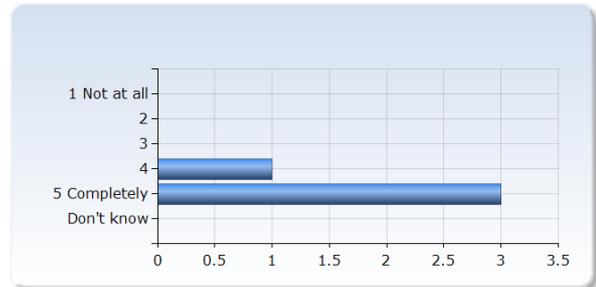


FK5031 - Strålningsdosimetri - VT19

Respondents: 9
Answer Count: 4
Answer Frequency: 44.44 %

5. Overall impression

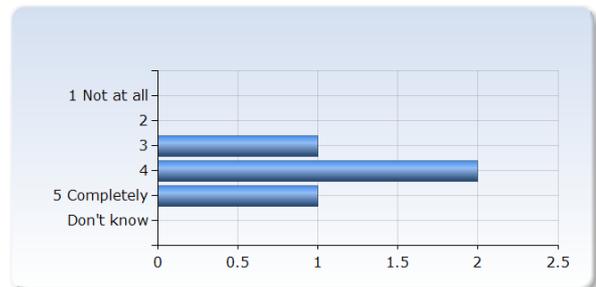
Overall I am satisfied with this course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know	0 (0.0%)
Total	4 (100.0%)



6. Student contribution

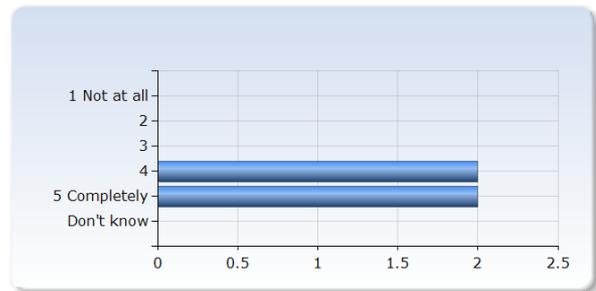
I am satisfied with my own effort in the course

I am satisfied with my own effort in the course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	1 (25.0%)
4	2 (50.0%)
5 Completely	1 (25.0%)
Don't know	0 (0.0%)
Total	4 (100.0%)



I took responsibility for my own learning in the course

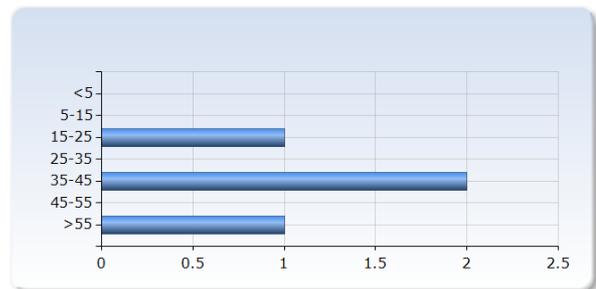
I took responsibility for my own learning in the course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	2 (50.0%)
5 Completely	2 (50.0%)
Don't know	0 (0.0%)
Total	4 (100.0%)



7. Work load

Indicate how many hours per week on average you have spent on the course, including self-studies and scheduled study time

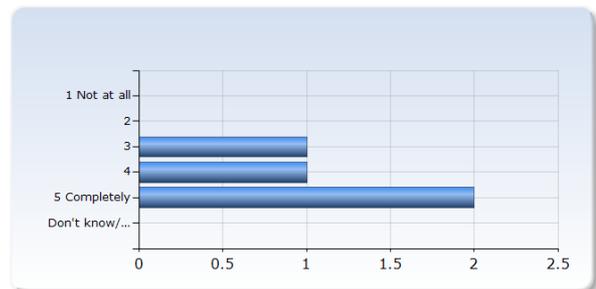
Indicate how many hours per week on average you have spent on the course, including self-studies and scheduled study time	Number of Responses
<5	0 (0.0%)
5-15	0 (0.0%)
15-25	1 (25.0%)
25-35	0 (0.0%)
35-45	2 (50.0%)
45-55	0 (0.0%)
>55	1 (25.0%)
Total	4 (100.0%)



