

Meeting SAT Computer Science 1 November 2023

Present:

- Dan Witzner Hansen (HoP BSWU)
- Marco Carbone (HoP KCS)
- Therese Graversen (HoP BDS)
- Patrick Bahr (HoP KSD)
- Luca Maria Ariello (HoP KDS)
- Louise Meier Carlsen (Co-HoP BSWU)

- Theodor Christian Kier (Student rep., KCS)
- Maja Styrk Andersen (Student rep, KSD)
- Lena Winther Jensen (Student rep, KSD)
- Bozhidara Stoyanova Pesheva (guest, BDS)
- Ida Junker Sohrbeck (guest, BDS)

- Paolo Tell (Guest, faculty)
- Riko Jacob (Guest, faculty)
- Thore Husfeldt (Guest, faculty)

- Trine Møller (Observer, Study and Career & Guidance)
- Allette Bjørn Bundgaard (Observer, Prog Coor SWU/KCS)
- Marc Kellaway (Prog Coor KSD) (Minutes)

Minutes:

1 - Approval of agenda

The agenda was approved.

2 - Approval of minutes from meeting October 11 2023

No comments to the minutes received within the 10 working days period. Minutes approved.

3 - Workload in *Algorithms & Data Structures* (BSW, BDS, KSD)

Riko: Thanks for inviting us! This is an important subject. The course takes place on the second semester of three different programmes, and builds upon the basic programming and math courses from the first semester. It is one of the fundamental places to learn how to efficiently do things. Since this is a huge course with almost 400 students, we work on an almost industrial scale, but so many students also means that we can offer TA classes tied to specific demands, which would not be possible on a smaller course with less resources. The course has been around at ITU for about 15 years - most of you have probably been subjected to it.

Maja: I want to say thanks to Thore and Riko for coming. The overall goal of the initiative to invite you is to improve the overall mental health of the Software Design programme. Algorithms and Data Structures has been chosen as the focus here, as it is one of the most demanding courses beside Introduction to Programming, which has a larger ECTS load of 15 ECTS. The course has been discussed in SAT many times, and while I represent the KSD students, I think this discussion is also relevant for the other programmes having this course.

The main focus for me are the mandatory activities, of which we have 14 and need to pass 10 to be eligible for the exam. (I think it was lowered to 8 in the middle of the last semester.) The demand to pass each MA is that we score 80%-100% in Kattis. This is a high number, and I have anecdotal

evidence that many students on the SD programme neglect their other courses to be able to do this. Just to balance things out, I'd like to mention also that people in general like the course, so this is not meant to be too critical, just some suggestions to balance the workload on the programme better.

I asked different types of students about their actual workload in the course, and it seems some student spend 8-11 hours on the MAs each week. If you look at the intended workload posted on GitHub, as well as the official ITU framework from LearnIT, it is supposed to be 10 hours everything included, so I thought this might be a good starting point for our conversation.

Therese: Are the hours pr. week from LearnIT including exams and the full semester?

Lena: According to ITU Student the total for the entire semester is 40 hours including exam preparation.

Maja: I also found one place stating it should be 8-10 hours pr. week and another 11.7 pr. week.

Therese: The lower you go during the course period, the more you have to spend on preparation before the exam. As far as I know 30 ECTS equals 206 hours in all.

Thore: I am surprised! I thought there was a clear rule for the hours.

Riko: The whole thing is fussy because you talk about average students.

Theodor: As ITU has decided it, it is 11.7 hours pr. week, based on a 14 week course, and a 47.8 hour working week.

Luca: The question was regarding the number of assignments. Do the teachers have any comments to this?

Thore: The mandatory activities are designed to take 1 hour for the average student. The idea was to have a fixed slot every week, where the students did this. Most students spending 10 hours on the course should be able to do this. The MAs are the smallest non-trivial programming exercises possible using the content from the weeks lectures. That was the idea, but it didn't fly. I am slightly worried, as the data shown does not gel with the data I have. I can see on Kattis how long the students use for solving the MAs, and typically the first submission comes within 8 minutes. But these are not the students we are talking about here.

Riko: One of the core elements of the course is the connection between the theoretical basis and the practical use of it. We have the MAs this way to ensure it is not disconnected.

