



PhD SCHOOL IN STATISTICS  
Department of Statistical Sciences

## Specialist Course

XXIX cycle

# SAMPLING THEORY

**Pier Francesco Perri**

*Università della Calabria*

**Aula Cucconi**

**November 2014**

### Schedule

<b>Monday</b>	<b>November 24</b>	<b>10.00 – 12.00</b>	<b>15.00 – 17.00</b>
<b>Tuesday</b>	<b>November 25</b>	<b>10.00 – 12.00</b>	<b>15.00 – 17.00</b>
<b>Wednesday</b>	<b>November 26</b>	<b>9.00 – 11.00</b>	

### Program

<http://www.stat.unipd.it/fare-ricerca/corsi2014>

# Sampling Theory

**Pier Francesco Perri**

*Università della Calabria*

## Course Description

The short course aims at providing to the students basic notions on sampling from finite population. The problem of the estimation of the population mean will be discussed starting from sampling with varying probabilities and emphasis will be also given to the use of auxiliary variables at the estimation stage through the regression method. Some recent contributions will be also discussed.

## Objectives

- First and second order inclusion probabilities
- Sampling with varying probabilities and some selection schemes
- Estimation of the population mean through Horvitz-Thompson estimator
- Cluster sampling and two stage sampling
- Ratio and regression methods of estimation. The optimality of the regression estimator
- The randomized response technique

## Bibliography

Cicchitelli G., Herzal A., Montanari G.E. (1992). *Il Campionamento Statistico*. Il Mulino, Bologna

Cochran, W.G. (1977). *Sampling Techniques*. John Wiley & Sons, New York

Conti P.L., Marrella D. (2012). *Campionamento da Popolazioni Finite. Il Disegno Campionario*. Springer, Milano

Diana G., Perri P.F. (2010). Improved estimators of the population mean for missing data. *Communications in Statistics – Theory and Methods*, 39, 3245-3251

Diana G., Perri P.F. (2007). Estimation of finite population mean using multi-auxiliary information. *Metron*, LXV, 99-112

Diana G., Giordan. M., Perri P.F. (2011). An improved class of estimators for the population mean. *Statistical Methods and Applications*, 20, 123-140

Särndal, C.-E., Swensson, B., Wretman, J. (1992). *Model Assisted Survey Sampling*. Springer, Berlin