Syllabus Biostatistics and Information Sciences and Biostatistics (111, 112, 113)

ISB	Biostatistics and Information Systems
Module coordinator	E. COUNIL & N. LE MEUR Professor, EHESP emilie.counil@ehesp.fr & Nolwenn.LeMeur@ehesp.fr
Speakers	Nolwenn Le Meur, Professor, EHESP, Pascal Crépey, Professor, EHESP, Emmanuelle Leray, Professor, EHESP,
Dates	October 2017: 03, 04, 06 (111) November 2017: 07, 08, 10 (111) December 2017: 12, 13, 15 (112) December 2017: 19, 20, 21 (112) February 2018: 06, 07, 09 (113)
Credits/ECTS	9 ECTS
Duration	90 hours (lectures, labs, and group work)
Module Description	The main objective of this biostatistics program is to give methodological key to comprehend a public health problem whatever the topics. More precisely, this course covers the basic tools for the analysis, and presentation of data. Each methodological course is followed by an application including exercises, cases study, articles/report discussion and data analysis on computers. Those applications cover different public health topics. The data analysis is carried out using R, STATA or Excel.
Prerequisites	None
Course learning objectives	Students who successfully complete this course will be able to (1) To discuss and critic reports and articles applying biostatistics to epidemiology (2) To work with scientific experts including biostatisticians, epidemiologists and public health professionals (3) To conduct preliminary/simple statistical analysis and to plan more sophisticated future statistical analyses

TU Structure
(details of sessions
title/speaker/date/duration)
	Main instructor: Nolwenn Le Meur
	1. Basics biostatistics
	    a. Descriptive analysis
	    b. Confidence interval
	    c. Alpha and beta risk
	    d. Chi2 test, Fisher test, t-test, Wilcoxon test (rank test)
	    e. Normality test
	2. An introduction to linear models and advanced statistics
	    a. Scatter plot
	    b. Variance analysis
	    c. Correlation
	    d. Correlation coefficient

	e. Simple linear model / regression coefficient f. Multivariate analysis g. Dummy variable h. Residual analysis i. Linear model building j. Introduction to spatial analysis
Learning Objectives	☐ Describe the study population using the most appropriate indicators ☐ Formulate statistical hypothesis according to the objective aimed by the study ☐ Apply the statistical test using the R or STATA software and to interpret the results ☐ Summarize statistical results and to write the material, methods and result sections of a report/article ☐ Extract the most useful/important information from scientific articles ☐ Interpret a scatter plot ☐ Measure the strength of the association between two quantitative or qualitative variables and interpret it ☐ Build a linear model ☐ Follow the step by step procedure to obtain the best model and interpret it ☐ Understand and interpret the results of a multivariate model ☐ Assess the validity of a linear model ☐ Discover other fields of bio-statistics ☐ Criticize the statistics of simple epidemiological studies
Course requirement	Read selected textbook chapters and papers before the lectures; involvement in group work; attendance to all sessions (epidemiology & biostatistics)
Training methods	Course, lecture and practice on R and STATA software
Grading and assessment	Group mark: 10% critical reading, 30% research project (common with epi 10[567]) Individual mark: 10% 1st test, 2nd test 50% final exam on table (1,5 hour).
Location	EHESP, 20 avenue George Sand – 93 210 La Plaine Saint-Denis