- Faculté des sciences
- www.unine.ch/sciences

Multivariate analysis (3ST2004)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en statistique	**Cours: 2 ph**	**Voir ci-dessous**	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Automne

Equipe enseignante

Prof. Yves Tillé
Institut de statistique,
Av. de Bellevaux 51
CH - 2000 Neuchâtel

Contenu

1. Brief review of basics of statistics and matrix algebra.
2. Exploratory Multivariate Analysis: Principal axes techniques (singular value decomposition, principal component analysis, simple and multiple correspondence analysis, discriminant analysis).
3. Exploratory Multivariate Analysis: Clustering techniques (hierarchical clustering, k-means and related methods, self organizing maps).
4. Links between these exploratory tools and some classical model based methods such as generalised linear models, discriminant analysis, and regression trees.
Eventually, since hand calculations are virtually impossible in this field, illustrations will be performed with the aid of the software R.

Forme de l'évaluation

2 hours written exam at any exams session. Authorized document - Y. Tillé, Multivariate Analysis (2020) Course notes. without annotations.

Documentation

- Y. Tillé, Multivariate Analysis (2020) Course notes.

- L. Lebart, A. Morineau, K. Warwick (1984) Multivariate Descriptive Statistical Analysis, Wiley (Wiley Series in Probability and Mathematical Statistics), New York.

- L. Lebart, M. Piron, A. Morineau (2006) Statistique Exploratoire Multidimensionnelle, Dunod, 4ème édition, 480p (in French).

- K. V. Mardia, J. T. Kent, J. M. Bibby (1980) Multivariate Analysis London; Academic Press (Probability and mathematical statistics), New York.

Pré-requis

basics in statistics and linear algebra

Forme de l'enseignement

- 3 ECTS credits
- Compulsory course for master in statistics
- Autumn Semester