Sustainable technologies for low- and medium income countries TN0354, 10408.2324

 7.5 Hp
Pace of study = 25%
Education cycle = Advanced
Course leader = Jennifer Mcconville, Priscila de Morais Lima

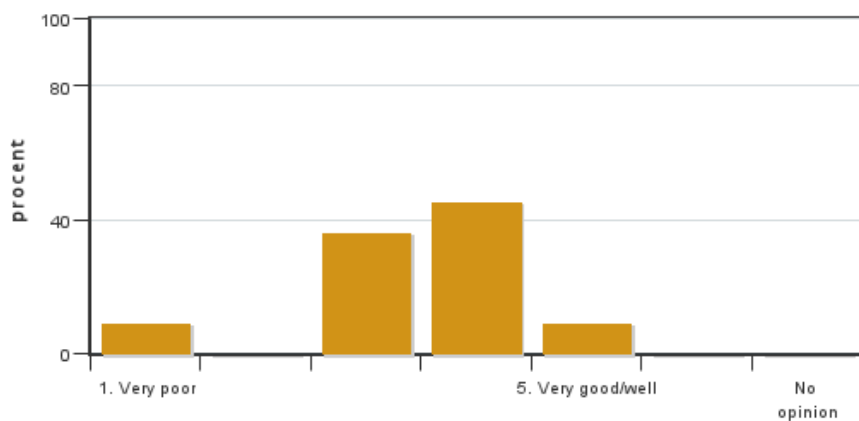## Evaluation report

Evaluation period: 2024-01-07   -   2024-01-28

 Answers   11
 Number of students 12
 Answer frequency   91 %

Mandatory standard questions

1.   My overall impression of the course is:

Answers: 11
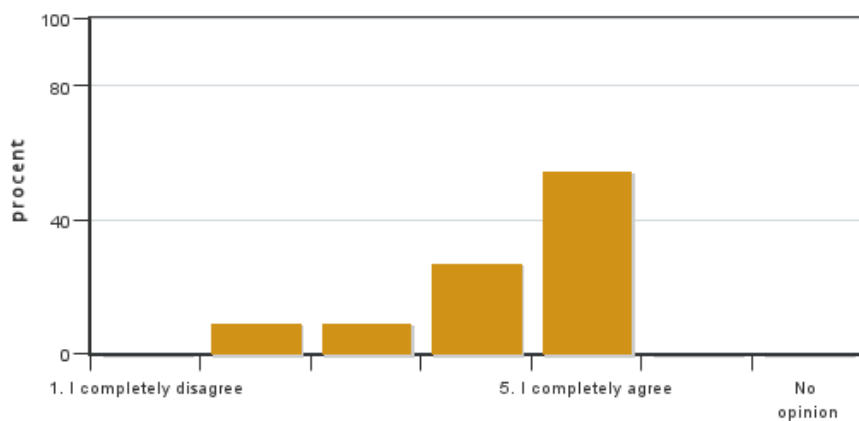Medel: 3,5
Median: 4

1: 1
2: 0
3: 4
4: 5
5: 1

No opinion: 0

2.   I found the course content to have clear links to the learning objectives of the course.

Answers: 11
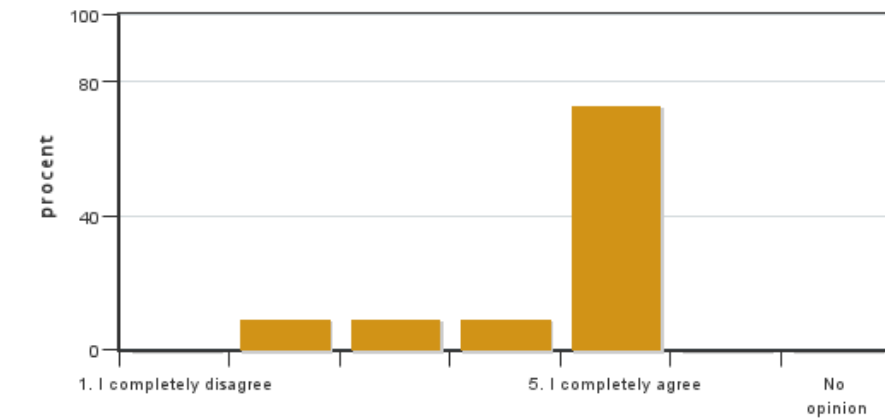Medel: 4,3
Median: 5

1: 0
2: 1
3: 1
4: 3
5: 6

