

LEQ analysis VT2018 for the third-cycle course series “Seminars in Industrial Biotechnology” (3.0 credits) codes BB3330, BB3340, BB3350, BB3360 (course responsible Christina Divne)

Description of the course(s)

Course design

This is a PhD seminar course series (BB3350, BB3330, BB3340, BB3360, 3.0 ECTS each) where students are trained to critically analyze data within their research field presented in manuscript/article form. The four courses cover the full extent of the third-cycle education, and two are mandatory (6.0 ECTS). The courses are given as a single module examined by 80 percent attendance (DEL1). As part of the attendance criterium, three mandatory tasks are required: presence, presentation of own manuscript or article, critical review and discussion on manuscripts/articles presented by other students.

The doctoral students work primarily with their own manuscripts. The manuscripts can be at any stage from preliminary draft to revision stage with existing review comments. For students that have not yet authored a manuscript draft, published articles in varying fields of biotechnology (with focus on the students research areas, i.e., bioprocess technology, metabolic engineering, enzyme engineering, and structural biology) are discussed.

Each course (3.0 ECTS) spans one year with 18 course sessions (two per month), and the students can start at any time during the spring and fall study terms. Each student presents at one to two sessions per year, but all students take part in active in-depth review and analysis of a maximum of 18 manuscripts per year.

As of December 2018, the courses enroll a total of 14 doctoral students distributed over the four courses (but all students study together): 5 students BB3350 (year 1), 5 students BB3330 (year 2), 3 students BB3340 (year 3), and 1 student BB3360 (year 4).

Session setup

The presenting student emails the reading material (manuscript or article) to all students one week before the course session. All other students prepare a careful review and critical analysis before the course session.

During the course session, the presenter summarizes the contents of the manuscript/article in the form of a powerpoint presentation. Discussions regarding all aspects of the manuscript/article (layout/disposition, language, data presentation, data analysis, conclusion etc) take place during and after the presentation. All students are encouraged to ask questions, reflect and discuss.

LEQ analysis spring 2018

General comments

The first LEQ was performed during the spring 2018 and includes answers from 9 doctoral students. The number of students is low, but I have nonetheless chosen to make an analysis presented in the form of a spider diagram (see Appendix 1). When reviewing the results for the standard questions (1-22) as well as comments to the open questions, one should keep in mind that the comments are made by students at different stages of their doctoral studies. Some students have just started the course series and do not have the “full picture” of all subjects discussed in the course, whereas others have attended for several years and have a better understanding of the strengths and possible weaknesses of the courses. I have noted that the longer a student has attended the course series, the more rewarding and useful the student finds the course for his/her own development.

Positive aspects in brief

The course series is greatly appreciated by the doctoral students. They feel that the in-depth discussions concerning their manuscripts are rewarding, and help them think critically about their own and others' writing style, data presentation, and analysis. Importantly, the students feel that they are safe to express their opinions in the group.

Aspects that can be improved

The spider diagram displays scores for the standard questions 1-22, where +3 means “strongly agree”, -3 “strongly disagree”, and 0 is “neither agree or disagree”. Thus, any number >0 is a positive response to the question. While the students were overall exceptionally positive (scores in the range 2-3), a few questions scored

slightly lower (however still considered good, i.e. >1). These questions (7, 11, 12, 13, 18) are highlighted by circles in the spider diagram in Appendix 1.

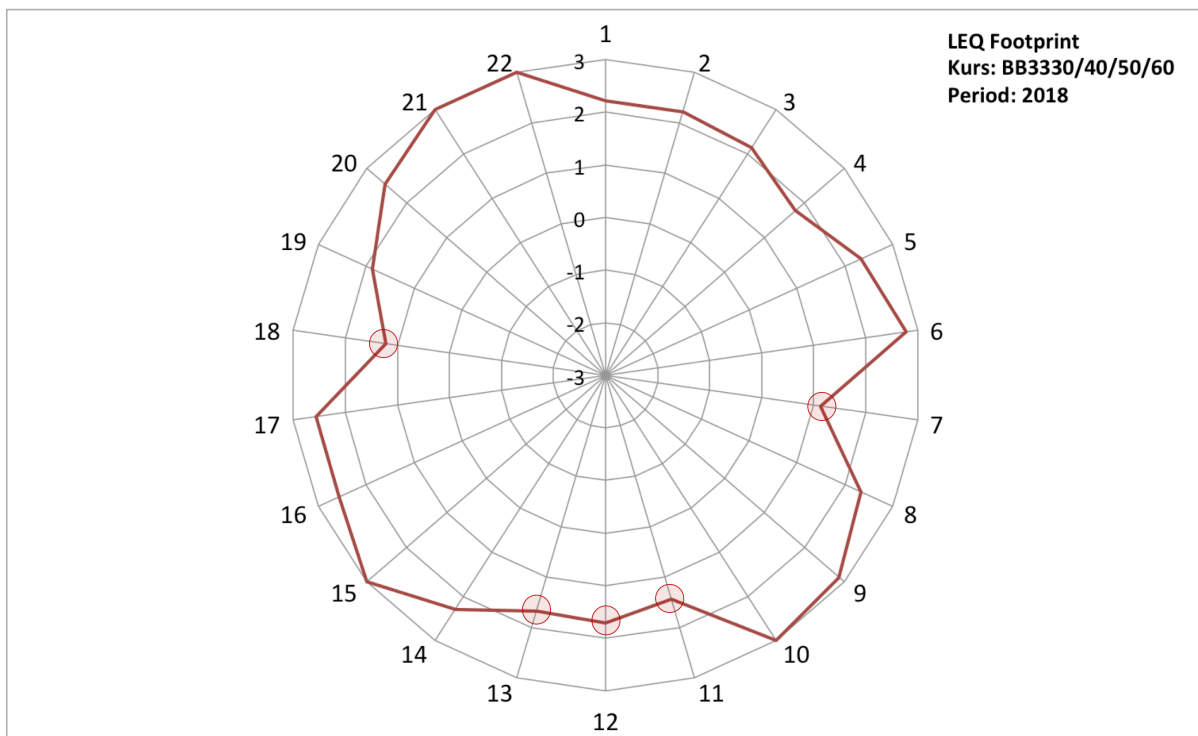
7. The learning objectives helped me understand what I was expected to achieve
11. Understanding of key concepts was given high priority
12. The course activities helped me to reach the learning objectives efficiently
13. I understood what I was expected to learn in order to get a particular grade
18. I regularly spent time to reflect on what I learned

