Course analysis

BB2165 Biomolecular Structure and Function HT19-1

Course title: Biomolecular structure and function	
Course code: BB2165	**ECTS credits:** 7,5
The course is part of program: Medicinsk bioteknologi, Industriell och miljöinriktad bioteknologi	
Term: HT19	**Study period:** P1
Course coordinator: Christina Divne	**Examiner:** Christina Divne
Number of registered students: 75	**Passed students when the course ends:** 60
Degree of examination (%): 80	**Degree of achievement (%):** 88.7
Answer frequency LEQ (%): 79 (49 of 62 answered the LEQ)	

1. Description of performed changes and development for this course offering

- Revised lectures. Strengthened focus on key concepts, not details.
- Studysheets for each lecture and exercise stating key concepts and coupling to (and concretization of) the course's learning outcomes.
- Study kinemages.
- Strengthened the structure-function focus. Include a common structural biology focus in exercises (GPCRs).
- Streamlined software, fixed time for exercises in the computer room, and provide better instructions for softwares.
- Reduced number of exercises from 6 to 4 to give more time for the project.
- Reorganized lectures and exercises.
- Better feedback on lab reports in general.
- Example exam with real examples of different grades for selected questions.

2. Summary of the student's course evaluations (LEQ)

This year was the second time the course was given, and based on last year's analysis, a number of changes was implemented to improve the learning environment. It is satisfying that the changes could be translated into distinct improvements. Overall, the student's perception of their study environment has improved since last year's course. The course is now perceived as more manageable and comprehensive. The students also feel that the course is more meaningful. The overall conclusion is that also this year's students consider the course topics important and valuable, and that our efforts to improve the study environment by removing the most obvious shortcomings and obstacles have been successful.

Summary of qualitative aspects from the LEQ

Positive aspects:

- Lectures well received in general. Some lectures need to be improved with respect to comprehensibility, and some need to cut back on details.
- While the intended learning outcomes (ILOs) of the course were perceived as difficult to understand (too vague), the study sheets with lists of key concepts and concretized ILOs for each lecture, exercise and project were considered useful.

- The students still (despite more efforts explaining) do not feel that ILOs and grading criteria are meaningful.
- In general the students felt that they were receiving enough support and feedback.
- The exercises and project are greatly appreciated.
- Especially the project was well received as evidenced by comments like:
- Teamwork greatly appreciated.
- The study sheets and study kinemages were praised.
- Students don't feel they have enough background to understand MD.
- Overall the students were very content with the teachers' performance, feedback and support.

Suggestions for improvements:

- While the lectures were generally appreciated, suggested improvements included fewer slides, less details and optimization and clarification of more theoretical lectures such as molecular dynamics.
- There was a suggestion to have the softwares installed also in other computer rooms (at main campus), and to reduce (even more) the number of softwares, and if possible use softwares that are easier to use.
- Regarding study support, the students want more previous exams, and better understanding of the grading criteria.

The students' advice to future course participants:

- Start to study early and throughout the course.
- Look at the learning outcomes as early as possible.
- The programs seem difficult at first, but they are fun afterwards.
- Ask questions when you're in doubt, and whenever you can.
- Ask questions frequently, study with others and focus on the learning outcomes of each lecture.

Student comments making my day as a teacher:

- I am very thankful to be able to participate in this course. It was a new way of learning too.
- Admirable to open the course with previous criticism! Responsiveness towards the students is always appreciated!
- Fun course. Would do it again if I got amnesia.
- Thank you ! ☺
- Great course ☺
- Thank you for the course, I learned a lot!
- I liked the project and the labs the best since the knowledge could be applied and there were good opportunities for discussions with the teachers.
- The course was definitely one of the better courses! It was clear what one was supposed to learn, but also all teachers were very open and inviting.
- It felt like real science/research since it was based on evaluating and developing others' publications.

- The exercises were really helpful to understand both methods and learning topics
- Given freedom to explore. I would like getting more kinemage-type tasks.

3. Reflections on execution and results

a. Strengths of the course:

- The students appreciate the new course topics, and their continued constructive criticism paves the way for effective course development towards an improved learning experience.
- The course's interactive setup with coupled lectures exercises and project.
- Real-life practical training to understand, validate and use biomolecular structure data.
- Close connection to the research front of the topics covered, and implementation in the project.
- Study sheets and study kinemages.

b. Weaknesses of the course:

- While the course has improved considerably since last year when the course was given for the first time, some challenges remain, including better explanation and concretization of the theory-heavy topics and general optimization of lecture and study material.

4. Suggestion for changes for the next course offering

- Review lecture material to include only the relevant information.
- Further concretization of the learning outcomes by examples of exam questions and how they couple to ILOs and individual grades.
- Consider to exclude MD exercise and provide more time for project or replace by other.
- Investigate the possibility to install the softwares in more computer rooms.
- Consider a shorter written exam, and instead give a quiz that covers E-level concepts in Canvas.
- Discuss how to prepare better interactive study material for the theoretical lectures/topics.
- Limit non-essential equations and formulas and focus on their meaning instead.
- More structured supervision in the project.