8. Clear aims

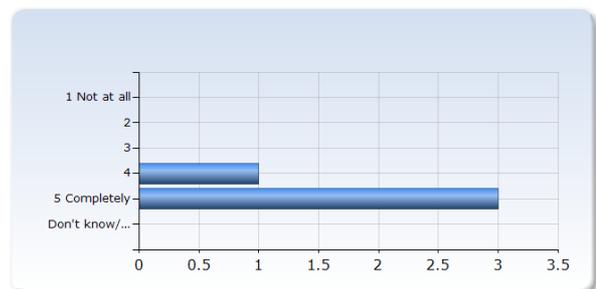
It was clear to me what I was expected to learn

It was clear to me what I was expected to learn	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	1 (25.0%)
4	1 (25.0%)
5 Completely	2 (50.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



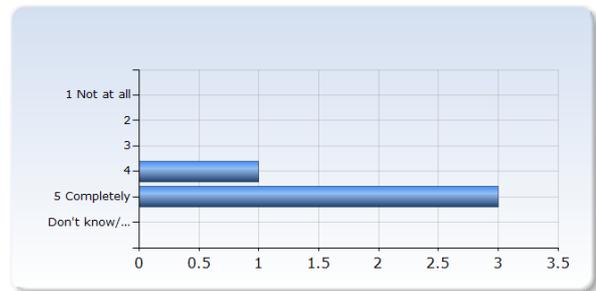
I felt that the course content and teaching methods were relevant to the learning outcomes

I felt that the course content and teaching methods were relevant to the learning outcomes	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



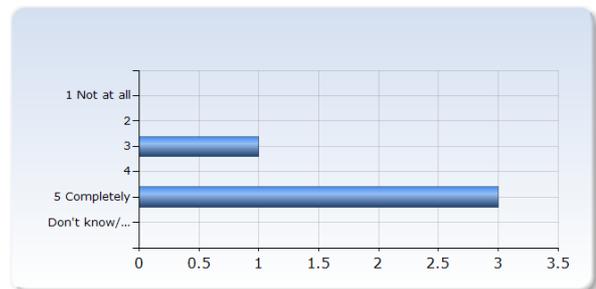
The examination tested how well I had achieved the learning outcomes

The examination tested how well I had achieved the learning outcomes	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



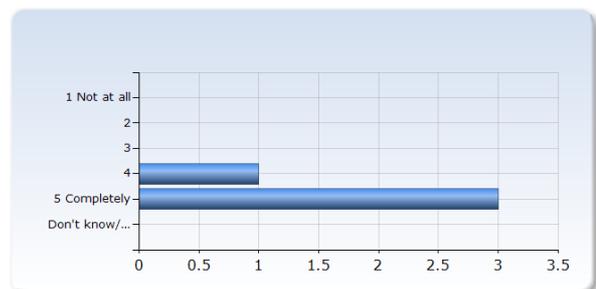
The course corresponded to my expectations

The course corresponded to my expectations	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	1 (25.0%)
4	0 (0.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



I feel that I will have use of what I have learnt after my studies

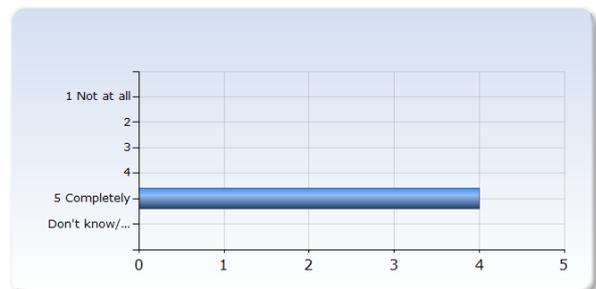
I feel that I will have use of what I have learnt after my studies	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



