Otto-Friedrich-Universität Bamberg
Lehrstuhl für Statistik und Ökonometrie
Prof. Dr. Susanne Rässler

Statistical Methods II (Methoden der Statistik II)

Organization:

Course type:	Lecture + Tutorial
Semester hours per week:	3 + 1
Prerequisites:	Statistical Methods I (Methoden der Statistik I)
Turn:	Every turn (summer term + winter term)
Exam type:	Written exam (90 min)
ECTS:	6 (variations possible)

Learning objectives:

The students of "Statistical Methods II" are imparted a basic understanding of rules and principles of the theory of probability. They are enabled by means of inductive statistics to draw conclusions from a sample to the population, to test hypothesis and to calculate simple model correlations.

Course description:

In the first part, the course "Statistical Methods II" deals with the basic principles of the theory of probability. Thereby the focus is on the description of random processes by means of parametric random variables. In addition basic principles, particularly the law of large numbers, as well as the central limit theorem are taught.

In the second part of the course, methods of inductive statistics are prioritized. They permit to draw conclusions from a sample to the population. The main emphasis is put on the methods of point and interval estimation as well as on fundamental hypothesis testing. Finally by the linear regression, a method for modelling of simple model correlations is introduced.

Besides the implementation, especially the prerequisites for the applicability of a method as well as the meaningful interpretation of results are discussed. Thereby, the focus of the lecture is on the theoretical derivation, while the own calculation of measures as well as their interpretation are centered in the tutorial.

Content overview:

1. Applied probability theory
    1.1. Basic principles of probability theory
    1.2. Discrete random variables and their distributions
    1.3. Parametric distribution families for discrete random variables
    1.4. Continuous random variables and their distributions
    1.5. Parametric distribution families for continuous random variables
    1.6. Bivariate random variables and their distributions
2. Inductive statistics
    2.1. Samples and sample functions
    2.2. Estimation of parameters
    2.3. Confidence intervals
    2.4. Hypothesis testing
    2.5. Non-parametric tests
    2.6. Linear regression model