No opinion: 0

3. My prior knowledge was sufficient for me to benefit from the course.

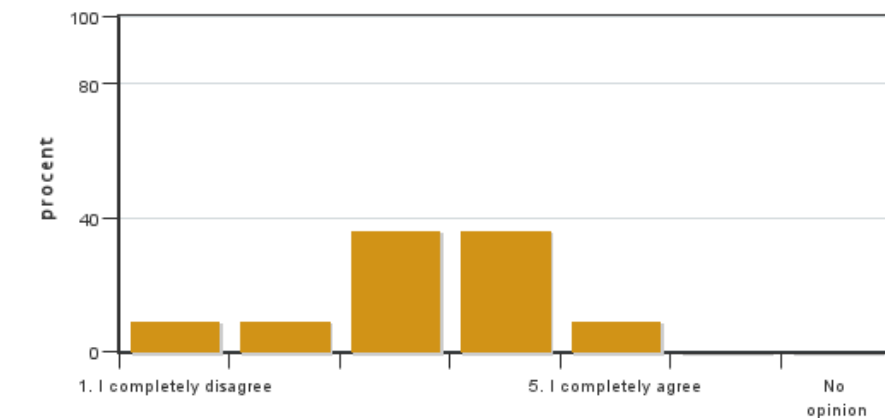Answers: 11
Medel: 4,5
Median: 5

1: 0
2: 1
3: 1
4: 1
5: 8

No opinion: 0

4. The information about the course was easily accessible.

Answers: 11
Medel: 3,3
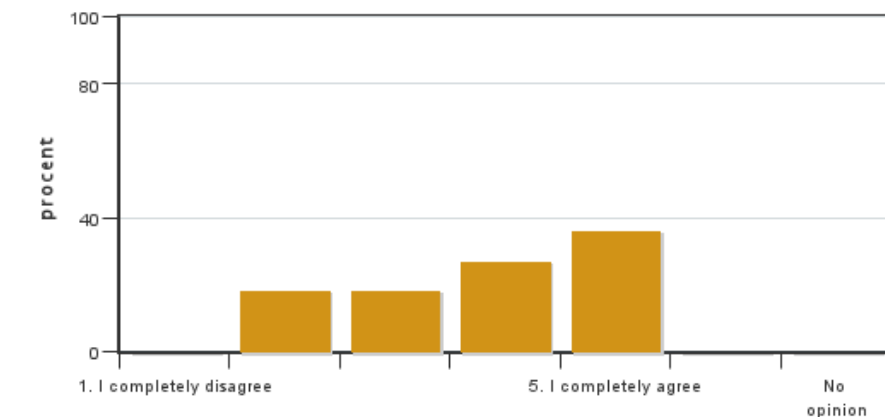Median: 3

1: 1
2: 1
3: 4
4: 4
5: 1

No opinion: 0

5. The various course components (lectures, course literature, exercises etc.) have supported my learning.

Answers: 11
Medel: 3,8
Median: 4

1: 0
2: 2
3: 2
4: 3
5: 4

No opinion: 0

6. The social learning environment has been inclusive, respecting differences of opinion.
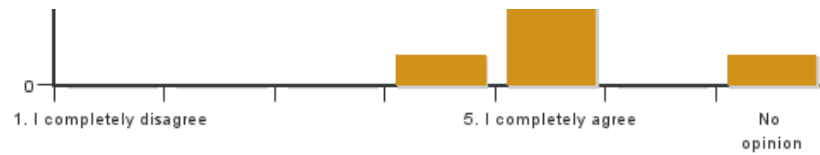
Answers: 11
Medel: 4,9
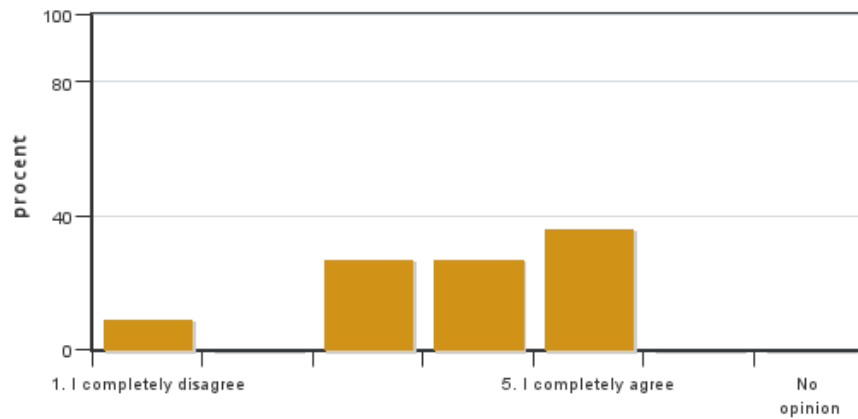Median: 5

