TCSS5AE STATISTICS

TCSS5AE Statistics for Decision Making and Forecasting	Duration : 30 heures	ECTS Credits : 3.5	Semester : S5

Person(s) in charge :

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Keywords : Inference, Probability, Risk, Decision, Estimation, Control, Normal distribution, Student, Chi2, Snédécor, Significance test, Linear regression analysis, ANOVA.

Prerequisites : Algebra and Analysis at a higher mathematics level (or undergraduate level scientific studies)

Objective : Show how Statistics allow the control of complexity and aleatory

Program and Content :

The course presents basic methods of inferential statistics, which allows the quarrying of general knowledge on populations from extracted samples. Its mastery permits to follow with sucess advanced analysis and decision-making courses. The course consists of 9 lab works and 1 written test. A handout is given at the beginning of the course and complements are available on the website of the class.

- Probability and random variables
- The Normal Law
- Statistical control
- Statistical estimation
- Statistical comparisons
- Facts and models
- Linear regression
- Statistical experimentation
- Introduction to data analysis, data mining and big-data.

Abilities:

Levels	Description and operational verbs
Know	Basic notions of probabilty and random variable, the Normal, Student, Chi2 Snedeco Laws and their applications.
Understand	Principles of statistical estimation and control, significance tests, union technics, analysis and regression of variance.
Apply	Be able to apply these technics to data sets which are properly presented to be processed
Analyze	Know how to organize a data set to adapt a statistical process, how to choose the most suitable method, and know how to interpret the results to draw conclusions.
Summarise	Be able to suggest an analytical method of a problem based on the acquisition of data to determine, and apply one or more methods seen in class.
Assess	Be able to take a critical look at the conclusions of an statistical analysis and when appropriate, question them with scientific arguments.

Evaluation :

☑ Written Test	☑ Continuous Control	☐ Oral report	☐ Project	☐ Written report