9. Good teaching

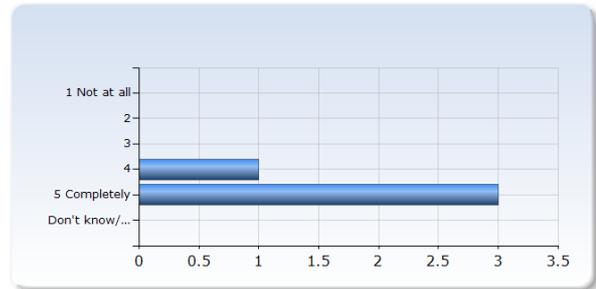
The course prerequisites were sufficient to follow the course

The course prerequisites were sufficient to follow the course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	0 (0.0%)
5 Completely	4 (100.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



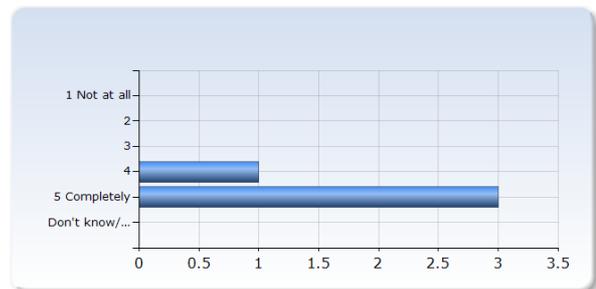
I felt that the course was well structured

I felt that the course was well structured	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



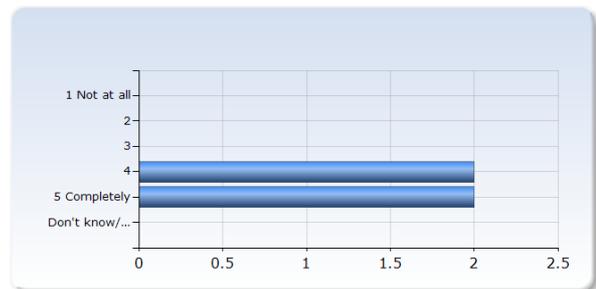
I felt that the teachers have helped me to reach the learning outcomes

I felt that the teachers have helped me to reach the learning outcomes	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



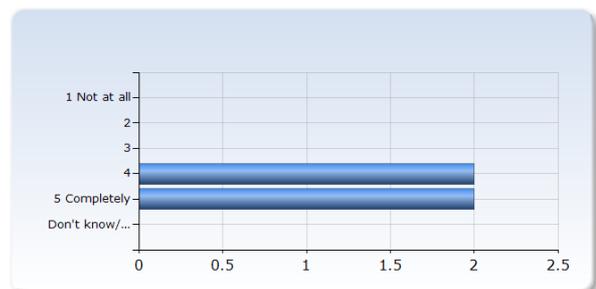
I could understand what was being taught

I could understand what was being taught	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	2 (50.0%)
5 Completely	2 (50.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



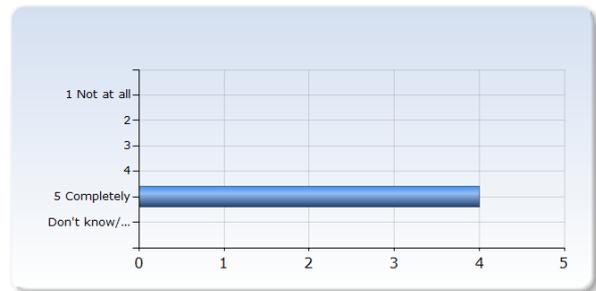
I have received constructive feedback on my performance

I have received constructive feedback on my performance	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	2 (50.0%)
5 Completely	2 (50.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



