Final report

VT2024_DVAD25_43823_Etisk hackning

First time registred students: 26
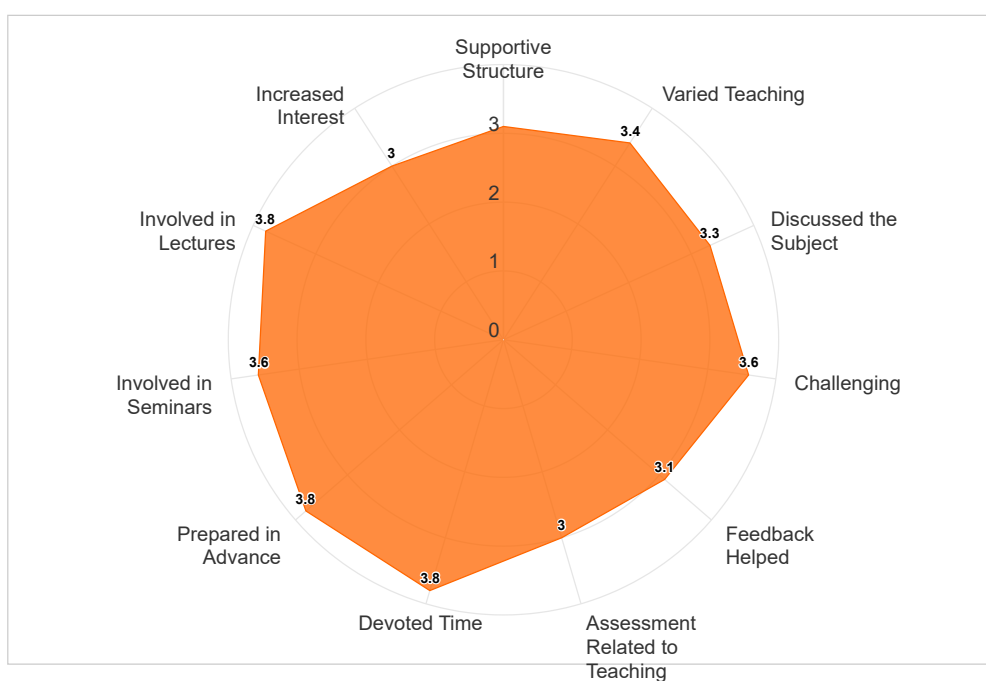**Answer Count: 11**
Answer Frequency: 42.31%

The course evaluation could be answered during the period:

23/03/2024 - 06/04/2024

DVAD25 Etisk hackning, End date: 2024-03-24

Mean value for each question. Highest value = 4.

|	Mean
Supportive Structure	3.1
Varied Teaching	3.4
Discussed the Subject	3.3
Challenging	3.6
Feedback Helped	3.1
Assessment Related to Teaching	3.0
Workload	2.5
Devoted Time	3.8
Prepared in Advance	3.8
Involved in Seminars	3.6
Involved in Lectures	3.8
Increased Interest	3.0

Results of learning

All in all, the course was valuable for me.

Courses that were considered valuable were related to personal development, acquisition of new knowledge and skills, understanding of something. Higher ratings can refer to students' perceived development (learned a lot, and it was useful). Lower ratings can refer to scanty development of knowledge and skills or not understanding certain themes or their parts, not understanding the necessity and significance of the course, problems in the learning environment.

	Mean
All in all, the course was valuable for me	3

- I agree
- I somewhat agree
- I somewhat disagree

1/2
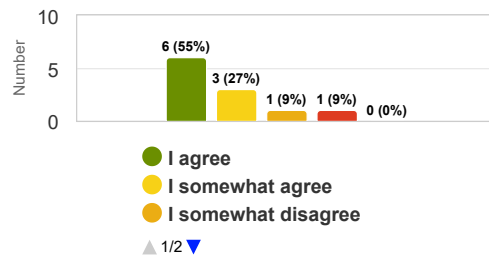
How likely would you be to recommend this course to a friend or colleague?
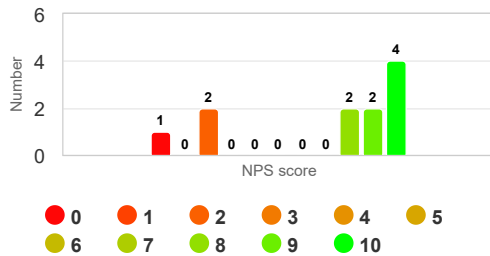
Net Promoter Score (NPS) = 27.3

Promoters = 6 (54.5%)

Passives = 2 (18.2%)

Detractors = 3 (27.3%)

The Net Promoter Score (NPS) is a metric that measures student experience and predicts the effectiveness of a course. It calculates an NPS score based on a key question using a 0-10 scale, asking how likely students would recommend the course to others. Respondents are grouped into Promoters, Passives, or Detractors based on their score, and the NPS is calculated by subtracting the percentage of Detractors from the percentage of Promoters. The NPS is a core metric for course evaluation programs and is trusted by educational institutions to engage their students and improve their learning experience performance.

