UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Generalized Linear Models in Epidemiology and Medicine

2021-3-E4102B059

Learning objectives

To make students capable to analyze and get information out of temporal and spatial data structures, developing both a theoretical comprehenson of the statistical methodologies and a practical ability of treating real data.

Contents

Univariate time series analysis

Multivariate time series analysis

Basics of spatial data analysis

Detailed program

The structure of a univariate time series: trend, seasonality, random component.

Goals of univariate time series analysis: decomposition and forecasting.

Forecasting models for stationary univariate time series: AR, MA, ARMA.

Forecasting and decomposition models for non.stationary time series: ARIMA, UCM, ETS.

Estimation, validation and selection of models for univariate time series.

Models for multivariate time-series.

Representation of spatial and geo-referenced data.

Poisson processes..

Elements of geo-statistical data analysis.

Applications with R.

Prerequisites

There are no formal prerequisites, but basic knwoledge of the following topics is needed: Mathematical Analysis, Linear Algebra, Probability Calculus, Statistical Inference, R programming.

Teaching methods

Frontal lessons and practical sessions (in presence or onine, based on the ecvolution of the COVID epidemic).

Assessment methods

Oral exam.

Textbooks and Reading Materials

Notes provided by the teacher, available online

Semester

Second

Teaching language

Italian