

Probabilités, inférence statistique et recherche opérationnelle

Lecturers

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Course mnemonic

STAT-S202

ECTS credits

10 credits

Language(s) of instruction

French

Course period

Academic year

Campus

Solbosch

Course content

Probability theory (Q1):

- Introduction explaining the link between probability theory and statistical inference
- Probability measures
- Random variables
- Random vectors
- Limit theorems, sampling distributions, Fisher's lemma

Statistical inference (Q2):

- Introduction to statistical inference
- Point estimation, interval estimation
- Hypothesis testing
- Analysis of variance
- Linear regression models

Operational research (Q2)

Objectives (and/or specific learning outcomes)

After this course, students will be able to:

- Understand the mechanisms that justify resorting to some statistical/econometric method
- Use statistical tools to guide the decision process
- Put their knowledge at work in daily-life situations.

Pre-requisites and co-requisites

Pre-requisites courses

STAT-S101 | Statistique descriptive et éléments de probabilités | 5 crédits and STAT-S102 | Statistique descriptive et éléments de probabilités | 5 crédits

Courses having this one as pre-requisit

ECON-S302 | Initiation à la recherche en économie | 5 crédits, GEST-S301 | Théorie financière | 5 crédits, GEST-S302 | Finance de marché | 5 crédits, GEST-S307 | Theory of innovation and entrepreneurship (Solvay Chair of Innovation) | 5 crédits, STAT-D307 | Méthodes d'enquête et de sondage | 5 crédits, STAT-S301 | Introduction to econometrics | 5 crédits and STAT-S308 | Introduction à l'économétrie | 5 crédits

Teaching method and learning activities

- Theory : standard lectures. The slides used for those lectures are available on the université virtuelle.
- Exercices : in small groups. The exercices are available on the université virtuelle. Solutions will also be made available there.

References, bibliography and recommended reading

Main reference:

Dehon, C., Hallin, M., Paindaveine, D., Thomas-Agnan, C., et Vermandele, C. (2020). Probabilités et inférence statistique. Editions de l'Université de Bruxelles, Editions Ellipses.

Further references:

Tijms, H. (2007). Understanding Probability. Chance Rules in Everyday Life. Cambridge University Press, New York.

Dehon, C., Dreesbeke J.-J. et Vermandele, C. (2008). Eléments de statistique, Bruxelles, Editions de L'Université de Bruxelles.

Mélard, G (1990). Méthodes de Prévision à Court Terme, Editions de l'Université de Bruxelles.

Anderson D., Sweeney D., et Williams T. (2001). Statistiques pour l'économie et la gestion, Bruxelles, De Boeck Université.

Dagnelie P. (1998). Statistique théorique et appliquée. Tome 2: Inférence statistique à une et à deux dimensions, Bruxelles, De Boeck Université.

Course notes

Syllabus

Other information

Place(s) of teaching

Solbosch

Contact(s)

Catherine Dehon

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Evaluation method(s)

written examination

Evaluation method(s) (additional information)

The exam on the 1st part of the course (probability theory) is organized in January. It consists of a theoretical part and an exercise part. The list of formulae used during the exercise sessions will be provided at the exam. No documents are allowed.

The exam on the 2nd part of the course (statistical inference) is organized in June. It consists of a theoretical part and an exercise part. The list of formulae used during the exercise sessions will be provided at the exam. No documents are allowed.

In the 2nd session, the exam on the first part and the exam on the second part are organized on the same day.

(Sanitary conditions might require changes in the organization of the evaluations)

Determination of the mark (including the weighting of partial marks)

The final grade for the first session is the average of the grades obtained in January and in June.

In case a student has to take part in the second session in August, he/she will be allowed to keep the grade from January or June as soon as it is larger than or equal to 10 (out of 20). Grades below 10 are cancelled. If a student decides to retake an exam, the new grade will replace the old one in all cases. The final grade for the second session is the average of the grades of the first part (grade from January or grade from August) and of the second part (grade from June or grade from August).

(Sanitary conditions might require changes in the organization of the evaluations)

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the Solvay Brussels School of Economics and Management

BA-ECON | Bachelor in Economics : General | unit 2 and BA-INGE | Bachelor in Business engineering | unit 2