

# Guide in Methodology of Teaching Applied Statistics

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The document has been prepared to cover various aspect of teaching applied statistics – from general and conceptual to purely practical. It is a joined work of 12 authors, all of them experienced in mathematical statistics, managed by the editorial board consisting of 4 experts from the project coordinating institution.

The contribution **Teaching statistical concepts with simulated data** by *Andrej Blejec* clarifies the general principles of using statistical data that a teacher should be aware of – mainly the different roles of real and simulated data in education.

Practical experience from teaching is the core of the section **Constructing multiple choice tests to check basic knowledge of statistics** by *Vesna Jevremović*. It deals with the students' work of preparing tests to check the knowledge acquired in a statistical course.

A lot of interest in the Guide has been devoted to sampling. **Census or sampling?** is the title of a work by *Sanja Rapajić*. Here the advantages and disadvantages of the mentioned research methods are discussed from the point of view of minimizing errors. The problems of sampling are presented also in the contribution **Sampling – with or without probability?** by *Sanja Konjik*. The third paper devoted to sampling is, this time studying sampling problems from very practical point of view, the section **sample size determination** by *Dušan Rakić*.

The Delphi method - a method of achieving consensus within the group of experts is discussed in the contribution **The methodology of developing questionnaires using Delphi method in statistics courses** by *Mirko Savić*. Its theoretical principles are provided as well as the method of its practical implementation.

The question of suitable mathematical background for statistics is important and frequently discussed. The paper **How to teach mathematics to students of applied statistics** brings a valuable insight of its author, *Branimir Šešelja*, an

experienced mathematician also teaching students of applied statistics. The focus is given to subjects of Linear Algebra and Calculus.

Similar problems as in the previous section are studied in the contribution **Statistics on the bachelor academic studies of sociology** by *Valentina Sokolovska*. Contrary to the previous part, where the author discussed the teaching for students mostly specialized in natural sciences, here the author summarizes the experience of teaching statistics for students in social sciences.

The paper **Variable selection in logistic regression** by *Antonio Lucadamo* and *Biagio Simonetti* is an example of a statistical topic discussed in a very detailed way. It provides some new insight in problems of logistic regression.

The author *Marko Obradović* stresses the fact that at teaching applied statistics one has to keep in mind possibly different mathematical background of the students. This is demonstrated in the paper **Probability tree diagram, total probability and Bayes formula**.

A didactical example of a single lecture in applied statistics is provided by *Vesna Jevremović* in her contribution **One lecture – one hundred statistical terms**. The contents of the lecture are properties of uniform distribution, as well as one nonparametric test of goodness of fit.

The guide does not cover all aspects of Applied Statistics and its methodology, however, this was by far not the intention of the editors. They have prepared a well designed set of contributions focusing some of the most important notions of Applied Statistics and their methodological aspects. The result is a readable material, that will be interesting and valuable source of information and inspiration for those, who teach not only subjects in Applied Statistics, but also for teaching Statistics for non-mathematics students either in natural, technical, or social sciences.