

# Report on the performance of the pilot short-cycle course in Erasmus+ WICT project

Erasmus+ WICT Organizers

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## 1 Introduction

This document serves as the report on the pilot "Short cycle course in Data Science and Artificial Intelligence" held as the part of the Erasmus+ "Introduction of joint short-cycle ICT courses for better employability of students and graduates" (WICT) course.

The report will cover the general profiles of the participants in the courses, as well as try to identify their satisfaction with the pilot course. The goal of this document is to analyze the situation at hand and offer advice in terms of future organization of the course.

## 2 Participant profiles

During the application, some details on participants were collected in order to gauge the interest in different groups. Prior to the analysis the data was cleaned from duplicate entries and entries lacking key information. The total number of participants in the course was 194.

One of the assessment was determining the home country of the student, as given in Figure 1. It is obvious that the largest amount of participants came from the countries of project partners - Greece with 90, Serbia with 33, Croatia with 26, Hungary with 24 and Poland with 11. In addition to this, there were a number of other countries the participants were from - Philippines and Cyprus with 4 participants stand out; while the following countries had a single participant - Afghanistan, Czechia, Nigeria, Armenia, Brazil, and Syria. Most of the participants from these countries are PhD students or exchange students in the organizing countries.

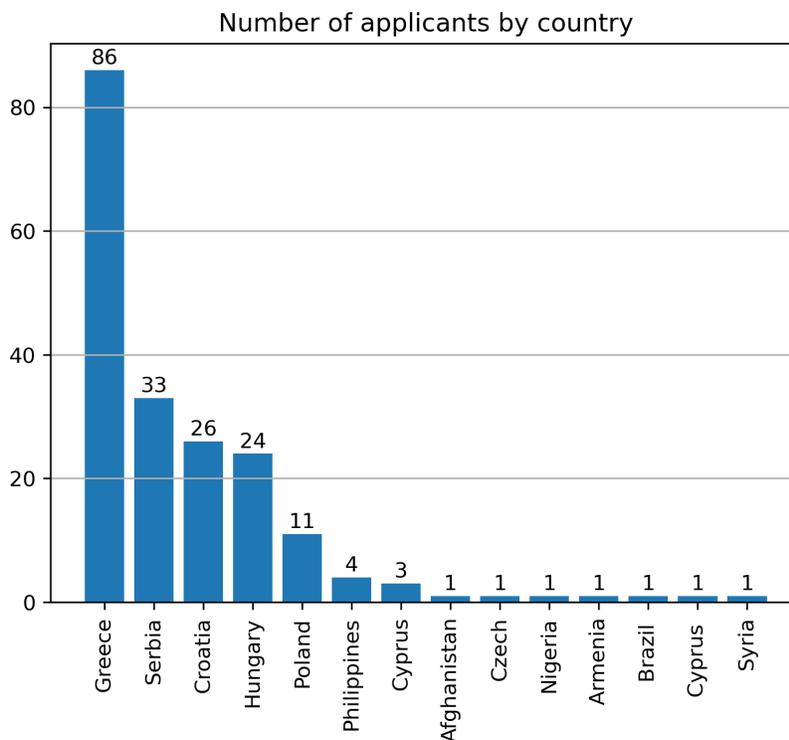


Figure 1: The number of participants per each country

Figure 2 demonstrates the number of participants of different educational levels, according to the last completed level of education. Most of the participants finished Highschool and are in the process of obtaining their Bachelors degree. The following group is recent graduates, of either the primary (bachelor) degree - at 50 participants, or secondary (master) degree - at 46 participants. 21 of the participants have obtained their doctoral degree prior to enrolling in the class.

