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LLL courses report No. 2

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Abstract	This report is a LLL courses report No. 2, i.e. the report of the organization of the second cycle of LLL courses for professionals in Serbia, within ADA project. This report as a result of the activity 3.3 Organization of LLL program. It consists of the description of the process of the organization of the second round of LLL courses, the list of the courses and lecturers and feedback analysis i.e. analysis of the questionnaires filled in by attendees of the courses.
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1.0	15/05/2022	Creation of document	UNIKG

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Second round of the LLL courses

Preparatory phase

LLL program within ADA project is primarily intended for professionals already working in different areas of economy, industry, and public sector, but also some students were allowed to attend. Choice of suitable topics and courses is done during Steering Committee meetings of ADA project.

Like in the case of first round of LLL courses, due to still on-going COVID-19 pandemic, it was decided that the second round of LLL courses should be also organized online, in period February/March 2022. Each of universities-project partners was invited to suggest a course, which is most suitable for online teaching. The general recommendation was that each course should last 3 days, 3-4 hours per day. Also, the suggestion was that courses should be organized in the afternoon hours and during the weekend, since the main target group for these courses were employed professionals.

The final list of the LLL courses to be offered in the second round was created by the end of January 2022, as follows:

LLL course code	LLL course title	Lecturer	Level	Schedule
WU	Managerial Artificial Intelligence – The Art of Modeling Success	Ronald Hochreiter, Vienna University of Economics and Business, Austria	Introductory	1 and 8 March – 14-18h
UNITOV	Unsupervised Learning	Alessio Farcomeni and Francesco Dotto, University of Rome Tor Vergata, Italy	Advanced	22 and 24 February and 1 March – 09-11h and 14-16h
CERTH	Multiple Criteria Decision Making	Jason Papathanasiou, University of Macedonia and CERTH, Greece	Introductory	28 February, 7 and 14 March – 16-19h
UNI	Quantitative Finance (in Serbian)	Srđan Marinković, University of Niš	Intermediate	10, 11 and 12 March – 17-19h
UNIKG	Artificial Intelligence for Practitioners (in Serbian)	Vladimir Ranković and Andrija Đonić, University of Kragujevac	Introductory	8, 9 and 10 March – 17-20h

Promotion of the offered LLL courses was performed during February 2022 by SAM – ADA project partner, which invited all its members to apply for the courses, by Association of Serbian Banks b.a., through project website and social media channels and through personal contacts. All applicants were informed that they will receive a Certificate of Attendance, for successful participation in the courses.

Implementation phase

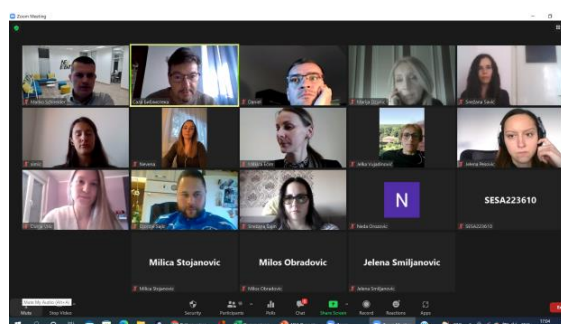
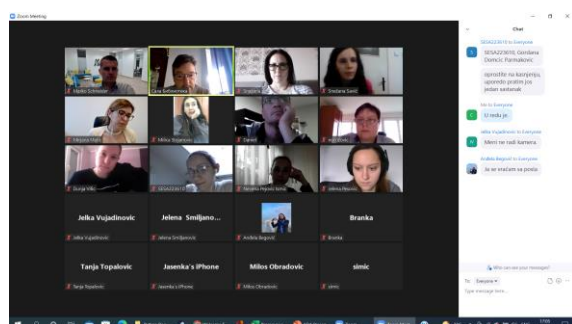
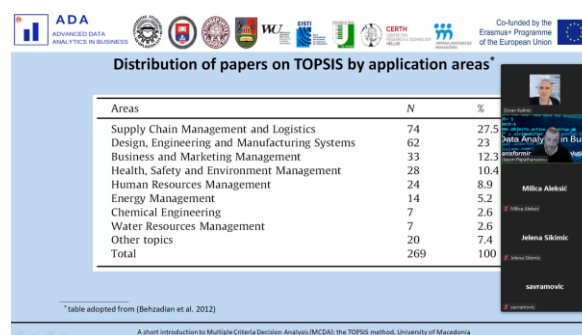
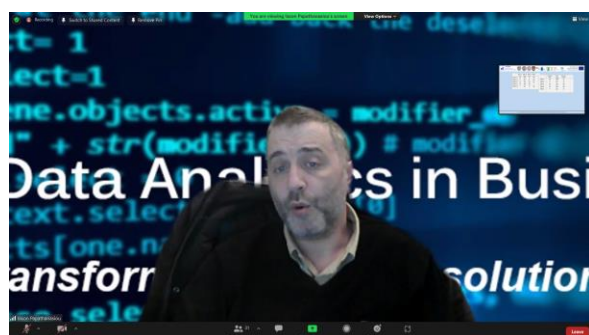
The application and course participation was free and attendees could apply to up to two courses. The application was e-mail, to dedicated e-mail address ada@uni.kg.ac.rs, and the process of application was organized and maintained by UNIKG team. The number of application per LLL course is presented in the following table.