Thore: If you spend 11 hours on the MAs, then something is very wrong. I have not met yet this cohort of students that have spent 10 or 11 hours on the MAs. One of the first MAs I show how to do in class, and I usually see the students understanding this. But I know the issue that some students consume all of the wide palette of what we teach, but still cannot demonstrate learning.

Riko: It is an important point, that all of this are offers. You do not need to do everything, but should only come to activities where you feel you learn.

Thore: I know that there are students who sit around after lunch and do the MAs together for a couple of hours, and then they are done for the week. We do not recommend this, but it is possible to use the MAs instrumentally this way, and then you might learn enough to possibly get a 4. But you

can also approach this another way, and use the diverse range of offers we have. That said, I want to also take seriously the 10% of students who still struggle after taking all we offer. We have all these LAB sessions where students can get help - I hope we have communicated this enough. We definitely do not want people to spend so many hours on the MAs, but to use the help available.

Maja: I want to mention that the students on my slide on workload also attended lab sessions. I can see how it makes sense, though. That this is the framework we have to find a solution within.

Thore: I think one thing is the programming issue. Perhaps StudyLab could guide to a better way to approach a solution.

Maja: Good point. If we have spent 2 or 3 hours on the MA, then we should know that we need to use the labs.

Riko: We also usually have someone on Piazza to give help relatively quickly.

Marc: In the discussion at the last SAT-meeting, there was raised a point from the students, that the high number of MAs you need to pass before being eligible for the exams can be a stress factor in itself.

Thore: It is a deliberate decision to have weekly small exercises instead of few huge exercises, because the course is very iterative. We feel that having many smalls MAs were preferable to a few big ones.

Marc: I think the issue was not the number of exercises, but that they are mandatory, instead of just telling the students, that they need to do them as part of the learning, and if they choose to not do this, then they might not learn enough to pass the exam.

Thore: Students only do the minimal number of exercises specified to pass the mandatory activities. We are old, we come from a system that used to fail 50% of the students to the exam, but we are not allowed to do this anymore. I do personally not like that we need mandatory activities.

Lena: When I took the course last semester, we were struggling with some assignment more than others.

Thore: This would be very useful information.

Lena: I think what I experienced was that when you both have MAs and exercises, you want to do them all, even though I remember you saying that it shouldn't be needed to do all of it all of the time. I think people do this because they really want to be prepared for the exams.

Thore: I really like to hear more about that - this is really good information.

Therese: On the slide you had 3 hours spent on the exercises. These weekly exercises - if you spend 3 hours on solving those, then how do they fit into the MAs?

Lena: The great thing about the course is that at the lab sessions they have green, yellow, and red exercises, so you can choose from a difficulty level that suits what you can and what you want to gain.

Therese: So, solving even the lowest level should give you skill? Do people struggle with the green ones?

Lena: Not the people I have had contact with. At the TA session the TA would discuss how to go about it.

Riko: It is important to remember that we have two concepts: TA sessions and lab sessions.

Lena: One of the misunderstandings I have met is that the lab sessions are only for exercises, and not the MAs.

Therese: Is it then completely disconnected between the exercises and the MAs?

Maja: From the green exercises I think you get in the headspace, but do not necessarily get the skill needed to solve the MAs. I think it is great we have all these resources - perhaps we could discuss how to use them better?

Thore: What we are talking about here is what we expect the model students to do, but I can see there are several directions the course can be taking for different cohorts of students.

Maja: Regarding the number of MAs that you need to pass, have you considered lowering the number?

Thore: Only in the different direction. When we introduced the MAs, then the bottom level was lifted at the exams.

Maja: I think 6 would be a sweet spot, rather than 8.

Theodor: I think 8 MAs could be a sweet spot, if we did not have MAs in the other courses at the same time, so it starts to add up. For me it's been the general thing about my study the last 5 years that there are too many MAs.

Therese: This is normal for universities.

Thore: ITU has a different subset of educations from other universities, which gives us different teaching needs. In general, expectations are more difficult to set than for other universities.

Bozhidara: Regarding the connection between exercises and MAs: I took the course last semester, and while the exercises were very theoretical, for the MAs it more came up to our own programming skills regarding how to apply things. This helped with the exam, but didn't help with the theoretical part. For the people in my study group, the less programming you had done, the more time the MAs took.