Comments

Course supervisor's comments

The feedback was mostly positive. This is the second time this course was delivered, and the changes we made following last year's course feedback worked really well. Of the 27 students registered in the course, 22 were active, and 11 answered this questionnaire.
At the beginning of the course, the students were presented with the course feedback from the previous year and were informed about course changes and updates. The course updates were:

- individual git-based diaries with the steps and procedures for solving the exercises.
- group work around scenario-based ethical questions concerning ethical hacking.
- a ctfd interface for reporting flags and requesting hints, which replaced canvas.

Quoting a selected couple of students:

- "I strongly recommend this course"
- "I would recommend this course as I found it to be very fun and challenging."

The direct quotes from the entire students' feedback is presented below

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Q. What enhanced your learning in this course?

- The teacher Leo was in my opinion flawless! You can tell that he enjoys teaching and that he does it well. He gets involved with the students and takes time to learn names!
- Other than that i am deeply impressed with the cyber space used in the course! Both the idé and the flags where excelllent.
- The practical nature of the course definitely made the course more enjoyable and through that enabled ease of learning. Leo as the teacher also enhanced the course learning due to him being very good at making shy awkward computer science students talk, this generally makes it so everyone learns more and are more engaged in the lectures.
- The practical part, hacking in the cyber range.
- My previous knowledge of the subject and experience with CTFs, the nicely designed learning curve of the cyberange, the detailed debriefings and suggestion system, the race and hacker culture present in the course in its entirety :)
- Doing things that are practical and learning by doing
- The course was very challenging because there was no lectures nor resources about what we needed to learn. It was basically like (here are your vpn credentials and you are on your own). I understand that this method is helpful and exciting for some of the students but it was a nightmare for others. The resources of canvas page was not enough and it took for ever to read and find the relevant information.
- Getting to experiment with semi-real-world situations and attempt various methods and tools.

Q. What would you do differently in the teaching of this course?

- The only thing i would suggest adding would be smal lectures in different hacking tools. On mondays where we would have flag reports, we would only use half of the lecture time on most mondays. I suggest that after the report is done, those who want to go can and those who want some extra help can stay. The rest of the lecture would then be spent giving the students tips on different hacking tools that may be useful for upcoming flags. That way those who are less experienced get some more support to complete the flags and might help the students complete the flags quicker.
- I'm not too sure. How it was now it felt really lonely, stuck on a problem and no one to talk to (because it was disincentivized to talk to other students) and the linked material is a lot but much of it did not really feel helpful.
- The most annoying part is that sometimes you did not know if you did something wrong or the infrastructure was messing with you (improve the infrastructure). It was down sometimes, checkpoints did not really work (ssh back door)
- I wish there were some extra content for those who finish the cyber range early.
- Not having so many people on the same matrix (people working on the same machines) since it makes it slower to work on and also you can sometimes find solutions from others on the machines.
- The cyberange machines and network were shared among the students from one of the three groups (or matrices), which often led to those machine becoming unavailable until they were reset in the next 24 hours, since the machines could easily break if some of the other students made some mistake; sometimes even the resets didn't fix the issues, as an example the permanent ssh backdoor present in some machines to avoid repetitive and time consuming tasks related the previously solved flags(assignments) was often unreliable, with the sshd service failing to start after the reset.
- Having a cyberange implementation that presents a separate environment for each student would thus be ideal, avoiding slowdowns and interference between students and making resets more flexible.
- The CTFd platform also needs to be more robust, the hint system, while very useful, was a bit cumbersome, and having all the solutions for the assignments be present on a student facing portal has some security implications that should be examined more carefully.
- I would create a knowledge base of things that the students need to know before starting with the cyper range.
- I know that the optional flag contained a huge part of the basics but I felt that it was not enough (my opinion)
- Find some way to allow cooperation among students or offer actual teaching material (lectures, demonstrations etc.) for the actual hacking part of the course. Currently, all parts of the course are graded and thus we are not allowed to cooperate which was particularly detrimental in a course with such a massive laboratorial part which was made even more difficult by the fact that the course did not teach anything about the actual hacking parts. I agree that we should be able to search for information on our own at this level of academics but I felt this course had almost none of the advantages of learning via university courses rather than just learning it via online resources

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Q. Recommendations for learning for future learners.

