UCLouvain

# linge1113

*2017*

# Probability

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| 4 credits | 30.0 h + 15.0 h | Q2 |

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| Teacher(s) | Segers Johan ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Main themes | The course covers traditional aspects of the probability theory but examines the concepts from the point of view of their use in statistical analysis. The probability model is described, as are the basic properties of probabilities. Then experiments are considered where the feature of interest can be modelled by a random variable (discreet, continuous, uni- and multivariate). The analysis of the random variable functions is presented and justified by its use in the analysis of statistic sampling distributions. The importance of the Central Limit Theorem is also highlighted. |
| Aims | 1 The course introduces students to the method of probabilistic reasoning and statistical analysis. These methods are useful in all fields of science which make use of random and/or experimental data (human, technical, medical and natural sciences). Particular emphasis will be laid on equipping students with the tools for studying Management Science and Economic and Management Science. By the end of the course, students should be able to understand and model the random aspects of certain simple experiments and calculate the probabilities of events of interest. They should also be able to apply these models to more complex real situations and to describe these phenomena by means of suitable random variables (uni - and multivariate). Students will also be shown how to study the properties of random variable functions and how these concepts lend themselves to application within the framework of the statistical analysis (sampling).<br>- - - -<br>*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".* |
| Content | Contents: Introduction to statistics, the probabilistic model, discreet random variables, continuous random variables, multivariate variables, random variable functions, sampling and Central Limit Theorem, normal approximation to the binomial The course comprises: - lectures (the teacher introduces the concepts through a particular concrete application and abstracts from that), - practical exercise sessions (the teacher gives students applications/problems and suggests ways of solving them). Active student participation through reading and independent problem solving |
| Other infos | Course materials : Wackerly, D., Mendenhal, W. and R. Scheaffer (2002), Mathematical Statistics with Applications, Duxbury Press, New York, 6th edition (chapitres 1 à 7) |
| Faculty or entity in charge | ESPO |

## Programmes containing this learning unit (UE)

| Program title | Acronym | Credits | Prerequisite | Aims |
|---|---|---|---|---|
| Bachelor in Business Engineering | INGE1BA | 4 | | |
| Master [120] in data Science: Statistic | DATS2M | 4 | | |
| Minor in Statistics and data sciences | LSTAT100I | 4 | | |