Ida: I am a new student so haven't had the course yet, but am looking forward to it next semester. I have spoken to some people who say it feels more like a 15 ECTS course, like Maja also mentioned at the beginning. I have also heard that it feels especially big for students who have not done much programming. Can you tell why the course is already on the second semester?

Thore: This course exists in some form in all computer science programmes - on DIKU it is a first semester course. The version at ITU assumes that you have had an introductory programming course previously, so is much more programmy than mathy. I would have loved to design a more mathy

version for Data Science, but now instead we have these big resources, which enable us to do these different things for different students. We have been trying to make the course slightly more mathy, and we also now start the course with separate lectures using respectively Python and Java.

Ida: My question is, if there is a correlation between students not having programmed before and students not doing well.

Thore: Yes, the main indicator is how much programming you have done before – I know this both from data and anecdotal evidence, and am super aware of this when teaching. I would love to make this even smoother. Riko and I focus on making the course possible for the KSD students. The main course only teaches the students what is relevant for the exam, and then we have moved the additional stuff to optional lectures on Fridays.

Louise: An observation I have made among the SWU students regarding the MAs is that they perceive it as us trying to stop them from entering the exam. I have told them that we are not interested in hindering them entering the exam, but for the students, this is not really clear.

Lena: The 1st semester KSD students have the same outlook regarding the MAs, especially around the mid-term exam in Introductory Programming.

Theodor: I have also experienced this.

Marc: I can confirm this from what we hear in SAP too – the students in general see the MAs as a threat.

Therese: But we get penalized for failing students.

Maja: I am curious, if you see some possible changes in the scope of the course after this discussion.

Thore: It is very cohort-dependent, but we will think about this. And thank you again for inviting us. I would like these exercises to be easy, if you have attended, and also like them to be smooth, so it is easy to see what you need to do. I can understand that they are clearly not super smooth to a big percentage of our students, so one thing we can do is making it clearer that if you have not solved it at this point, you need to go to the Lab and get help. It would also be a great help, if a student sat down with me and told me in more details for specific exercises what they struggled with and what was the issues. I mostly meet the TAs, and do not see so many of the students on the course, so this would be a big help. Perhaps we could also work on making the connection between the exercises and the MAs clearer for the students.

Maja: I am curious, if the possibility might exist that we could lower the number MAs needed to pass. Last year there was a coding-event, which could count for two MAs.

Thore: Each of them has a make-up. But if the coding event made a difference, I'd love to do more of this.

Therese: One comment: I would not like for this course to be smaller, but perhaps we might look into whether some of the 15 ECTS courses could be smaller?

Maja: A last point: Maybe you could tell people already in the beginning that only 8 MAs are needed to pass, instead of first doing this in March, as it then gives more freedom for the students to plan.

Thore: If that could help, we will think about doing this.

4 - Information from the Student Counselling

Trine: Not much news to say. We will do some exam preparation events soon. All students will receive an invitation.

Marco: What do they consist of?

Trine: The first one is on how to use your time, and setting and adjusting expectations. There will also be one on how to prepare for oral exams.

5 - Information from SAT Members

Lena: I think right now all is good at the KSD programme. Everyone is busy - it always narrows down in the last part of the semester. The new students just did the mid-terms. They were terrified and we had a lot of discussion in the TA sessions. But think it is going fine overall.

Bozhidara: At the BDS programme, I think there is a higher attendance compared to last semester, especially in machine learning course. People are more active, but this is also expected as we now have two project exams coming up.

Ida: At the last meeting we talked about Foundations of Probability. I feel there has been a big improvement with the lectures since then, so it is more coherent now. Lectures and exercises feel more connected.

Theodor: I have not much to say from KCS. Everybody is a bit slow on the Research Project, but I haven't heard from anyone not doing well.

Luca: Why are they slow?

Theodor: I think it takes time to get started, settling in, and getting together with supervisor. Maybe the project is also a little underprioritized by the students.

Marco: My main concern is that sometimes it feels that there is not time enough to put into the Research Project.

Therese: We have the introduction to the BA-thesis in the spring. Why do we not have the intro to the Research Project the semester before? Or perhaps coordinate with the BA-thesis market?

Marc: I will put it on the agenda for the next meeting.

Maja: It can also be hard to find supervisors. This might also be a reason for the late start for some students.

Marco: I know this is a problem – some supervisors get many requests, some get none.

6- AOB

Nothing for this point.