FARM2147 Statistical data processing

[15h+15h exercises] 2 credits

This course is taught in the 1st semester

Teacher(s): Jean Cumps
Language: French
Level: Second cycle

Aims

This course is designed to introduce the students to the statistical and methodological issues for research or industrial applications (quality control, validation process) and to avoid the common pitfalls in data analysis.

Main themes

The objective of this course is to give a basic knowledge in the statistical data processing related with analytical chemistry. The course also deals with how computer software, in particular JMP (SAS), XLSTAT and EXCEL can be used to present and analyze data. This course is connected with analytical practical exercises (FARM 2143) and integrated practical exercises (FARM 2205).

Content and teaching methods

¾ Introduction to the statistical methodology : (theoretical course: 15h)
o Extract and organize electronically stored data
o Produce useful graphical and numerical summaries
o Univariate statistic in descriptive aspect (median, standard deviation, variance, interval of confidence) and validation aspect (precision, accuracy, test on normality of distribution, discordance tests on outliers)
o Significance tests: type 1 and type 2 errors
o Bivariate statistic in descriptive aspect and validation aspect: Bravais and Spearman correlations, linear regression, calculation of a concentration with limit of detection and quantification.
¾ Exercises with statistical software (EXCEL, XLSTAT, JMP) (practical seminaries: 15h)
¾ Use of an intranet site TPAO to illustrate the course (slides, javascripts, illustrations, summary) and the exercises (exercises, solutions to exercises, tables of statistics).
¾ Connections with practical exercises of analytical chemistry laboratories.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequesites: mathematical notions
Evaluation based on the treatment or the discussion of examples issued from the scientific literature in the medical or pharmaceutical field.
Staff: 1 professor and 1 assistant/20 students for the practical exercises.
Teaching aided with computer, practical exercises with statistical software JMP and XLSTAT.

Programmes in which this activity is taught

ESP3DS	Diplôme d'études spécialisées en santé publique
ESP3DS/HY	Diplôme d'études spécialisées en santé publique (hygiène et sécurité du travail)
ESP3DS/ST	Diplôme d'études spécialisées en santé publique (santé au travail)

Other credits in programs

FARM21	Première année du grade de pharmacien	(2 credits)	Mandatory