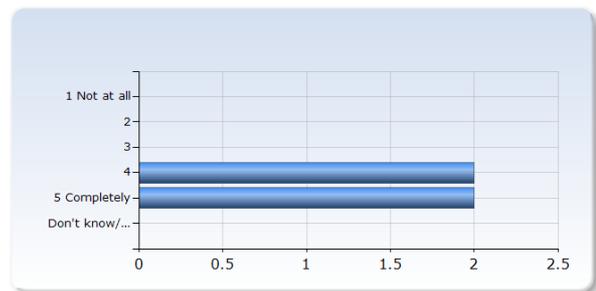
I was encouraged to reflect on my learning during the course

I was encouraged to reflect on my learning during the course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	0 (0.0%)
5 Completely	4 (100.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



The course material helped me in my work to achieve the learning outcomes (literature, e-resources etc.)

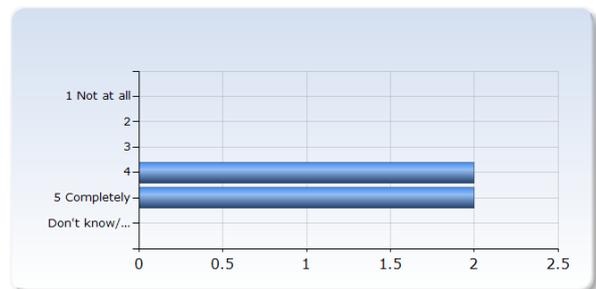
The course material helped me in my work to achieve the learning outcomes (literature, e-resources etc.)	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	2 (50.0%)
5 Completely	2 (50.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



10. Administration and study environment

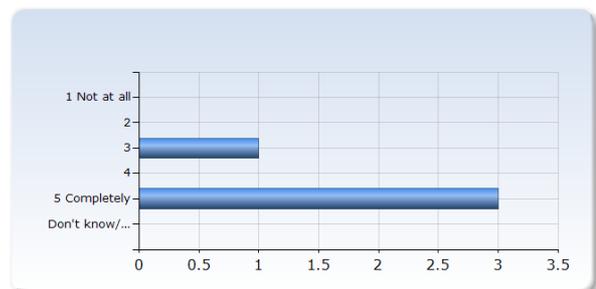
I felt that the course was well organized

I felt that the course was well organized	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	2 (50.0%)
5 Completely	2 (50.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



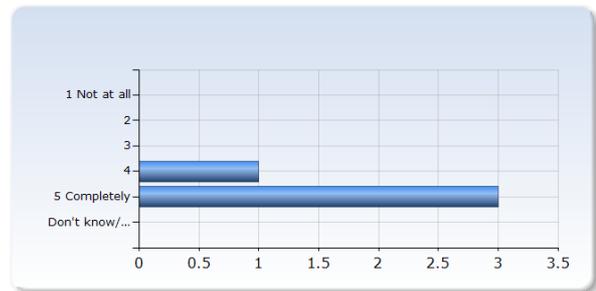
I have been able to find the information I felt I needed before and during the course

I have been able to find the information I felt I needed before and during the course	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	1 (25.0%)
4	0 (0.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



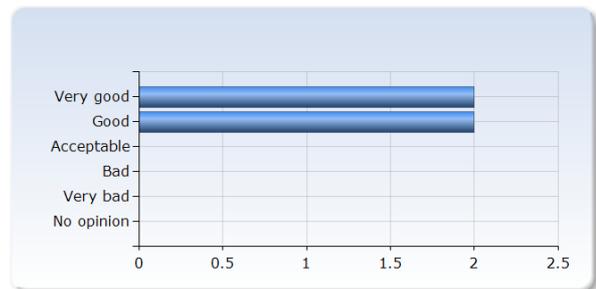
I was able to get support when I needed it