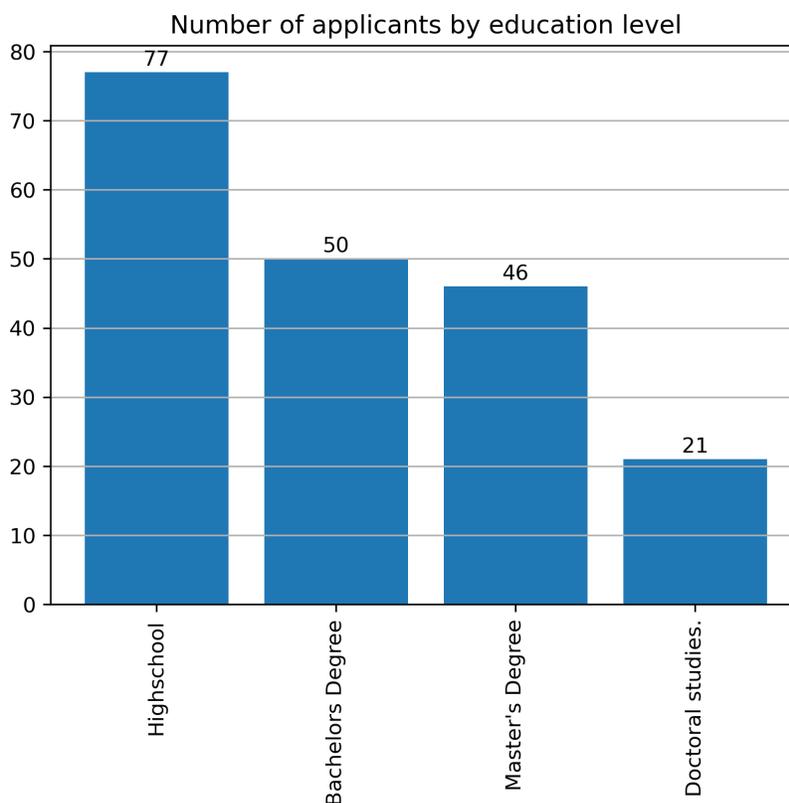


Figure 2: The number of participants of different educational levels

Considering the area of study or work of participants is interesting, as it allows us to gauge interest across different areas, allowing us to adjust the programme to them. The distribution across different subjects is given in Figure 3. Over 90 students are in Programming/computer science and similar subjects. Other notable subjects with multiple participants are engineering at 30, social sciences at 18, economics at 17, medicine at 5, art, at 4 and emergency services and physics at 2. There are many other study areas represented between the participant — such as law, european studies, sport science and others. A lot of interest in the area of computer science is not surprising due to the topic of the course, although in the future courses more effort could be invested in attempting to target users who are not in areas directly connected to the topic.