1: 0
2: 0
3: 0
4: 1
5: 9

No opinion: 1

7. The physical learning environment (facilities, equipment etc.) has been satisfactory.

Answers: 11
Medel: 3,8
Median: 4

1: 1
2: 0
3: 3
4: 3
5: 4

No opinion: 0

8. The examination(s) provided opportunity to demonstrate what I had learnt during the course (see the learning objectives).
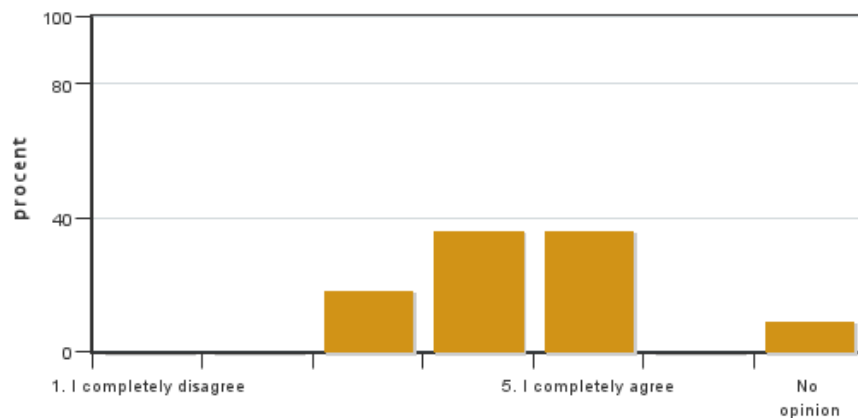
Answers: 11
Medel: 4,2
Median: 4

1: 0
2: 0
3: 2
4: 4
5: 4

No opinion: 1

9. The course covered the sustainable development aspect (environmental, social and/or financial sustainability).
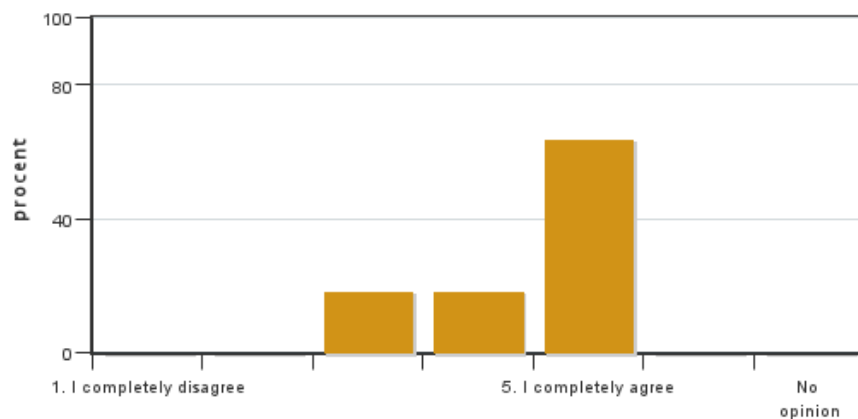
Answers: 11
Medel: 4,5
Median: 5

1: 0
2: 0
3: 2
4: 2
5: 7

No opinion: 0

10. I believe the course has included a gender and equality aspect, regarding content as well as teaching practices (e.g. perspective on the subject, reading list, allocation of speaking time and the use of master suppression techniques).