I was able to get support when I needed it	Number of Responses
1 Not at all	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	1 (25.0%)
5 Completely	3 (75.0%)
Don't know/ Not relevant	0 (0.0%)
Total	4 (100.0%)



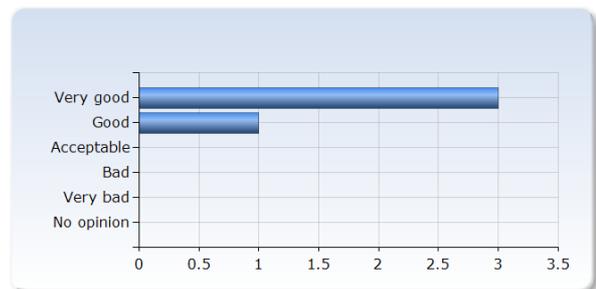
12. What do you think about the lectures given in this course?

What do you think about the lectures given in this course?	Number of Responses
Very good	2 (50.0%)
Good	2 (50.0%)
Acceptable	0 (0.0%)
Bad	0 (0.0%)
Very bad	0 (0.0%)
No opinion	0 (0.0%)
Total	4 (100.0%)



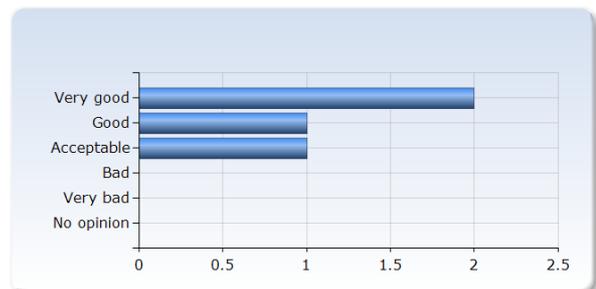
13. What do you think about the laborations given in this course?

What do you think about the laborations given in this course?	Number of Responses
Very good	3 (75.0%)
Good	1 (25.0%)
Acceptable	0 (0.0%)
Bad	0 (0.0%)
Very bad	0 (0.0%)
No opinion	0 (0.0%)
Total	4 (100.0%)



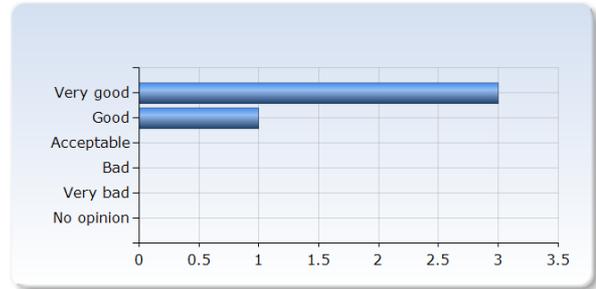
14. What do you think about the calculation exercises given in this course?

What do you think about the calculation exercises given in this course?	Number of Responses
Very good	2 (50.0%)
Good	1 (25.0%)
Acceptable	1 (25.0%)
Bad	0 (0.0%)
Very bad	0 (0.0%)
No opinion	0 (0.0%)
Total	4 (100.0%)



15. What do you think about the Athena platform that was tested for this course? Which parts of Athena did you like, and what do you think could be improved?

What do you think about the Athena platform that was tested for this course? Which parts of Athena did you like, and what do you think could be improved?	Number of Responses
Very good	3 (75.0%)
Good	1 (25.0%)
Acceptable	0 (0.0%)
Bad	0 (0.0%)
Very bad	0 (0.0%)
No opinion	0 (0.0%)
Total	4 (100.0%)



Reflections on the course “FK5031 - Radiation Dosimetry, VT19”

Niels Bassler 29.5.2019

Summary

Overall, this course seem to have improved further since last year. The course satisfaction has improved astonishingly well this year, however, as last year, this is based on very few respondents.

Most noteworthy, students have been very satisfied with the Athena implementation, and highlight in particular the “micro-assignments” which are discussed below.