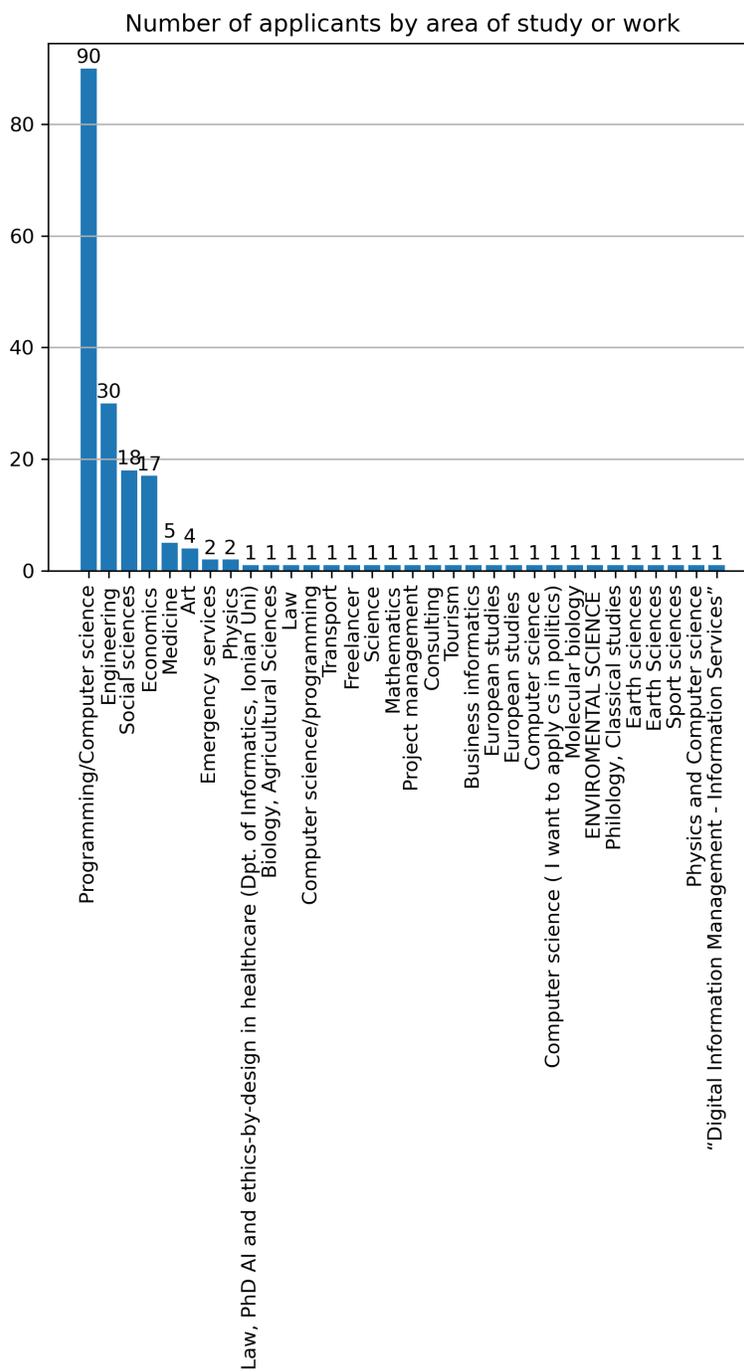


Figure 3: The number of participants in different areas of study and/or work

To assure effective spreading of information about new courses, observing what were the effective ways of contacting the potential participants is important, which is why we noted the sources of information that participants heard about the course from, as shown in Figure 4. Most of the applicants heard about the course through the university, while a lower amount, 27 and 21 respectively, heard about it from social media of the project and word of mouth. Only eight participants heard of the course through their employers identifying this as a source that can be increased in the future.