Answers: 11
Medel: 4,4
Median: 4

1: 0
2: 0
3: 1
4: 4
5: 5

No opinion: 1

11. The course covered international perspectives.

Answers: 11
Medel: 5,0
Median: 5

1: 0
2: 0
3: 0
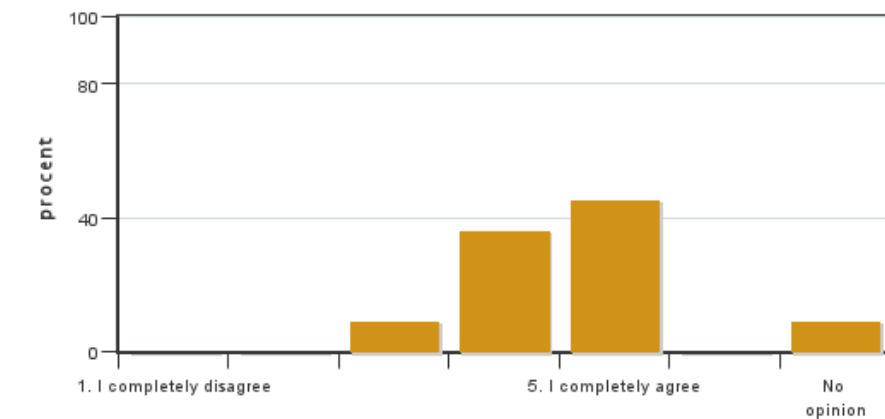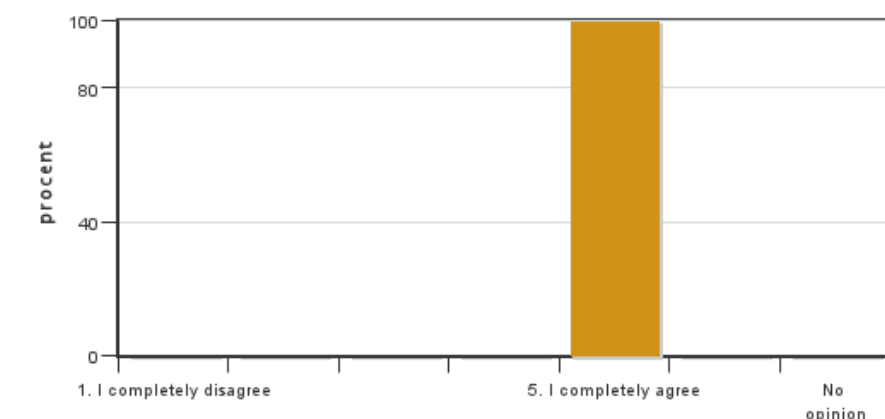4: 0
5: 11

No opinion: 0

12. On average, I have spent … hours/week on the course (including timetabled hours).
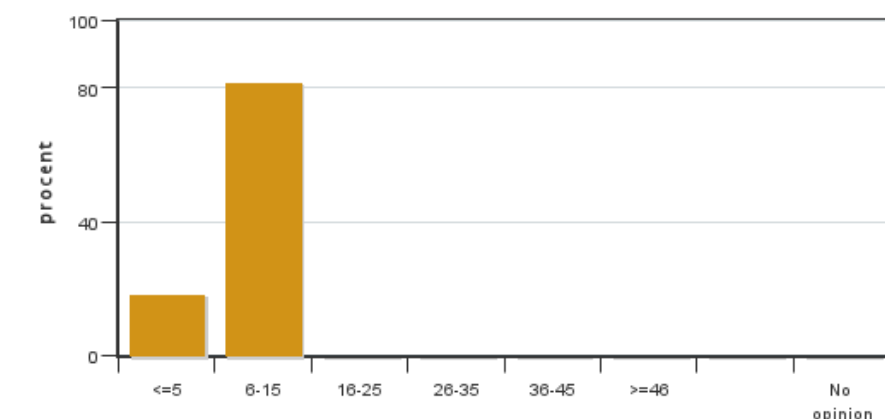
Answers: 11
Medel: 8,6
Median: 6-15

≤5: 2
6-15: 9
16-25: 0
26-35: 0
36-45: 0
≥46: 0

No opinion: 0

Course leaders comments

Eleven out of twelve students answered the course evaluation and the general impression of the course was predominantly good (3.5 out of 5), with one outlying grade of 1. In comment sections, students expressed that they found the course very interesting, relevant and educational, but that the planning could have been better. Information came out too late and was not so easily accessible (3.3/5). We talked a lot about "flipped classrooms" at the beginning of the course with the students, i.e. having fewer lectures and more seminars with open discussions in class, but this was not always followed by the different teachers of the course in practice, which caused frustration when the students prepared for seminar.

The learning environment has been inclusive (4.9/5), but the classrooms (Sal Q and R) have received many complaints about bad air (four out of four comments mention it).