5. Other points

Appendices:

1. Course evaluation (LEQ)

Summary of quantitative aspects from the LEQ

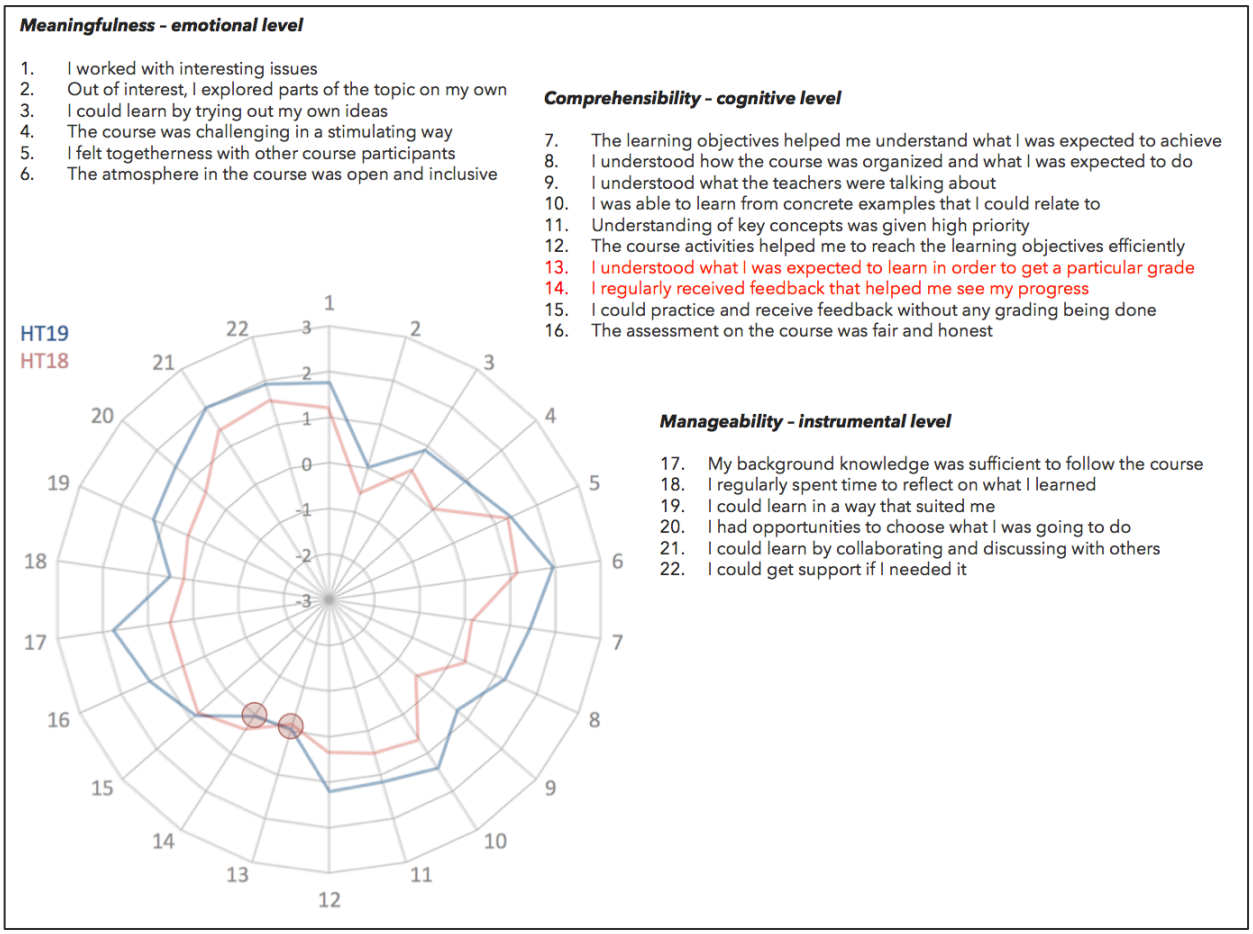

Figure 1. LEQ questions and spider diagram. Comparison for HT19 (blue) and HT18 (red).

The Spider diagram shows the comparison between the quantitative evaluations of the learning environment from the fall 2018 (red) and this year, fall 2019 (blue). There is a small but distinct improvement of meaningfulness, particularly regarding course atmosphere and the possibility to try own ideas, however, the students still find the course relatively challenging. One reason is that the course is very intensive and demanding. Considerable improvement is observed regarding comprehensibility, where study sheets with concretized ILOs for each lecture, exercise and project, as well as an example exam helped the students focus on the key learning concepts of the course. Considerable improvement is also seen for manageability, especially in the case of having sufficient prior knowledge to follow the course.