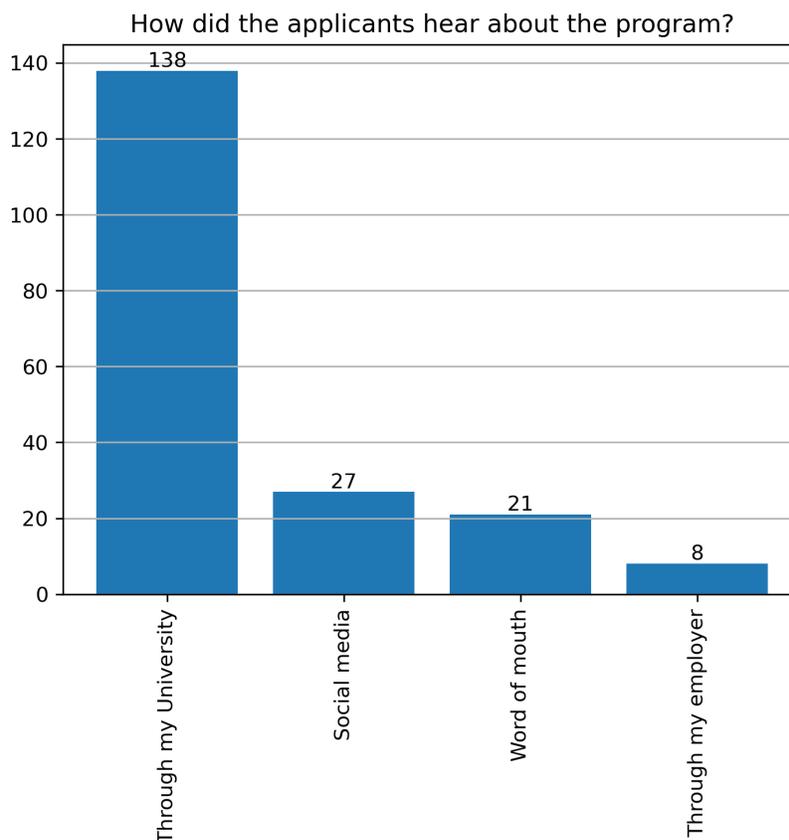


Figure 4: The number of participants which applied to course in a given way

Considering one of the goals of the project was to reach out to as many female applicants as possible, we have inquired into their gender during the application process. As shown in Figure 5, around 30% of the applicants to the course were women.

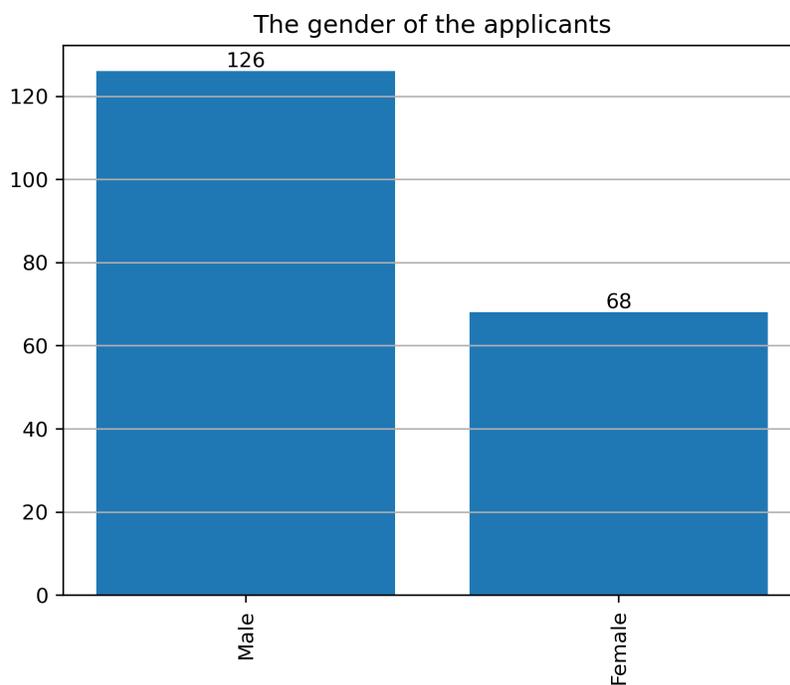


Figure 5: The gender of the applicants.

Finally, as the course offered a total of 10 elective classes to participants, an analysis of the selections was performed to see which classes were the most popular. The data in Figure 6 shows that there were not any particularly uninteresting classes skipped by a large amount of people. The most popular elective class was Statistical data analysis, followed by Problem solving and decision making, Big data and Practical AI applications in medicine.