- As can be deduced from above, the first three questions (7, 11, 12) all relate in one way or the other to knowledge regarding learning objectives. The course plans for the seminar courses were originally written by Gen Larsson, and at that time, the regulations were somewhat different. Consequently, the courses lack proper learning outcomes in the course plans. This explains, at least partly, why the students are not fully aware of the learning outcomes and how to fulfill them.
- Regarding question 13, there is no grading for examination on these courses, only pass/fail based on attendance. Thus, it is perfectly logical that this question scores lower.
- That question 18 also receives a somewhat lower score also seems logical. The students probably mostly reflect on what they learnt when writing their manuscripts, which they do not do on a regular basis. However, I think the knowledge they get from the course finds its way into a wide range of their research activities and analysis, although they may not realize it.

Follow-up

The course design and execution are not in need of any major revision. Most importantly, I intend to revise the course plans during 2019, and will add proper learning outcomes at that point. I will also further reinforce the learning outcomes in class, and hopefully the goals will become clearer.

Appendix 1. LEQ VT2018



Meaningfulness – emotional level

1. I worked with interesting issues
2. Out of interest, I explored parts of the topic on my own
3. I could learn by trying out my own ideas
4. The course was challenging in a stimulating way
5. I felt togetherness with other course participants
6. The atmosphere in the course was open and inclusive

Comprehensibility – cognitive level

7. The learning objectives helped me understand what I was expected to achieve
8. I understood how the course was organized and what I was expected to do
9. I understood what the teachers were talking about
10. I was able to learn from concrete examples that I could relate to
11. Understanding of key concepts was given high priority
12. The course activities helped me to reach the learning objectives efficiently
13. I understood what I was expected to learn in order to get a particular grade
14. I regularly received feedback that helped me see my progress
15. I could practice and receive feedback without any grading being done
16. The assessment on the course was fair and honest

Manageability – instrumental level

17. My background knowledge was sufficient to follow the course
18. I regularly spent time to reflect on what I learned
19. I could learn in a way that suited me
20. I had opportunities to choose what I was going to do
21. I could learn by collaborating and discussing with others
22. I could get support if I needed it

General questions

23. What was the best aspect of the course?

- *We learn how to write a research article in a very practical way, and get the feedback of our own manuscripts from peer review.*
- *A lot of constructive comments, very useful.*
- *Keep up-to-date with recent literature. Get feedback on own manuscripts.*
- *That we develop the ability to scientifically discuss and critique research related to industrial biotechnology.*
- *Discussions and feedback.*
- *Discussions.*
- *Interesting discussions with nice colleagues.*
- *Open discussions in a safe environment. Sharing thoughts and knowledge (both hands-on knowledge and theoretical). Reading and seeing many different articles.*
- *Peer-review of the manuscript by the fellow PhD student. Learn from people with different backgrounds / ideas / point-of-views.*

24. What would you suggest to improve?

- *I think now it is good enough.*
- *Nothing to improve, to me a very excellent course.*
- *When you do not present your own manuscript, add your presentation or make copies about your own comments (what is good or bad in your opinion) to the work that you are presenting.*
- *More involvement from students.*
- *Speak up!*
- *A somewhat wide range of what is supposed to be discussed, maybe narrowing it down. Is it writing-focused / methodology-focused / results-focused. Hard to cover all aspects for each paper.*
- *Find a way to get everyone involved. Sometimes not everyone is so actively involved which does not necessarily mean that they don't have comments. Maybe let everyone state their main comments / critique before we dive into the discussion. This holds also for when we discuss an article.*
- *I have the feeling that the discussions are too much focussed on how the figure / tables look but there are also other parts that are important to address if for example I get feedback I also want to know which part could be more concise, what they think about the "flow" in the text, what their ideas are about the introduction/abstract etc. These parts are now not discussed at all.*

25. What advice would you like to give to future course participants?

- *You will benefit a lot if you prepare your own manuscript and share it with us.*
- *Go to the course as often as possible and get as much input as possible.*
- *If possible try to present your own manuscript to get valuable feedback.*
- *Try to present your own manuscript or work, you receive so good feedback.*
- *Read the paper and discuss it with your peers before the session.*
- *Promotion of a more systematic or deep analysis of an article from a scientific point of view (not grammar and design, although that part is important feedback in written comments to student's manuscripts). Concluding marks from teacher in the end of a seminar would also be insightful and interesting to hear.*
- *Try to look at the bigger picture of an article/manuscript, don't only look at the way figures are made, but try to identify if the stated goals are achieved/clear etc.*

26. Is there anything else you would like to add?

- *It would be better if someone could bring some knowledge about scientific writing skills. Maybe 10 min each time, like how to write an introduction section.*
- *This course is highly appreciated and very helpful.*
- *No, good course and well organized.*
- *Really nice and pleasant course.*
- *Maybe would be good if the presenter discusses what sort of feedback they want to see, which parts they are insecure about and what our ideas are about it, as a way to give better feedback to the presenter.*