

Faculty of Biological, Agronomic and Environmental Engineering

BIRE2101 Statistical analysis of spatial and temporal data

[22.5h+15h exercises] 3 credits

This course is taught in the 2nd semester

Teacher(s): Patrick Bogaert
Language: French
Level: Second cycle

Aims

This course will complete the basic notions already presented during the courses BIR 1203 - Probability and Statistics (I) and BIR 1304 - Probability and Statistics (II). The student will be able to analyze data that are correlated through space and time, these data being frequently encountered in the agro-environmental field. The course will put the emphasis on the link between the general theory and the practical specificities of environmental data. It should allow the student to model such kind of processes and to use them in a mapping or forecasting context

Main themes

Notions of spatial/temporal dependency and its effect on statistical estimation. Quantification and modelling of dependencies through space and time. Random fields theory. Prediction and simulation of correlated data. Mapping and forecasting methods.

Content and teaching methods

This course will complete the basic notions already presented during the courses BIR 1203 - Probability and Statistics (I) and BIR 1304 - Probability and Statistics (II). The student will be able to analyze data that are correlated through space and time, these data being frequently encountered in the agro-environmental field. The course will put the emphasis on the link between the general theory and the practical specificities of environmental data. It should allow the student to model such kind of processes and to use them in a mapping or forecasting context. Practical exercises using Matlab software will take place in the computer room.

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

This course follows the BIR 1203 and BIR 1304 courses. There will be a written examination. Support is a set of slides and additional notes.

Other credits in programs

BIR22/0A	Deuxième année du programme conduisant au grade de bio-ingénieur: Sciences agronomiques (Technologies et gestion de l'information)	(3 credits)	Mandatory
BIR22/0C	Deuxième année du programme conduisant au grade de bio-ingénieur: chimie et bio-industries (Technologies & gestion de l'information)	(3 credits)	
BIR22/0E	Deuxième année du programme conduisant au grade de bio-ingénieur: Sciences et technologies de l'environnement (Technologies et gestion de l'information)	(3 credits)	Mandatory
BIR22/4E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Technologies environnementales: eau, sol, air)	(3 credits)	Mandatory
BIR22/5E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Aménagement du territoire)	(3 credits)	Mandatory
BIR22/6E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Nature, eau & forets)	(3 credits)	Mandatory
BIR22/7E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Ressources en eau et en sol)	(3 credits)	Mandatory
STAT21MS/ST	Première année du master en statistique, orientation générale, à finalité spécialisée (sciences et technologie)	(3 credits)	
STAT22MS/ST	Deuxième année du master en statistique, orientation générale, à finalité spécialisée (sciences et technologie)	(3 credits)	
STAT3DA/P	diplôme d'études approfondies en statistique (pratique de la statistique)	(3 credits)	