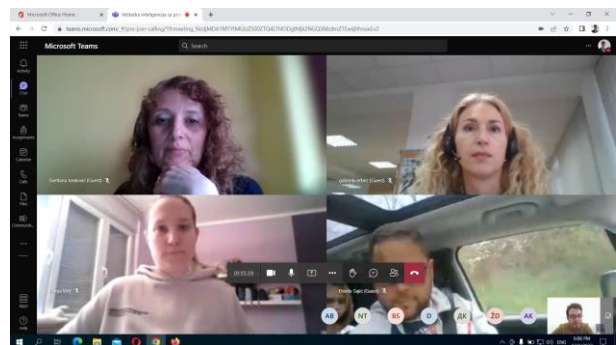
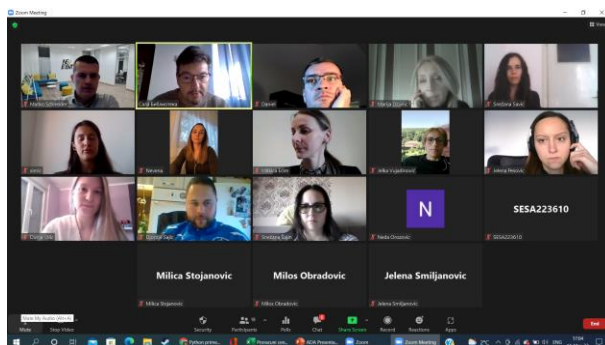
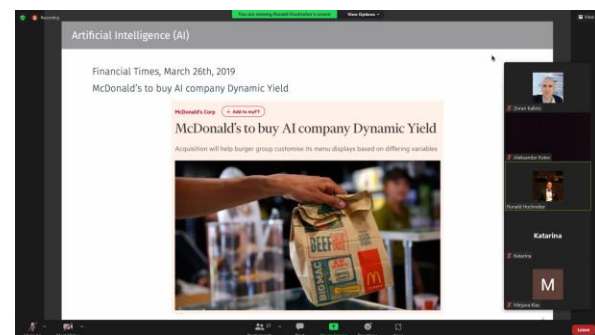
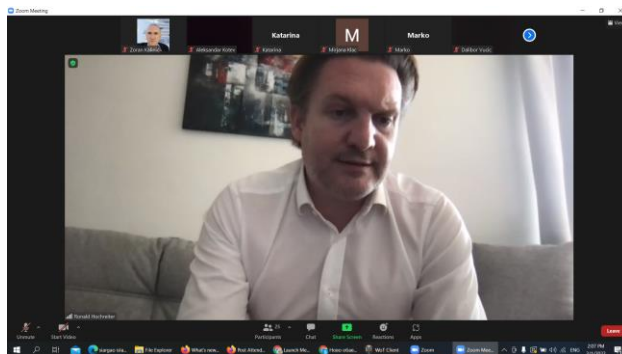
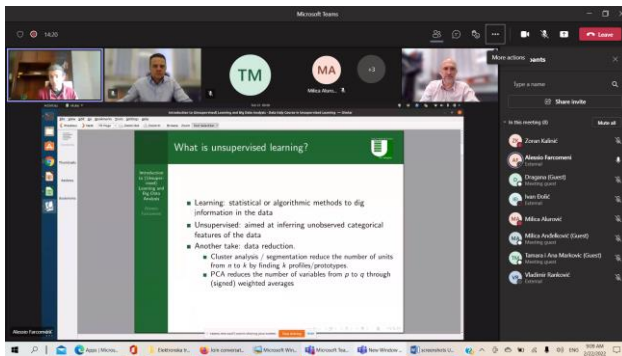
LLL course code	LLL course title	Number of applicants
WU	Managerial Artificial Intelligence – The Art of Modeling Success	50
UNITOV	Unsupervised Learning	12
CERTH	Multiple Criteria Decision Making	41
UNI	Quantitative Finance (in Serbian)	42
UNIKG	Artificial Intelligence for Practicioners (in Serbian)	54

