



MATH2440 Statistical analysis

[30h+22.5h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Ingrid Van Keilegom, Rainer von Sachs
Language: French
Level: Second cycle

Aims

Second cycle course of general education in mathematical statistics.

Main themes

General presentation of the statistical model. Sufficient statistic and exponential family.

Theory of point estimation: use for sufficiency and completeness.

Construction of estimators: maximum likelihood method, asymptotic equivalence.

Construction of confidence regions: exact and asymptotic regions.

Theory of hypothesis tests: Neyman-Pearson lemma, likelihood ratio tests, Rao statistic, Wald statistic. Applications to the exponential family models,

and to problems encountered in the first cycle course.

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

Support:

- Von Sachs R., Analyse statistique, syllabus of MATH 2440, Institut de statistique, UCL, Louvain-la-Neuve, 2000.
- Montfort A., Cours de statistique mathématique, Economica, Paris, 1982.
- Lehmann E.L., Casella G., Theory of point estimation, 2nd edition, Springer, 1988.
- Lehmann E.L., Testing statistical hypothesis, 2nd edition, Springer, New York, 1997.

Other credits in programs

MATH22/G	Deuxième licence en sciences mathématiques	(5 credits)	
STAT21MS/MM	Première année du master en statistique, orientation générale, à finalité spécialisée (méthodes mathématiques)	(5 credits)	Mandatory
STAT22MS/MM	Deuxième année du master en statistique, orientation générale, à finalité spécialisée (méthodes mathématiques)	(5 credits)	Mandatory
STAT3DA/E	diplôme d'études approfondies en statistique (statistique et économétrie)	(5 credits)	Mandatory
STAT3DA/M	Diplôme d'études approfondies en statistique (méthodologie de la statistique)	(5 credits)	Mandatory