The content of the course was found to be relevant (3.7-4.7/5) with the lower ratings targeting parts of the course that were not re-engaged with after being introduced, e.g. logistics and value chains. The course is project-oriented, and what the students choose to focus on in their projects largely determines which topics they spent more time on. We have discussed between us teachers whether the project work should be freer or distributed between different subjects, so that everything is covered.

The students considered themselves to have had good opportunities to demonstrate their learning (4.2/5), but we teachers intend to develop clearer grading criteria and perhaps revise the examination form to facilitate our grading. From the students' side, the assessment was 3.8/5 regarding whether they understood what was required to achieve a certain grade.

Positive aspects of the course:

- The course was considered very relevant and instructive. The diverse backgrounds of the teachers with personal experiences from many parts of the world were particularly appreciated.
- The inclusion and balancing of broad aspects of sustainable development in the course.
- The project work and the high degree of freedom
- The practical laboratory.
- Inclusive, respectful and equal study environment.

Planned areas for improvement:

- Clearer structure and better foresight in the provision of information via Canvas
- Clarify the grading criteria and include modules in the course, e.g. one module for the lectures, lab and another for the project.
- Make sure that seminars are seminars and not lectures (e.g. involve and engage the students). Avoid long sessions with only lectures. Make sure that all topics have both lectures and discussion seminars. To achieve this we will work to improve coordination between teachers and subject areas.
- Present the project work earlier so that the students can more easily absorb parts of the course that are relevant to their project, as well as distribute their time more evenly over the semester (especially for those who are studying other courses in parallel at the end of the term).

Student representatives comments

Out of the 12 students taking the course this term, 11 have participated in the evaluation (91%).

For the standard course evaluation questions, the students gave the following review:

The median impression of the course overall was a 4 out of 5 points, the average was slightly lower at 3,5 due to one outlying rating of 1 out of 5 points. Students thought that the course and the teachers were interesting, and that valuable information was taught. Some students also thought, that the course fits well thematically with the course "Safe Nutrient Recycling", although it was also stressful to have a 100% course during the project part of this course. The overall impression was, that the course has clear links to the learning objectives, and that the prior knowledge was sufficient for benefitting from the course.

A critique point for the course throughout the answers was, that the planning and structure of the course were not optimal. Students thought that information was often provided last minute, that classes which were held as seminars were actually just lectures, and it was not clear if a seminar required preparation or not. It was also not always clear when assignments were due. In some cases information was missing until students reminded the teachers, and even at the end of the course some presentation slides available in canvas were not from the current semester, but previous ones. Yet, overall the accessibility of information about the course was rated with a median of 3 out of 5 points.

The engagement of the teachers with the students during seminars varied, making it harder to follow class when the engagement was low. Some teachers were also hard to understand acoustically.

In regards to the question of inclusivity of the learning environment, one student commented that there was not a lot of discussion and the aspect was hard to judge. That student chose not to vote, but the rest of the students voted 4 or 5 points, leading to a median of 5 out of 5 points.

The physical learning environment was deemed quite satisfactory with a median of 4 out of 5 points. Students noted that the milling exercise which was held in a storage/garage building on campus had a very satisfactory location, and that the air flow and air quality in the lecture room (Sal Q and R) were of poor quality.

The provided examinations in the form of a group project report and presentations, and individual assignments were given a median of 4 out of 5 points for their usefulness in demonstrating what had been learnt in the course. One student commented, that not all of what had been learned could be included in the report.

Most students agreed that the course covered the sustainable development aspect, giving it a median rating of 5 out of 5 points. Several students commented on this aspect, that they thought the financial aspect could be included more.

All students agreed that the course covered international perspectives, and most students thought that it also included a gender and quality aspect, giving it a median 4 out of 5 points.

The most common time spent on the course per week was 6-15 hours. It was noted, that the time spent on it was quite uneven throughout the course, with more time needed during the project time. Students expressed the wish to start the project work earlier in order to balance out the time throughout the course period.

To the additional questions the students answered as follows:

The module "Introduction to sustainable development in low- and medium income countries" was deemed fairly relevant, giving it a median of 4 out of 5 points. Students commented, that they enjoyed the introduction module and it's lectures, and that it addressed the major elements of sustainable development (clean water and air, good sanitation), linking them to the SDG's. The lecture "Sustainable development and participatory research" was noted to have been particularly enjoyable.

