

4.0 credits

15.0 h + 5.0 h

2q

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| Teacher(s) : | Bugli Céline ; |
| Language : | Français |
| Place of the course | Louvain-la-Neuve |
| Main themes : | <ul style="list-style-type: none"> - Multivariate random variables, conditional expectation and linear approximation - Multivariate normal vector - Multivariate sampling and sampling distributions in relation to the normal law (Wishart, Hotelling) - General principles of inference (maximum likelihood and likelihood ratio) - Standard tests for multivariate normal populations (test for a mean, comparison of means, test with linear constraints, test for covariance matrices, ...). |
| Aims : | <p>By the end of this course, the student should be familiar with the basic concepts for modelling multivariate random experiments and should be able to develop the basic techniques of statistical inference (estimation and hypothesis testing) in these models. In particular, he/she should know the properties of multivariate normal distributions and of other associated distributions, needed for solving inference problems in multivariate populations.</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p> |
| Content : | <p>Content :</p> <ul style="list-style-type: none"> - Random vectors : joint, marginal and conditional distributions, independence, conditional expectation and covariance, best linear approximation. - Limit theorems - Normal vector : general properties and conditional properties - Estimation for a multivariate normal distribution and sampling distribution of the estimators. - Hypothesis testing for multivariate normal distributions : linear hypothesis in the marginal and conditional model, confidence intervals. <p>Method :</p> <p>The course consists of lectures, meetings exercises and an individual project on computer.</p> |
| Other infos : | <p>Prerequisites</p> <p>An elementary course on probability and statistics</p> <p>Evaluation</p> <p>The evaluation consists of :</p> <ul style="list-style-type: none"> - an oral exam - a written exam (exercises) - a project on computer <p>Teaching materials</p> <p>The course notes will be distributed during the first lecture.</p> <p>Professor</p> <p>Ingrid Van Keilegom, tel. : 010/47 43 30, e-mail : vankeilegom@stat.ucl.ac.be</p> <p>References :</p> <ul style="list-style-type: none"> - Härdle, W. and L. Simar (2003), Applied Multivariate Statistical Analysis, manuscript, Humboldt-Universität zu Berlin, Berlin, to appear at Springer-Verlag, Berlin. - Johnson, R.A. and D.W. Wichern (1988), Applied Multivariate Statistical Analysis, Prentice Hall, London. - Mardia, K.V., Kent, J.T. and J.M. Bibby (1979), Multivariate Analysis, Academic Press, Duluth, London. |

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| <p>Cycle and year of study :</p> | <ul style="list-style-type: none"> > Bachelor in Mathematics > Bachelor in Information and Communication > Bachelor in Philosophy > Bachelor in Pharmacy > Bachelor in Engineering : Architecture > Bachelor in Computer Science > Bachelor in Psychology and Education: General > Bachelor in Economics and Management > Bachelor in Motor skills : General > Bachelor in Human and Social Sciences > Bachelor in Sociology and Anthropology > Bachelor in Political Sciences: General > Bachelor in Biomedicine > Bachelor in Engineering > Bachelor in Religious Studies > Certificat universitaire en statistique > Master [120] in Statistics: General |
| <p>Faculty or entity in charge:</p> | <p>LSBA</p> |