

*Report by Dr Vera Lazarevic, associate professor at the Faculty of Technical Sciences Cacak in relation to Tempus project – JPCR “Master Program in Applied Statistics (MAS)”*

### **Feedback and final analysis**

The result of the realization of Tempus project- JPCR “Master Program in Applied Statistics -MAS“ at FTN Čačak through four LLL presentations (20 and 27 October 2012, and 8 and 15 December 2012.) is an affirmation of applied statistics. Statistical education of seminar participants was greatly extended. The latest statistical software and its application possibilities to problem solving were presented to attendees. This was followed by the results that were presented in some national and international conferences (see attached evaluation of seminar participants). The faculty started the process of re-accreditation after the LLL seminars. Applied statistics is now more present in each study program compared to previous accreditation. Three statistical courses (2 compulsory and 1 optional) were offered in five accredited study programs. Now, eight statistical courses are planned (2 compulsory and 6 optional). Positive experience of LLL seminar participants, teachers and assistants who actively participate in the process of re-accreditation, has contributed to this. Here are some reviews of LLL courses participants (LLL courses are conducted at FTN Čačak).

1.) I followed Lifelong Education Seminar in Applied Statistics through four lectures of Professor Dr. Vera Lazarevic . The theme itself drew my attention. But after the first exposure: “Preparation of statistical research, collecting, sorting and presenting the statistical material”, I attended the whole seminar. Methods of cluster analysis are quite applicable in various fields of science. I will use cluster analysis in further research as well as everything I heard at this seminar. The seminar was well organized because it was meticulously guided and very easy to follow- units that were connected to each other, the preparation of research, analysis, and different methods presentation.

Teaching assistant mr Vesna Ružičić

2.) The first and second part of the seminar helped me to systematize my current statistical knowledge and to remind me about some forgotten facts. The third and fourth parts allowed me to master the technique of cluster analysis. I applied these techniques to my current research for PhD thesis. In general, I find the seminar very useful for employees in high education and the application in scientific research.

Teaching assistant Miloš Papić

3.) Dr Miroslav Bjekić, Associate Professor

Statement on the contribution of attending LLL seminars

4 meetings 20.10.2012-15.12.2012.

I was very interested and motivated to attend the seminar in applied statistics. I did not systematically study this area, because it was not in basic math courses. I attended the first three lectures.

The first lecture was very useful for me because it provided a systematic introduction to the field of statistics: explains the basic terms, definitions, explains the subject of research ... Sample selection problem was explained, its collecting, processing and interpretation. Everything is backed up with a lot of concrete examples. Statistical software packages were presented. So far I poorly used the SPS program. Review of software Statistica was very useful.

The second lecture was related to statistical data analysis. Exposed to the interesting field of statistical inference method was exposed, sample tests and testing of statistical hypotheses. In particular, I was intrigued by defining the threshold of significance and reliability of the hypothesis.

I met the terms of the cluster analysis on the third class for the first time.

I did not attend the fourth lecture, but I saw the PPT presentation later.

The general impression of the LLL seminars is very advantageous. Participants were able to acquire the knowledge of basic statistical terminology and procedures. The lecturer was an expert. The special quality of the lectures was plenty of practical examples. It's a pity there were not more participants, because they could, in a very short period of time, acquire a good basic review in the field of statistics.

Compliments to the organizers.

4.) LLL seminars have deepened my theoretical and practical statistical knowledge. For me, the most interesting and most useful part was workshop of cluster analysis. The information I obtained at the seminar was a good base for further research in this area in the direction of the fuzzy clustering and intuitionistic fuzzy clustering. Some of the presented methods are applied in this work:

M. Đukić, V. Lazarević, D. Đurčić, Application of fuzzy clustering on quality control, ICDQM-2013, Beograd, 27-28 Jun 2013.

I think that the lectures were useful, applicable and interesting, and I am looking forward to the next seminar.

mr Marija Đukic, teaching assistant FTN Čačak

5.) I was pleased to be a participant of LLL seminar within Tempus project. My interests, as a mathematician, are application of statistics in practical situations which is covered by cluster analysis. The impression is that this was a well-prepared course focused on applications and analysis of specific situations. After this course, I renewed my knowledge of probability and statistics, and more importantly, I learned what current trends in the applications of these mathematical disciplines are.

mr Milovana Mutavdžić, lecturer VŠTSS Čačak

6.) LLL seminars significantly expanded my knowledge of statistics and deepened my understanding of the various possibilities of application of statistical methods to the characteristic practical examples. I am particularly interested in the selection, preparation of samples and the interpretation of research results. This is, perhaps, one of the most important segments of the statistical survey, because the wrong choice of sample and misinterpretation of the results can lead to completely wrong conclusions. The consequence of this error may be flawed procedures or wrong assessment of the current situation in the research area.

Certain methods presented at this seminar were used in the papers:

Mladen Janjić, Vera Lazarević, Živadin Micić, Momčilo Vujičić, Komparativna analiza uspeha učenika u srednjoj školi i na prijemnom ispitu na mašinskim fakultetima, YU INFO 2013, Zbornik radova na CD-u (ISBN: 978-86-85525-11-7), oblast Primenjena informatika, 3-6 mart 2013. god., Kopaonik, str. 221-226.

Mladen Janjić, Vera Lazarević, Cophenetic Coefficient of Correlation Between Study Programs, Proceedings of the 4th DQM International Conference „Life Cycle Engineering and Management ICDQM-2013“, Belgrade, Serbia, 27-28 June 2013, pp. 340-346. ISBN 978-86-86355-15-7

I believe that the seminar was very useful, and provided an excellent foundation for applying statistical methods on various problems in all areas (education, science, economy, increase in administrative efficiency, etc.). I think that would be very useful to continue the seminar with new and more advanced topics that are useful for increasing efficiency, and competitiveness in all areas of society and the economy.

mr Mladen Janjić, teaching assistant FTN Čačak

7.) LLL seminars were well organized. All four lectures were well prepared and followed logically one to another. Participants were able to acquire basic knowledge in statistics, cluster

analysis and applications. The lecturer was professional and presentations were rich in many illustrative examples.

dr Dragan Đurčić, full Professor, Faculty of Technical Sciences in Čačak

We can conclude that LLL seminars fulfilled the participants' expectations. Possible future activities would make sense in initiated direction.