The module "Sustainable resource management: water, nutrients and waste" received a median rating of 5 out of 5 points for how relevant it was, and students thought that it was very good. One student noted that it was the module where they had learnt the most form the lectures.

The module "Small-scale renewable energy technologies" was thought to be quite relevant and was given a median of 4 out 5 points. Students thought that it contained relevant content and good exercises, but that the seminars were held more like lectures and they wished they could have had real seminars, with more a more pedagogical approach.

The module "Small-scale transport technologies, logistics and value chain management" was also seen as relevant with 4 out of points. One student found that the module was very relevant since knowledge about small scale technologies applies to many developing countries. However, students noted that the module was a little confusing to them, and that it was not very clear how it was supposed to be integrated into the rest of the course. The link to the SDG's was also not clear.

The students agreed, that the course was somewhat challenging in a stimulating way, giving it a median of 4 out of points. This was elaborated by saying that the course was mostly challenging during the project work, and that it became more challenging by taking another 100% course at the same time.

When asked if they found it important to prepare for lectures by reviewing the course literature, students thought that it varied between lectures. For seminars it was noted to be important where it was requested to read beforehand, but not all seminars. One student expressed that they didn't prepare for lectures since it was communicated that only seminars required preparation. Similarly, another student thought that seminars which were held more like lectures as was discussed in previous sections above, did not require preparation. Yet, the median amount of points given was 4 out of 5.

In regards to whether students understood what teachers were talking about, the median answered points were 4 out of 5. One commented that some teachers spoke very quietly and could be hard to understand. Another student commented, that they understood what was being taught because they had prepared themselves before the lectures. On the contrary, one student felt that sometimes the teacher had not prepared the lecture and a red thread was missing in the presentations.

When asked if teachers provided concrete examples to relate to and learn from, most students agreed that this was the case. One student commented, that this was particularly the case in the assignments.

Concerning the grading in the course, the students rated their understanding quite high with a median of 4 out of 5 points. There were a few comments however, that the expectations were not completely clear. For example, it was hard to know how deep into the topics the students should go, if it was required to prepare for certain seminars or not since all classes were listed as assignment in the course page, and the deadlines for when things were to be sent were not always clear.

One of the less well performing aspects of the course, along with information accessibility, was regular feedback on progress. This, the students rated 3 out of 5 points. They noted, that they wished to have gotten more time with supervisors and mostly got feedback on the assignments but not otherwise. Some of the exercises towards the end of the course gave feedback very late, so that it wasn't very useful anymore. Also for the project, the wish to receive feedback at another preliminary hand in was expressed. Some students also noted that they were satisfied with the feedback provided.

Students mostly agreed, that they spent time on reflecting what they had learned regularly, rating it with a median of 4 out of 5 points. One student pointed out however, that towards the end of the course they had to spend more than 25% on the coursework (project work) and that they had no time left for reflection during that time.

Whether students could learn in a way that suited them had varied answers, but most agreed that it was the case. It was noted that the lectures in the afternoon were very long. In addition, it was said that the seminars should be a place for discussion and that this would have contributed more to learning. Students felt that the project work was a

good way to learn the topics in more detail but that time constraints also hindering the suitability of its learning method.

When asked what the best aspect of the course was, the answers given by students were: freedom, new perspectives on research, and praise for the course elements. What students enjoyed particularly, were the project work, individual assignments, the practical lab, hearing examples from teachers and the lectures, regarding topics and lecturers.

Improvement suggestions from the students included seminars, structure and the project work.

The seminars should be more like seminars, according to the students. They also wished for the course to be better structured. This includes improving the assignments and seminars, and improving the connection between seminars, lectures and the project. It was suggested by many to start the project earlier, which will improve time management for the students but was also hoped to improve the connectivity to the course modules and provide a better overview of the project. The wish to go through assignments after submission was expressed, as well as a wish for teachers to speak louder and for some of them to interact more with students during class. Lastly, the wish to have zoom meetings individually and not in a class room was expressed, as this made the teacher difficult to understand.

Advice from the students of this term to future students is, to do the reading and prepare for seminars, to start early on the project and stay in touch with your group, and to take the "Safe Nutrient Recycling" course in parallel if possible. While one student said to take the course, but only if the seminars are more proactive, another student expressed that they highly recommend the course, and that students should take the course since it gives a broader system approach and is really interesting.