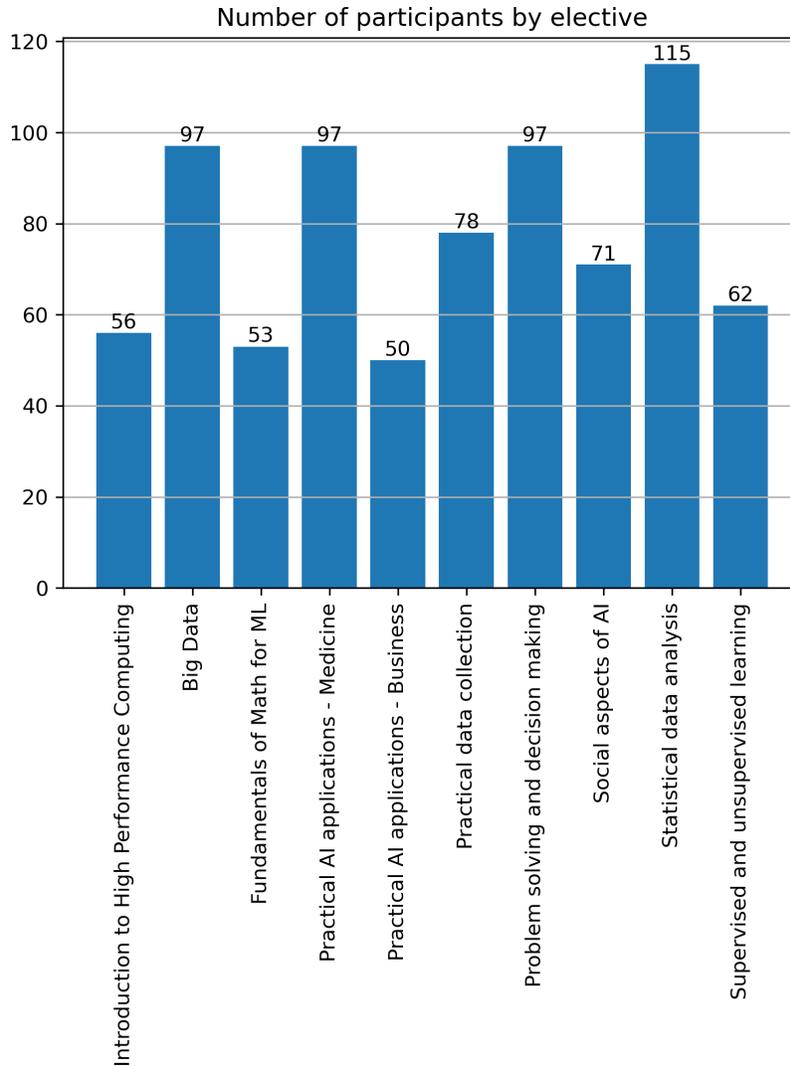


Figure 6: The number of participants which selected elective classes

### 3 Improvement of knowledge (self-assessment)

To judge the performance of the course, the participants were asked to self-assess their skill in eleven different areas that the subjects surveyed in the initial phases of the project identified as key:

- Data management
- Data visualization



- Statistics
- Mathematics related to DS and AI
- Big data
- Data mining
- Machine learning
- Artificial neural networks
- Data collection
- DS and AI applications
- AI in society

Participants were asked to self-assess themselves in these areas on a scale of one through ten, with 1 being the lowest ("I have no knowledge of the subject") and 10 being the highest ("I am an expert in the subject"). The participants were asked to repeat this self-assessment after the completion of the course. The results can be seen in Figure 7. The data shows that on average, the mean improvement across areas was 2.48 points. The largest improvement is shown in the area "DS and AI applications" at 2.81, "Big data" at 2.69, and "Data collection" at 2.67. The lowest improvement is shown in "Statistics" at 1.91 and "Mathematics related to DS and AI" at 1.92 — which can be expected due to the profile of participants (Figure 3, with most of them having experience with computer science). While this data cannot be said to indicate real skill improvements, it is obvious that, at the very least, the confidence in knowledge across areas related to DS/AI has grown amongst the participants.

