

Course analysis

SK2532 Biomedicine for Engineers

2021

The course data

Course credits: 7.5 credits (written exam TEN1 6.0 credits, grades A-F; home assignment INL1 1.5 credits, grades P/F)

Course responsible: Marina Zelenina

Teaching hours: lectures 26 h, seminar 2 h

Number of registered students: 10

Graduation rate: 100 %

Grade distribution: A – 9 students (90 %), B – 1 student (10 %)

The course layout in 2021

In autumn 2021, the course was given for the first time. However, it was not totally new; it was based on the first part of the bigger course, SK2531 Biomedicine for Engineers, 12 credits. Having a smaller introductory biomedicine course was considered to be necessary because it better fitted into the renewed Biomedical Physics track in Engineering Physics master program.

The course was given using so called *flipped classroom* strategy. The lectures were pre-recorded and made available to the students one by one as the course progressed. On the time slots in the schedule, we had online meetings in Zoom (due to Covid-19 pandemic). Before each Zoom meeting the students were supposed to have watched the corresponding lecture recording and to have read the respective book chapter. At the meeting we discussed this material. Everyone had a chance to ask questions if something was not clear. Part of the discussion was in form of *group discussions* in breakout rooms in Zoom.

At each meeting, the students answered *a quiz* on the lecture material. The points from the quizzes were then used as bonus points at the final exam.

At each meeting, we went through the previous quiz questions, making sure that everyone understood their mistakes.

Most of the students attended and actively participated in the *seminar* given by the PhD students that were taking the parallel course FSK3532.

The topic of the *home assignment* was Ethical Issues in Biomedical Research. The students wrote about the issues/dilemmas that they thought were important or interesting to explore.

The exam was performed on campus. The news for this year was that the exams were scanned, and the teacher could correct them in Canvas. This hopefully made it easier for the students to read the teacher's comments.

Unfortunately, only one student answered *the course survey*. The student had a very good general impression about the course. The student I liked the flipped classroom layout because he/she could listen to the lectures at his/her own pace. The student thought that having the

regular quizzes was good. The course was a bit more time consuming compared to other courses, but he/she really liked the topic; to get a better understanding of how the cell works was really fascinating.

We had an elected student representative who could convey to the teacher any issue that might have arisen during or after the course. However, **no issues** were raised by the students.

The plan for 2022

The course lectures will be somewhat updated according to the latest edition of the course book, Essential Cell Biology.

The course will continue to follow the flipped classroom layout, with discussions of the material and quizzes hopefully performed in a classroom on campus.

The topic for the home assignment will be the same, because it is important to be aware of the ethical issues in biomedical research and have a personal opinion about the matter whether or not one is going to be engaged in the research in the future.

Things to consider:

One might need to book bigger classrooms to organize the group discussions.

It would be nice to continue with online quizzes – but then all the students need to have their laptops in the classroom. Maybe to have a paper alternative for those who don't want to bring them.

If we continue with the online quizzes, I should have some extension cords with me, and the students need to bring their power adapters (chargers) to make sure that the laptops are functional for the quizzes.