

## Content

| Course Code | Course Name               | Semester | Theory | Practice | Lab | Credit | ECTS |
|-------------|---------------------------|----------|--------|----------|-----|--------|------|
| ECON207     | Mathematical Statistics I | 3        | 4      | 0        | 0   | 4      | 6    |

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|------------------------|--|
| Prerequisites          |  |
| Admission Requirements |  |

|                         |  |
|-------------------------|--|
| Language of Instruction | French   |
| Course Type             | Compulsory   |
| Course Level            | Bachelor Degree  |
| Objective               | Introduction to probability theory   |
| Content                 | Counting techniques, conditional probability, univariate and multivariate continuous and discrete random variables, functions of random variables, expected value and variance, Tchebychev Inequality, Law of Large Numbers, Central Limit Theorem |
| References              | Schay, G. (2007), Introduction to probability with statistical application.<br>Fouratié J. ve Laslier, J.F. (1987), Probabilités et statistiques.  |

## Theory Topics

| Week | Weekly Contents   |
|------|---|
| 1    | Introduction: probability, subjective and objective probability concepts  |
| 2    | Experiments and events and counting techniques                            |
| 3    | Probability of events: subsets, partitions and population                 |
| 4    | Conditional probability and Bayes Theorem                                 |
| 5    | Univariate discrete and continuous random variables                       |
| 6    | Mid-term  |
| 7    | Bivariate discrete random variables                                       |
| 8    | Bivariate continuous random variables                                     |
| 9    | Marginal and conditional distributions and independence                   |
| 10   | Fonctions of discrete random variables                                    |
| 11   | Fonctions of continuous random variables                                  |
| 12   | Expected value and variance   |
| 13   | Expected value and variance of functions of random variables              |
| 14   | Tchebychev Inequality, Law of Large Numbers and the Central Limit Theorem |