All introductory-level courses were open to all applicants, but for intermediate- and advanced-level courses, some prerequisites were made (for example, basic knowledge of finance, statistics, IT tools usage, etc.), so initial selection of the applicants, satisfying these requirements, was made before the courses started.

It should be noted, as in the case of first round of LLL courses, many of the applicants did not show up at the start of the course (approx. 40% of them). All LLL courses were organized as planned, with minor changes in start dates of one course: unfortunately, due to the illness of the lecturer, UNIKG course was postponed twice, and finally held in period April 19-21. The organization of the lectures, choice of online platform (Zoom, Microsoft Teams, Google Meet, etc.) and invitation of the applicants was performed by each institution/course itself.

The screenshots of the lectures are presented below.





Finally, approx. one half of the initially applied participants successfully attended the courses and in total 97 Certificates of Attendance were issued and delivered to the attendees.

An example of the Certificate is presented below.



Feedback from the attendees

As planned by the Project application and Quality and Assessment plan of the project, at the end of courses, the survey of the quality of the LLL courses was performed by UNIKG, responsible for WP5 Quality control and monitoring and also for the implementation of LLL program. The survey was organized online, using Google Forms and survey template for LLL courses, from the Quality and Assessment plan, adapted to online courses. An e-mail invitation was sent to each applicant to the course, followed by two reminders, to those who didn't reply to the first invitation. It should be noted that the

number of respondents was not high (approx. 60% of those who stayed until the end of the course), partially due to relatively high churn of the applicants (high non-show rate) but also due to some problems to approach the survey (in some companies, due to IT security policy and rules, it was not possible to access the Google Forms survey at all, so participants were forced to use private computers/accounts).

Quantitative results of the survey (statements and average scores) are presented in the following table.

STATEMENT	WU	UNITOV	CERTH	UNI	UNIKG	TOTAL
Online platform used for the course functioned without any problems.	4.93	4.50	4.62	4.71	5.00	4.75
Course objectives are clearly defined.	4.47	4.33	4.77	4.29	5.00	4.57
The course is well structured.	4.33	4.40	4.62	4.35	5.00	4.54
Teaching materials (recommended readings, manuals, etc.) were clear and easy to read and they facilitate learning.	4.47	4.33	4.77	4.24	5.00	4.56
The course was supported with enough illustrations (examples, case studies, exercises, etc.).	4.40	4.83	4.77	4.41	4.78	4.64
My thinking and discussions were stimulated.	4.07	4.83	4.69	4.24	4.67	4.50
The lectures were organized on time (according to the schedule).	4.80	4.83	4.69	4.88	4.89	4.82
The course is presented in an interesting and dynamic way.	4.20	4.83	4.62	4.53	4.78	4.59
The use of didactic material (slides, blackboard, films, etc.) helped me to understand the concepts that were taught.	4.20	4.67	4.77	4.18	5.00	4.56
The lecturer's oral expression is good (clarity, volume, tone, flow).	4.71	3.83	4.54	4.75	5.00	4.57
The lecturer shows show interest in teaching.	4.57	4.83	4.77	4.71	5.00	4.78
The lecturer is readily available to answer your questions.	4.71	4.83	4.77	4.71	5.00	4.80
The lectures of visiting lecturer were very useful.	4.27	4.83	4.54	4.24	4.89	4.55
I got the knowledge I had expected from this course.	4.20	4.50	4.62	4.00	4.67	4.40