Averages of participants self-assessment in skills, before and after the classes

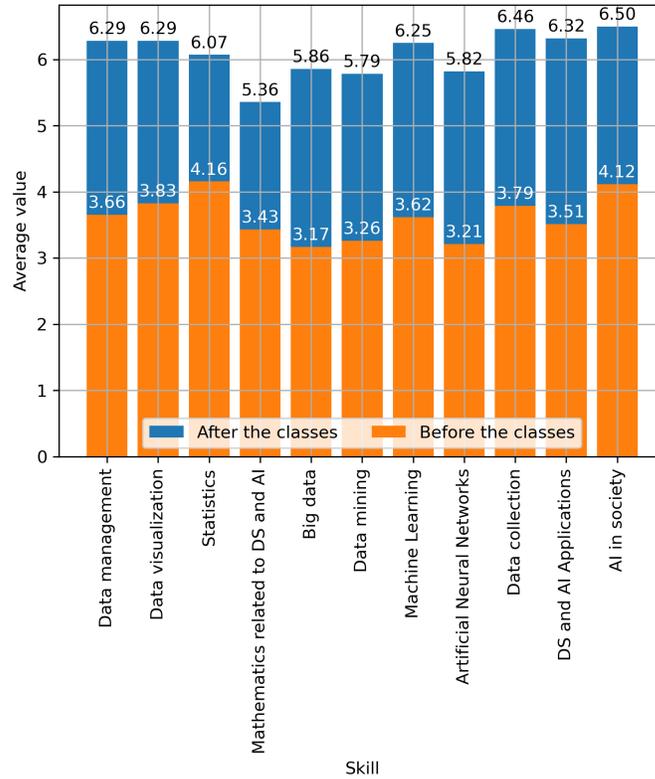


Figure 7: The self-reported skill improvements of participants

## 4 Evaluation of participant’s satisfaction with the course

The evaluation of the course was performed through the exit form the students needed to fill out in order to obtain the certificate for the completion of the course. The participants were asked to evaluate different aspects of the course on a scale of one to five.

Overall, the rating of the course by participants was 4.50, which is a very high value, indicating overall satisfaction with the course. When asked if students would be interested in attending this type of a course again, or if they would recommend this type of a course to a peer, the average rating of likelihood on the given scale was 4.43 and 4.53, respectively.

Participants rated the lecturers approach to teaching and their general treatment of participants with a rating of 4.64. In terms of the organization the rating given was 4.46.



When asked whether they believe that their needs were met in terms of covering all important aspects of DS and AI, the participants rated the course at 4.0. Lower score here was possibly caused by not covering some topics which were newer in depth (such as Large Language Models), due to those not being well-known during the time where lectures and materials were prepared.

On average, when asked if the course was interesting, participants rated it with 4.36. On the question of whether they think the course improved their knowledge in DS and AI, the rating was a high 4.29, confirming the results for skill self-assessment.

When asked about certain elements of the course, such as the need to include more practical elements, or go in more depth regarding AI, participants were mostly indifferent. Particularly when discussing going in bigger depth, the average result was the neutral grade 3.0, while the grade was the inclusion of more practical elements was 3.29 — indicating a slight preference for more practical demonstrations.

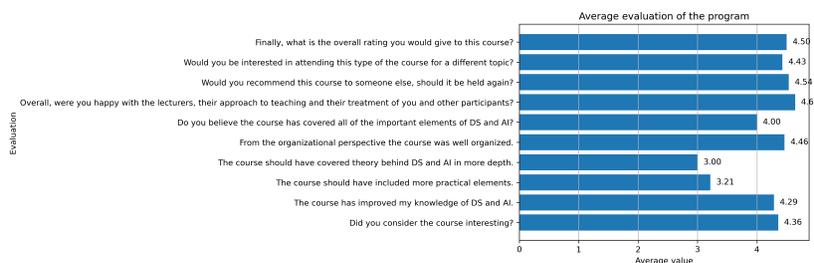


Figure 8: Average evaluation scores

Regarding the duration of the classes, we wanted to determine whether the duration of the class was satisfactory to the users. As shown in Figure 9, most participants considered the duration of course to be just right, neither too long, nor too short.

