis of Spatial point pattern; geostatistics; introduction of spatial lattice data.

Detailed program

Spatial point processes: homogeneous and non homogeneous Poisson process. CSR tests. Parametric estimation of the intensity function of an inhomogeneous Poisson process.

Geostatistics: exploratory spatial data analysis; variogram, covariogram and correlogram; isotropy and some isotropic variogram models; variogram estimation: empirical and robust variogram, the kernel estimation, parametric modeling of the variogram function: OLS, WLS, GLS and maximum likelihood estimation; simple, ordinary and universal kriging;

Laboratory sessions in R.

Prerequisites

Elements of inferential statistics, stochastic processes and R programming .

Teaching methods

Class lessons and lab sessions.

Assessment methods

Lab assesment and oral examination .

The overall mark is obtained by averaging the marks obtained in each part.

Textbooks and Reading Materials

O. Schabenberger, C.A. Gotway, 2005, Statistical methods for spatial data analysis Chapman & Hall/CRC.

Additional readings, R-codes, datasets and case studies will be made available through the eLearning web page of the course.

Semester

First term of the first semester.

Teaching language

Italian.