This course is undergoing an evolutionary course transformation since I started teaching this course in 2017.

Lectures

The lectures are mostly appreciated by the students. The traditional lecture format is mostly retained, as this forms a stabilising element throughout the transformation process.

However, some changes were made:

- The course content was updated to newer standards.
- All slides are revised since 2017. Instead of long blocks of text, the slides now feature the essential concepts in the form of bullet points. Figures were improved. If any visuals are available, they are included (e.g. photos, movies of phenomena).
- Concepts are “atomized”, i.e. broken down into encapsulated elements. These may depend on each other, but a clearer separation of concepts, makes it easier for the student to identify and isolate important parts to be learned. This process is still not complete, and will continue over the years to follow.
- As a result of the “atomized” contents, it is very straightforward to implement formative assessment techniques.

This year, I started most lectures with a 10-20 minute improvised quiz, where I ask the students *ex tempore* about the most essential parts from the last lecture. This has several beneficial effects:

- The students become aware of what is important, and become aware if they have not acquired sufficient knowledge about this topic.
- The teacher gets instantaneous feedback from the students on whether they actually absorbed the teaching material. I typically spend additional time to repair any uncovered misconceptions.

- The dialogue between the students and lecturer also breaks the barrier and by my experience also makes the student more attentive to the lecture to follow immediately. The students are more inclined to ask for elaborations.

Exercises/Tutorials

Timing is identified as one of main issues why exercises originally tended to end into teacher monologues. The students need to have time for working with the material just learned, before they start solving the exercises. Since 2017, I therefore scheduled all exercises by one week later relative to the lectures, so there is at least one week time to process the new material.

Students are instructed beforehand that they are supposed to present the exercises at the blackboard. Even if the students are not able to complete the exercise, they should try to formulate what piece of information is missing which prevents them to proceed with the question. Even merely setting up the question at the blackboard and then discussing it in plenum is more desirable than the teacher resigning and demonstrating the exercised him-/herself. Student presentation of the exercises is motivated to the students as a training in their ability to express themselves using professional scientific language. Finally the students are told, that the actual results of the exercises are secondary and they should not worry if they have wrong or no result at this stage. What matters is understanding the method how to get to the result. Correct results follows understanding, not the other way round.

These changes implemented over the last two years however themselves did not prove to be sufficient. Students were still mostly unprepared for the tutorials. The students were allowed to calculate in class first, supervised by me, but only few exercises could then be completed due to time constraints. The students remained still reluctant to present their results at the blackboard, even if to a lesser extent.

This year, however, there seems to have been a breakthrough. From the feedback I received, I attribute this to a specific change, where I decided to schedule the exercise preparation as an out-of-class activity and actually reserve time for it. The tutorials are scheduled mostly every wednesday afternoon, and the mornings are now reserved for exercise preparations which are unattended by the teacher. Following the idea of student-centered learning, the students are left to their individual preferences to work in groups or alone.

To my astonishment, this year most students were able to solve most exercises, and most students volunteered to present the exercises at the blackboard. Even students who did not complete or got stuck early in the exercise preparation volunteered, and were actively helped by all their peers solving the problem. I felt a high level of understanding the topics was achieved, and I added additional ad hoc questions to also train the students ability to reflect on the learned material.

Blended Learning

The most noteworthy change from previous year was the transition from Mondo to the Athena learning management system, in order to “beta-test” it before rolling the platform out to the bigger audience. This turned out to be a very rewarding experience for both the students and lecturers.

As a starting point, Athena can in principle be used just as Mondo was used before¹, i.e. just using the resources folder and upload the schedule and course material there. This however would be a waste of potential, since Athena strongly encourages blended learning. In order to fully test Athena, I attempted to use as many features as I could in the limited time available (possibly I should consider to apply for extra hours for course transformation).

Specifically, in Athena I started by setting up the “Standards” which are synonymous with the intended learning outcomes. These were taken from the course syllabus.