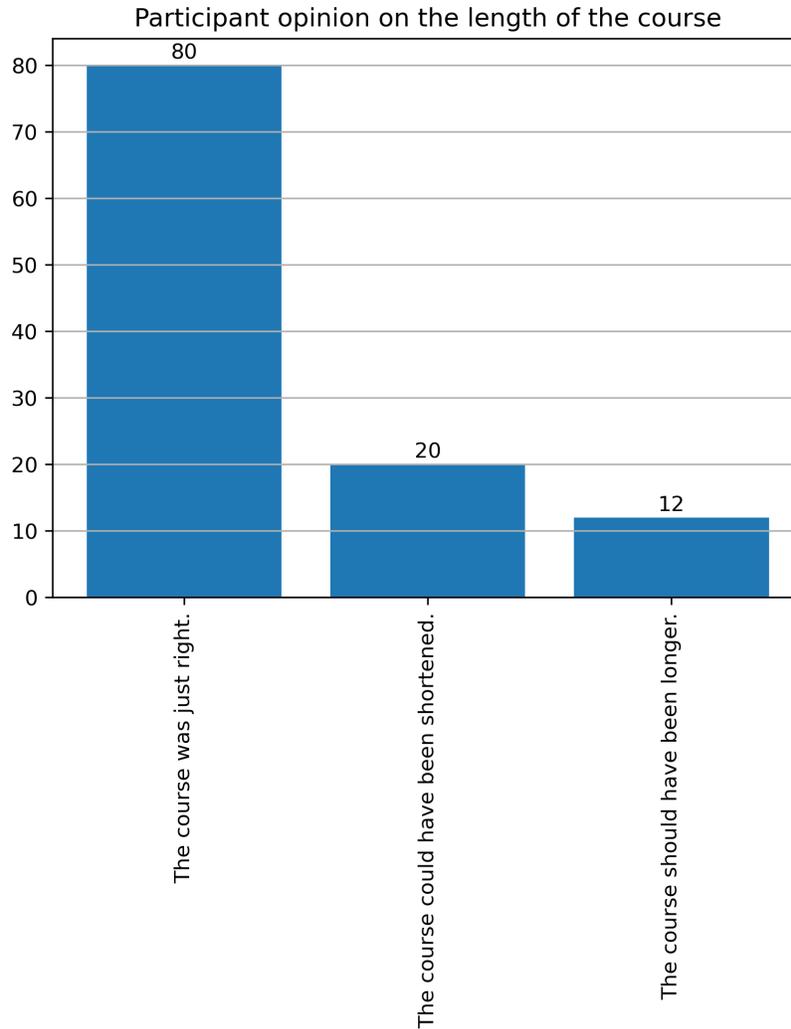


Figure 9: The opinion of users on the course length

The participants were offered an option to provide additional comments in freeform. The full comments are included as the Appendix A.

## 5 Conclusion

Based on the data presented in this report, it can be concluded that the pilot course for DS/AI was successful, with most participants, on average, being satisfied with the course and the knowledge they obtained.



## Appendix A: Individual comments

1. I would like to see more connection between the different modules  
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2. the course was highly educational and interesting . i would like to also see similar courses in different topics .  
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3. Although the courses I attended were interesting, some courses could do more to keep the students' attention because the lectures covered too many theoretical topics and were sometimes very difficult to follow  
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4. Overall everything was good the only extra thing would be to inform students from the start that lectures are uploaded on youtube.  
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5. My personal opinion, watching the seminar from the perspective of a student (PhD candidate), is that it would be better if the seminar included more lectures, each lasting no longer than two hours, and with a total duration of two to three months. This way, there would be time for study, practice, for questions to arise, and for students to ask the lecturers for the relevant answers. Also, the morning lectures are not very easy to be attended for those people who work. am grateful for the opportunity to attend this very important intensive course from truly great lecturers in the transmission of knowledge.  
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6. Some lectures are hard to sit through.. they were like 4 hrs.. if they were devided (maybe 2hrs max) it would be more amazing. Also I'm not sure about the email if it's not this one it's nevenajelicicekf@gmail.com  
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7. I am very happy with communication with professors and with the course from the very start till today. It was my pleasure to attend this course. Thank you for your time and for shared knowledge. All the best  
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8. .  
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9. It was amazing! Thank you for the knowledge i gained  
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