INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT BIOSCIENCES
INSA Campus LyonTech - 11 Avenue Jean Capelle
Batiment Louis Pasteur - 69621 VILLEURBANNE
Phone 0472436448
E-mail : bs-secretariat@insa-lyon.fr

Mathematics and Modeling

Biostatistics 1: Usual Confidence Intervals and Parametric Tests

IDENTIFICATION

CODE : BS-3-S1-EC-COSTAT1
ECTS : 3.0

HOURS

Lectures :	12.0 h
Seminars :	23.0 h
Laboratory :	0.0 h
Project :	0.0 h
Teacher-student contact :	35.0 h
Personal work :	40.0 h
Total :	75.0 h

ASSESSMENT METHOD

2 x 1h

TEACHING AIDS

Photocopies of documents. On line PDF et PPT documents. Specialized softwares and web sites

TEACHING LANGUAGE

French

CONTACT

MME AUBIN Samuela
samuela.leoni@insa-lyon.fr
M. MEYER Sam
sam.meyer@insa-lyon.fr

AIMS

Being capable of analyzing data resulting from different types of experiments and to model experimental situations to propose effective strategies. Be capable of adapting itself to situations and varied domains and of taking into account the constraints of quality and control.
This course has to supply the statistical indispensable basic tools to structure, analyze and model simple data. He also has to allow to conceive experimental plans and to acquire the concepts and the general methods allowing to adapt itself to the diverse situations met in Life Sciences and in the industry. Simulations on microcomputer allow to show the laws of the statistics. The lesson leans on the consultation of web sites and specific softwares.

CONTENT

- Probabilities (elementary, conditional, ..).
- Random variables and vectors: definitions, properties, moments, micro-computer simulations.
- The main discreet and continuous laws and their inter-relations
- Law of large numbers and central limit theorem.
- Populations and samples. Sampling laws.
- Estimation, estimators and methods: point and confidence interval estimation.
- General information on hypothesis tests, likelihood of hypothesis.
- Main usual parametric tests. Comparison of variances, means, proportions. Contingency tables. Normality tests. Testing of outliers.
- Power of a simple experiment and determination of the number of measurements to be carried out. - Introduction to the linear model.
- Introduction to R software for statistics

BIBLIOGRAPHY

1 - Statistique théorique et appliquée (vol. 1 et 2) - P. Dagnelie - De Boeck Université - 1998
2 - Statistical theory and methodology - K.A. Brownlee - Wiley and Sons. New York - 1967
3 - Biostatistical analysis - J.H. ZAR - Prentice-Hall - 1998

PRE-REQUISITE

Bac + 2 level in mathematics