



Course analysis

Higher Seminar in Industrial Biotechnology I-V

<u>Course name:</u> Higher Seminar in Industrial Biotechnology I-V	<u>Cycle:</u> 3
<u>Course code:</u> FCB3001, FCB3002, FCB3003, FCB3004, FCB3005	<u>ECTS credits:</u> 3,0
<u>Term:</u> VT21+HT21	<u>Study period:</u> P1-P4
<u>Course coordinator:</u> Christina Divne	<u>Examiner:</u> Christina Divne
<u>Degree of examination:</u> 100%	<u>Answer frequency:</u> 33% (3 of 9 participants answered from all courses)

1. About the course series

The course series including courses FCB3001-FCB3004 was established spring 2019 and replaced the previous course series FBB3330-FBB3360 that had been running 2014-2019. An additional course in the series, FCB3005, was established in 2021.

The seminar course series for doctoral student "Higher Seminar in Industrial Biotechnology" (course codes FCB3001, FCB3002, FCB3003, FCB3004, FCB3005 for years 1-5 respectively, 3.0 ECTS each) focuses on critical analysis of published research within the broader field of biotechnology as well as in more specialized fields of research. Whenever possible, the students also present and critically analyze each other's manuscripts, which can be at any stage of completion.

The five courses cover the full extent of the third-cycle education. The courses are examined as a single module through by 80 percent active attendance. As part of the attendance criterion, three mandatory tasks are required: presence, presentation of own manuscript or article, critical review and discussion on manuscripts/articles presented by other students.

When doctoral students work 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 two sessions per month, and the students can start at any time during year. Typically, each student presents at two sessions per year, but all students take part in active in-depth review and analysis.

2. Pedagogical approach

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 an oral presentation supported by lecture slides. 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.

The learning outcomes are coupled to several of the Higher Education Ordinance's examination objectives for doctoral and licentiate degree, more specifically:

- ILO1: Links to Higher Education Ordinance's degree objectives A1 and A2 for doctoral degree, and A1 for licentiate degree.
- ILO2: Links to Higher Education Ordinance's degree objectives B1, B2, B4, B5 and B6 for doctoral degree, and B1 and C3 for licentiate degree.
- ILO3: Links to Higher Education Ordinance's degree objectives B3 and B4 for doctoral degree, and to B2 for licentiate degree.
- ILO4: Links to Higher Education Ordinance's degree objectives C1, C2 for both degrees, including KTH's local sustainability goal.

3. Student throughput and group composition

As of December 2021, the seminar series enrolled a total of 9 doctoral students distributed over the five courses (but all students study together).

Course analysis

Number of new students enrolled 2021:	Number of students finishing 2021:
FCB3001: 1	FCB3001: 1
FCB3002: 0	FCB3002: 2
FCB3003: 4	FCB3003: 1
FCB3004: 1	FCB3004: 2
FCB3005: 1	FCB3005: 0

4. Changes made before this course offering

Due to the pandemic, the course has been mainly given in zoom but during periods in hybrid mode.

5. Summary of the course evaluations

The questions 1-11 were scored 1-5 where 1=strongly disagree; 3= neither agree or disagree; 5=strongly agree.

Question	
1. The course helped me to learn about new topics within the field of Biotechnology to get a broader perspective.	4, 5, 3
2. The course helped me to obtain specialized knowledge in my own research area.	3, 4, 2
3. I had the possibility to practice presenting research results (own and others) during the course.	5, 5, 5
4. I spent time thinking about how to present research in a pedagogical way when preparing presentations.	5, 2, 4
5. I had the possibility to practice critical analysis and evaluation.	5, 5, 5
6. I had the possibility to learn about academic writing and academic authorship, and the publishing process.	4, 3, 4
7. I had the possibility to discuss ethical issues related to scientific writing and publishing research results.	4, 2, 3
8. I had the possibility to discuss and learn about sustainability through discussions and own reflection.	4, 2, 3
9. I felt comfortable discussing in an open, inclusive and non-judgmental environment.	5, 5, 5
10. I consider the course useful for my studies and research project.	3, 4, 4
11. I consider the course useful for reaching the examination goals for my intended degree.	4, 4, 4
12. What was the best aspect of the course ?	<ul style="list-style-type: none"> ▪ The best aspect of the course is seeing the improvements in all of us taking the course, becoming more and more used and comfortable in fulfilling the learning outcomes of this course. Discussions became more natural and we manage to interact also if the topic is outside of our field. ▪ The opportunity to critically evaluate your own presentation data and others'. ▪ The atmosphere created, which was non-judgmental and open for every kind of question.
13. What can be improved in the course ?	<ul style="list-style-type: none"> ▪ There is still room for improvement, especially from the point of view of the pedagogical presentation of manuscripts and articles. ▪ The different specializations in the group make it difficult to gain research related input or have in depth discussions about the presented papers.
14. Any other comments ?	<ul style="list-style-type: none"> ▪ I appreciate the hybrid model, I think it works really well.



Course analysis

Positive aspects:

The course series is overall appreciated by the doctoral students. The most appreciated aspects is to be able to practice presenting research results,, critical analysis and evaluation in an open and non-judgmental atmosphere.

Aspects that can be improved:

The challenges with this type of course is that all students have different research areas and expertise. While this helps to broaden their perspective in the third-cycle subject it also presents challenges in understanding others' work and may limit the input on own work when it comes to the specialized research areas. This is however not easy to do anything about.

Suggestion for changes for the next course offering

There have been no specific suggestions for improvement but since the hybrid mode is appreciated, we will continue with course sessions both on site and zoom.