Next, every lecture, laboratory work, study visit, and exercise/tutorial session were created as “plans” with a start and stop date+time. Extra columns were added for the lecturer name and the location of the class. The plans were groups in a few major topics, and every plan was associated with a “Standard”.

With this, the basic course is created in Athena, and it provides a robust platform for paedagogic experiments. To each plan I can add several “ressources”, which could be a quiz, a task or an assignment. Lecture preparation was thus added as “tasks” (such as “Read page 255-298 in this book”) which the students can mark when they have completed them.

Athena has a tool for assessing assignments with peer-feedback using rubrics. Even if the classes are small, I began experimenting with it for the following reasons:

- the exam is in written form, and by experience often the answers fall short, incomplete, and with poor usage of scientific language. Peer-assessment could help training the student better to discriminate what is a good answer from the incomplete ones.
- Peer-assignment may also liberate time for the teacher to focus more on other parts of the course.

A natural solution I came up with is the concept of “Micro-assignments”. A micro-assignment is a single, small, but not too trivial, question which is uploaded as a resource in the Athena platform. The questions are in this case taken from a set of theoretical questions which previously have been used for exams, and normally would be addressed in a dedicated exercise session. The students are beforehand informed that these micro-assignments have a hard deadline, and it will be peer-assessed on a 4 grade scale.

The micro-assignments are not mandatory, but again presented to them as a tool where they can train their written language. The intent is to have two micro-assignments per week.

¹ Many of the new Athena features were also already available in Mondo, however there was no tradition to utilize these. Changing the learning management system probably delivered the necessary motivation, to set these up.

The idea was very well received by the students, and the first round had an response of 80%. Prior the deadline I noticed how students were sitting in groups and trying to work the answer for the micro-assignment. Group work is here explicitly allowed even if the answers are individual.

This concept was very well received following the course feedback, and will definitely be a concept I will continue to refine (in particular integration in the course plan, and more teacher feedback).

Future teaching elements

Beyond the list of already implemented teaching elements, there are additional elements I would like to try for future courses in general:

- **Lectures:** Along with implementing blended learning and flipped classroom concepts, I would like to record all lectures and move them out-of-class. This should enable me to spend time on discussion in-class of the respective lectures. This requires the lectures to be broken into smaller pieces, I would probably aim for ~10-15 minute videos, depending on topic. The videos can then be rearranged and possibly also more easily recycled if needed for other courses. However, I expect this will take a lot of time to prepare, and if there are errors found, the entire video will most likely have to be repeated. Nonetheless, with the digitization of the course material and the blended learning concept, I anticipate there will be an increased pressure to implement these at all universities in the future.
- **Summative assessment:** With the development of information technology and the availability of computers and modern data-processing possibilities, it seems anachronistic to use an exam form without access to books, computers. Furthermore, oral exams are more effective in probing understanding, as the examiner is able to have a dialogue with the student, giving him/her a chance to clarify any inconsistencies. Nonetheless, there is a long tradition for the written examination form in particular for the numerical part, which therefore will be difficult to change. I have still not found a proper solution to this problem. Contact to the Center for University Learning (CeUL) has been established, and a pedagogical project has been established to investigate this.
- **Scheduling:** From the experience I had with scheduling out-of-class activities for the tutorials, and due to the way how the Athena platform is constructed, it is worthwhile to consider to schedule most, if not *all*, out-of-class activities. This includes the time when they are supposed to read a chapter in a book for lecture preparation, preparation for presentations, writing assignments and similar. Me as a lecturer and course coordinator, may not be fully aware of that I sometimes demand too much from the students, e.g. by expecting they should turn in an assignment, read 100 pages in a book and also be prepared for the exercises, all between tuesday and wednesday. In other words, scheduling out-of-class activities will also help the teacher to better check whether the course actually can be completed on the designated ECTS load.