

UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Spatial Statistics

2223-2-F8204B019-F8204B023M

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

Geostatistics: exploratory spatial data analysis; variogram, covariogam and correlogram; isotropy and some isotropic variogram models; variogram estimation: empirical variogram, 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.
Sustainable Development Goals