- Document your steps. You will need to refer to your notes multiple times in this course.
- Should really recommend students to be able/quickly learn to use a Linux terminal. This should really be mentioned as I think it would be very easy to be left behind and hard to catch up.
- Like if they use Windows maybe recommend something like using WSL2 if they were programming in VS Code, so that they can learn naturally how to use Linux while programming.
- If you get hardstuck on a flag, take a break and go do something else. It's usually when you're doing something completely unrelated that the best ideas pop up.
- I strongly recommend this course, you will acquire a lot of practical experience by the end of it; don't skip the tutorial flag, it will give you a grasp what your work environment will be; be ready to invest your time and maintain your efforts throughout the length of the course, don't be scared if you get stuck at some point, you will eventually succeed with a lot of patience and trial and error, and it will be extremely rewarding in the end to come up with the solution. And even if you can't get pass some point or fail completely, there is always a suggestion system and a final debriefing to let you understand what needed to be done, you will still learn a lot.
- Make sure that you know very much about Linux before you begin with this course or you will hate your life
- This course was a trial by fire. If you are anything like me you will be extremely frustrated at every practical part of this course and the only real way to get through it is to go slow and read absolutely everything you can find and hope that you are lucky enough to stumble across what you need in a relatively timely fashion.

Q. Please explain your evaluation.

- If said colleague is intresstred in the field i would most definetly recommend this course. To someone who does not have the intressed in cyber secutiry the course might be a bit difficult but still compelling.
- I would definitely recommend it but it comes with some asterisks. 1. It is not for everyone, you will feel stupid, angry, frustrated, and alone in solving the problems. 2. Most of my frustration came from the cyber range acting differently from one day to another.
- I would recommend this course as I found it to be very fun and challenging.
- If you had your own cyber range/shared if with fewer people it would've been a 10.
- I learned a lot about hacking and the inner workings of several systems in general in a fun and engaging way, more so than even in previous courses; had one of the best teachers of the department, with some really interesting guest lectures (but maybe it may be better to plan a remote meeting option if the guest is stuck by the weather next time), had some interesting ethics lectures and group activities and discussions, the reports were always really interesting to listen to see how the other students worked with the problem (the use of mentimeter was great!), and in general the course was able to create a great hacker culture between all the participants =D
- A good course, a bit hard flags in the end but in general it was a interesting course to get to hack things, and to talk about ethics
- It is a very hard course that I would not recommend it to my enemies.
- Don't get me wrong, this subject is super interesting and important to me but it requires very much knowledges about Linux and we never had a course about Linux (some would say we had course about operating systems "will that was a piece of cake and it didn't have any practical Linux learning I would say that it didn't have anything about Linux other that a PowerPoint slide") anyway I hope they fix it somehow.
- My experience was that after this course finished I did indeed know a bit about hacking but I cannot overlook how I was more frustrated at this course than any other course and I never really felt I got any advantage from this course rather than online resources.

Q. Other opinions and comments about the course.

- Please make an announcement on the canvas when the next guest lecturer from FRA is since we missed it, and it was the guest lecture I was most looking forward to.
- I really enjoyed the competitive aspect to the cyber range, as it was fun trying to win against the other students, it really gamified the course and was really motivating.
- Really fun course!
- I probably will never forget this course.
- Maybe have some sort of clearer way of showing that you're at a checkpoint for a flag or something like that. Maybe have a bit more general flags to hack, some were a bit to difficult in my taste but otherwise a great course and Leo seems to enjoy lecturing it, that's always nice when a teacher wants to be at the lectures.
- I am unsure what could be done about some of my points but I will outline my main issues with the course here. Firstly I felt like I was fumbling around blindly with no actual learning material in the course to learn from which was a large contributing factor towards frustration. This is usually a major advantage of university studies having a good path to learn the material to follow. Secondly, I was not able to ask any other course participants what they did since everything was graded. We could discuss after we had completed the flags but this is more akin to reading a solution than collaboratively forming solutions which I find is much more valuable. However, by far my most important issue is seen when I partway through the course realized I would never have a chance to pass this first attempt and thus I tried to make a really good document of notes to properly digest and learn all the material I could for next year. During this process, I completed enough flags in a single day to pass the course, were it not for the fact that I had already spent too many points for hints, and some of these flags were completed in several ways or using several methods. But this didn't matter because I had already lost too many points. I am aware that going through the flags again is not equivalent to solving them the first time but I felt like I did know the material at the end of the course but that I had already failed because my previous knowledge was insufficient.

As seen from the student quotes, the feedback is really positive. Still, a major source of frustration is connected to the shared nature of the cyber range. In the future, we plan to offer individual cyber ranges to avoid side channel leaks and interruptions caused by system failures caused by hacks - we want to give students the possibility to restore their individual cyber ranges instead of waiting for scheduled restores. This is a mandatory course in the Masters in CS program, and it requires a very good understanding of Linux and how to properly use its command line interface, which some students seem to lack. There is a set of initial but optional exercises offered at the beginning of the course to refresh CLI knowledge. I plan to better highlight the importance of these exercises at the beginning of the next course instance.