The gained knowledge improves my competences and performance at my workplace.	3.93	4.67	4.15	3.69	4.50	4.19
I have made significant advances in learning in this course.	3.80	4.50	4.23	3.69	4.25	4.09
In general, I appreciate this course.	4.53	4.83	4.69	4.53	5.00	4.72
I would recommend this subject to the others.	4.33	4.83	4.69	4.47	5.00	4.67
TOTAL	4.39	4.62	4.63	4.37	4.86	4.57
Number of respondents	15	6	12	17	9	

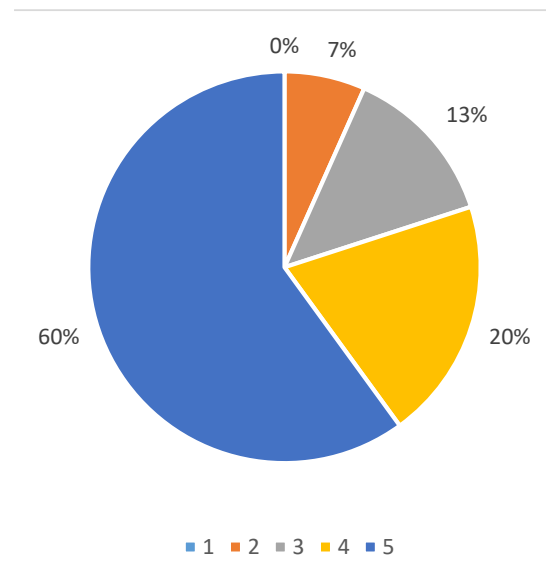
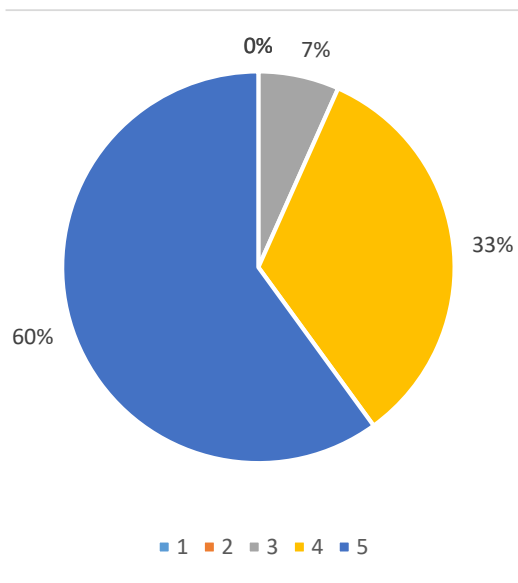
All courses and all questions were highly graded (grades of all courses are higher than 4.35). The highest average scores were recorded for the statements *The lectures were organized on time* (4.82) and *The lecturer is readily available to answer your questions* (4.80), which confirms dedication of the lecturers to the attendees. Generally, all scores related to the quality of the course and the lecturer were high. All average scores were above 4.0. The average lowest score (4.09) was recorded for the statement *I have made significant advances in learning in this course*. This is probably due to the fact that majority of the courses were at the introductory level, and probably participants already had some pre-knowledge in this area, and therefore, they didn't experience significant advances in knowledge.

We have analyzed the distribution of the answers to the two probably most important questions: *In general, I appreciate this course*, and *I would recommend this subject to the others*, which, in our opinion, summarize the participant's attitude towards the LLL course. The distribution of the grades for each course is presented in the following graphs.

