Specification of the course for the Book of courses

Study program		Applied statistics	
Title of the course		**Sampling theory**	
Teachers (for lectures)		Aleksandar Nastić	
Teacher/fellow teacher (for exercises)		Predrag Popović	
ESPB	6	**Status of the course (obligatory (O) /elective (E))**	O

Conditions	
Aim of the course	The aim of this course is to introduce students to the sampling theories and the importance of proper sampling for subsequent statistical analysis.
Course outcomes	Students will be able to make decisions about how to choose the sample depending on the statistical analysis to be used. Students will be able to apply different sampling theory in real situations and to evaluate the quality of the sample in the research.
Content of the course	
Theoretical classes	Sampling: Basic concepts related to sampling and evaluation. The main steps in the planning of sampling and selection of sample units. Simple random sampling. Assessment of population size, mean, proportion and relationships. Systematic random sampling, stratified random sampling and the second step. Sampling with unequal probabilities. Clusters and sampling plans in more steps. Surveys: Basic concepts related to sampling and evaluation. The main steps in the planning of sampling and selection of sampling units. Procedures for data collection in the sampling for the survey. Surveys by households, the telephone survey, the survey by mail and electronic mail, the survey online, snowball surveys and online polls. Procedure with unanswered questions and measurement errors. Unreliable sampling populations, sequential, spatial, adaptive sampling, and sampling kvota. The Bootstrap and Jackknife procedures.
Practical classes	Practical instructions follows the course content, ie. theoretical instructions. Using of statistical software. The analysis of case studies related to sampling.
References	
1	Carl-Eri Sarndal, Bengt Swensson, Jan Wretman: Model Assisted Survey Sampling, Springer series in statistics,2003
2	Shao, Tu: The Jackknife and Bootstrap, Springer series in statistics 1995.

The number of contact hours per week during the semester / trimester / year

Lectures	**Exercises**	**DON**	**Research work**	**Other classes**
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Teaching methods	lectures, exercises, analysis of examples with applications, writing reports.

Evaluation of knowledge (maximum score 100)

Pre exam duties	**points**	**Final exam**	**points**
activity during lectures	5	**Oral exam**	40
excercises	5		
homeworks	20		
seminars	30		