Inferential Statistics

SCHOOL
Faculty of Law, Economics and Business Studies (DEG)

CAMPUS
Saint-Serge

LEVEL
2nd year Bachelor's degree

OPEN TO EXCHANGE STUDENTS
Yes

SEMESTER
Spring (S2)

- **Degree course:** Bachelor Studies in Economics et Management
- **Teaching unit:** UE24D
- **Course language:** French
- **Duration (hours):** 14
- **ECTS:** 1
- **Teacher(s):** Enareta KURTBEGU

Assessment:
- ☐ Continuous assessment
- ☒ Final exam

Teaching methods:

☒ Lecture course	14 hours	☐ Case study	
☐ Tutorial course	hours	☐ Project	
☐ Practical work	hours		

COURSE DESCRİPTİON

This course will introduce students to inferential statistics. It is an essential course that relates notions of "Statistics and Probability Theory" to the applications of "Econometrics Theory". The distinction between the sampling and the estimation process is presented. The properties of point estimates (biasness, precision, convergence) and the confidence interval estimates are introduced for the mean, the standard deviation and the proportion. Finally, the hypothesis test will allow students to use the decision rules and conclude whether to "reject" or "not reject" the null hypothesis. Multiple cases are described with concrete applications.

Chapter 0 : Revising basic notions
- Normal/Student/Khi2/Fisher distributions -- Notions of convergence -- Central limit theorem

Chapter 1 : Sampling (Mean/standard deviation/proportions)
- Moments of sample statistics -- Distribution of sample statistics -- "Betting" interval (confidence interval for sampling)

Chapter 2 : Estimations (Mean/standard deviation/Proportion)
- Characteristics of point estimates -- Confidence interval estimates

Chapter 3 : Testing hypothesis
- one sample test (mean; variance) -- two sample/paired difference test(mean; variance) -- Independence test of Khi2

OBJECTİVES

1) understanding of the concepts of sampling distribution, statistical reliability and hypothesis testing, as well as the principles and procedures of the various tests of significance.

2) being able to define which test to use based on the given situation.

3) being able to read and interpret the results of a statistical test.

Keywords: "betting" interval (confidence interval for sampling), confidence interval, unbiased estimator, precise estimator, type I error, type II error, critical probability value(p-value), significance level of test, critical region, z-test, ttest, Khi2 test.

PREREQUİSİTES

Statistics and Probability Theory course (notions: Common Probability Distributions, Central Limit Theorem)

SELECTİVE BİBLİOGRAPHY

Statistics for Management and Economics. Abbreviated, Ninth Edition. Gerald Keller. VP/Editorial Director: Jack W. Calhoun. Publisher: Joe Sabatino.

ADDİTİONAL İNFORMATİON

This class is taught in French with an English module is offered online. The slides are written in English.
We also offer explanations in English through several integrated videos. Tutorials are not programmed for this course, but we offer exercises and the correspoding corrections in English. Simple applied examples in Microsoft Excel will be introduced. On top of the assignments proposed in English, a supplementary online module allows you to exercise with several examples using the "learning by doing" technique.

The programmed office hours (45min/week) allow students to ask questions regarding the lecture of the exercises on a regular basis. Students have the possibility of writing the final exam in English. By the end of the semester, an official document will be distributed to those who have written the final exam and followed this class in English.