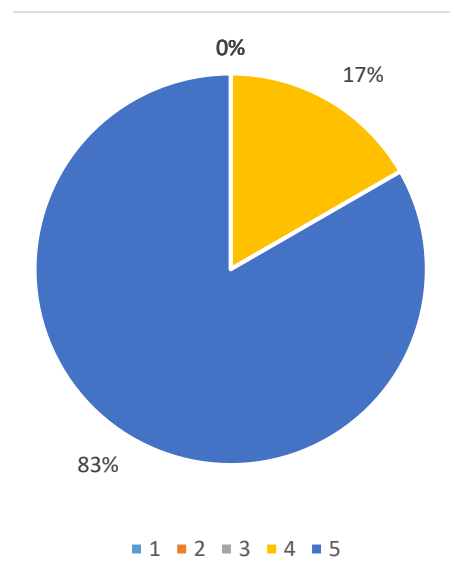
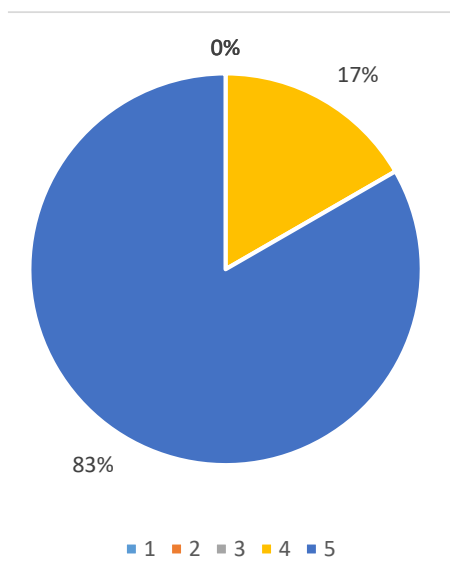
In general, I appreciate this course

I would recommend this course to the others

COURSE: WU - Managerial Artificial Intelligence – The Art of Modeling Success



COURSE: UNITOV – Unsupervised Learning

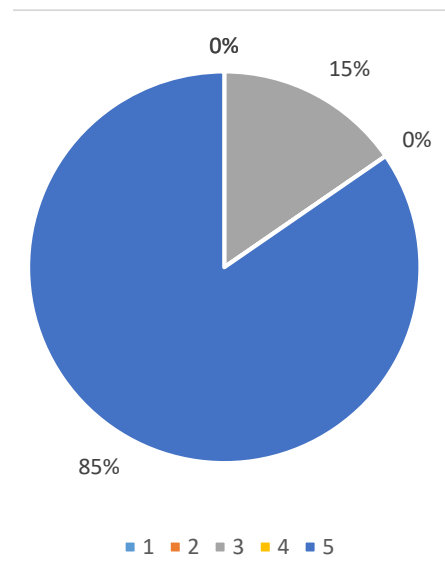
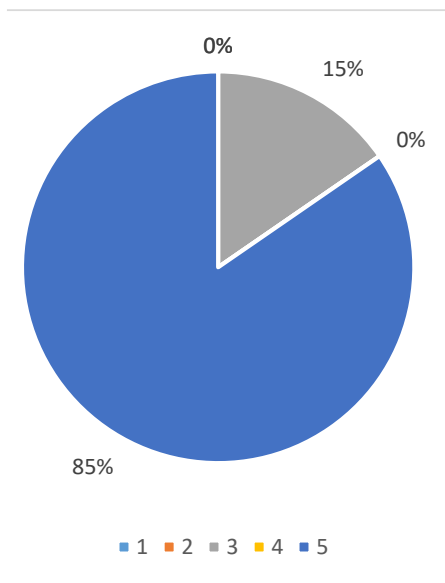




