Statistical Methods for Economics
Ph. D in Economics
Department of Economics
Roma Tre University

Syllabus

Statistical Inference: from Data to Models and back *F. Dotto*
Probability Theory:
Basics of Probability Theory, Random Variables, Transformations and Expectations, Multiple Random Variables. Examples with the R statistical software
Statistical Inference:
Statistical Models for discrete random variables, Statistical Models for discrete random variables, Statistical Models for Continuous Random Variables; Delta Method.
Likelihood Function MLE estimators, Asymptotic properties of Estimators, Confidence Intervals, Test.
R programming for statistical inference
Basics for R programming: vectors, matrices, data frame, lists, owned defined functions.
Basic R functions
R for statistical inference: computing confidence intervals with R and statistical tests.
Basics of data simulation and parallel computing.
Optimizing a function in R: define and optimize the likelihood function

Suggested Books
Agresti A., Kateri M. (2022), *Foundations of Statistics for Data Scientists, With R and Python*, Routledge Taylor&Francis Group.
Casella G., Berger R. L. (2002), *Statistical Inference*, 2nd Edition, Duxbury Advanced Series in statistics and decision sciences.
Dalgaard P. (2008), *Introductory Statistics with R*, Springer