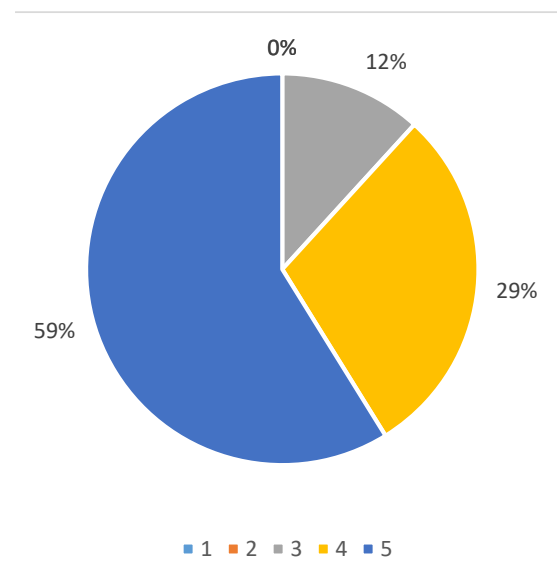
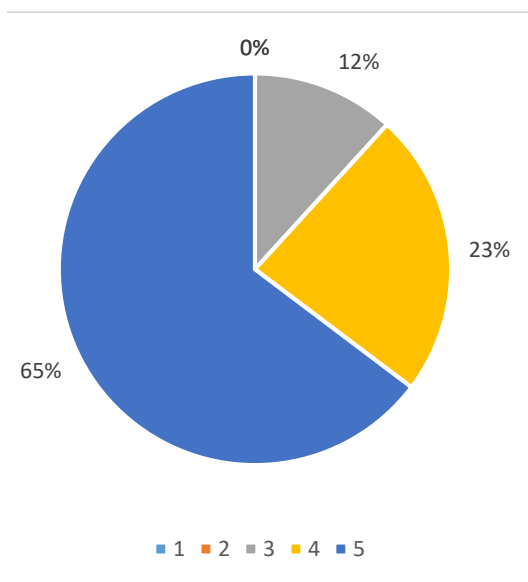
In general, I appreciate this course

I would recommend this course to the others

COURSE: CERTH - Multiple Criteria Decision Making



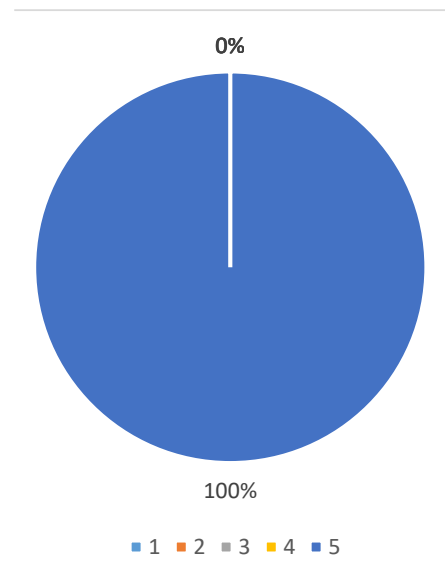
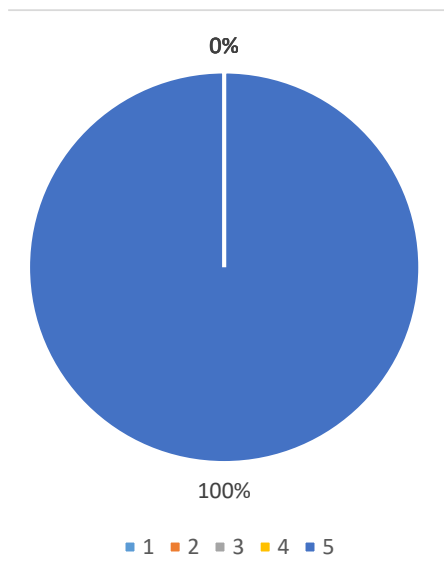
COURSE: UNI – Quantitative Finance



In general, I appreciate this course

I would recommend this course to the others

COURSE: UNIKG - Artificial Intelligence for Practicioners



In all cases, the dominant was the highest grade – 5, representing more than 50% of the grades, in all cases.

The analysis of open-ended questions gave the organizers some interesting ideas and guidelines for the next round of the LLL courses. The answers to the first open-ended question (*What did you particularly like about this course/teacher and what are its strengths?*) show that most of the participants stressed that the lecturers were very competent, motivated, open to questions and discussion and that the lectures were interesting, well structured, with plenty of good examples. The answers to the second open-ended question (*What did you particularly dislike about this course/teacher and what are its weaknesses?*) show that there were no significant complains, only a few of respondents at some courses suggested that the lectures should not be organized in consecutive days, immediately after working hours, as this was quite tiresome for them.



Finally, the responses to the third open-ended question (*Do you have any suggestions for the improvement?*) were mainly focused on suggestions that courses should be longer (more days, less hours per day), and that it would be better next time to be organized in-person.