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Course analysis for "MOBA02 Chemistry of the Cell/ EXTGG55 Biochemistry (15 credit points)" HT2020

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Other teachers: Urban Johanson, Tommy Cedervall. Teaching assistants: Camille Garcia, Egle Kelpsiene, Dev Thacker

Registered student: *MOBA02*: 30 registered students (20 re-registered); *EXTG55*: 6 registered students.

Grades:

MOBA02: 9 students UK, 20 students G, 11 students VG (total 40 students took the exam, 77.5% passed).

EXTG55: 0 students failed, 2 students grade 3; 3 students grade 4, 1 student grade 5 (total 6 students took the exam, 100% passed)

Course description

The course is given under two course codes, *MOBA02* (Science faculty) and *EXTGG* (Technical faculty, LTH), but the course content and the exam is the same for all students (grade system varies for the two faculties). In the fall semester the course is in English.

The course is a basic course in biochemistry, typically taken year two. It is compulsory for Bachelor program in Chemistry. The course has several other student categories, including such on the program Molecular Biology (Science faculty), LTH students (Nanotechnology, course code *EXTG55*) and some students from Medicine. Most of the fall semesters some exchange students take the course, for the most part coming from other European countries.

The course has a course book (Berg et al "Biochemistry", 9th edition), a course compendium printed and sold by Media tryck (includes e.g. materials for the lab practical "Agal" and group discussion (GD) problems), a Canvas course page where course materials (e.g. lecture presentations, GD assignments, general course information) are uploaded.

Seventeen chapters in the book is included in the course. Each chapter is covered by a lecture and a group discussion (GD) with associated problems. Lectures and GDs are not compulsory. Lectures and GD were digital HT20, due to Covid-19 regulations. Typically two chapters are covered by lectures, scheduled the same day, followed by one reading and GD



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problem solving day with a GD one of the following days. Lectures were scheduled for all students at the same time (the majority were recorded and put on the webpage). The students were divided in three groups (A, B and C) due to lab practical Agal and Bioinformatics computer practical. GDs were given for one-two groups at the same time, dependent on the schedule for the Agal laboratory practical. During the GD (via zoom) students were discussing the GD problems (approx. 7-16 per chapter) in break out rooms, the teachers entered occasionally to give advice and supervision (typically 1h 45 min) and on requests explained how to solve problems and give the correct answers. This semester (and the previous one) students could file their answers via a Canvas assignment (up to approx. 4 hours after the GD) and if doing so essentially correct for all GD, students could get up to 12 bonus points for the exam (the exam gave maximum 100 points). If GD problems were unanswered or incorrect the points were reduced.

The course consists of two practicals, a laboratory practical (Agal) (5 days) and a Bioinformatics (BioInf) computer practical (5 days). Participation and report hand in are compulsory for both. The laboratory practical includes a compulsory planning and a report to hand in (digitally). The Bioinformatics practical includes problem based learning (PBL) case discussions with a closing session and report hand in (all digital). It also includes approx. 8 questions which are connected to the enzyme studied in the Agal laboratory practical.

The course ended with a 5 hours written exam (8 problems, total 100 points) which was held digitally in Canvas, overseen via zoom.

Evaluation

I. Summary of evaluation

Student replies to the evaluation: 13 (36% of 36 first registered students that were asked to participate; 11 for MOBA02 and 2 EXTG55 – about the same percentage for both categories).

The students were sent a link where they could give their answers to 18 questions and write free text comments. The reply number is considered low (despite 3 reminders) but sufficient to summarise and consider the student's views.

Summary of the students replies on the evaluation: In summary the students were very satisfied with the course. In particular the group discussions were very well received (mean 4,4 out of 1-5 and where 5 is the best grade) as well as the laboratory practical (mean grade 4,5) and the bioinformatics computer practical (mean grade 4,0). The compendium covering these parts were also very well received (4,2-4,3) as well as the course book (4,5).



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The lectures were well received, albeit somewhat lower grade (3,5) and a majority of the students spent approx. 30 h per week on the course (61%), followed by 40 h (23%). The absolute majority of the students think the course "was relevant for their education" (mean 4,6, where 1=totally disagree and 5=totally agree).

The students think the course "was organized in a satisfactory manner" (4,3 where 1=totally disagree, 5=totally agree) and that the digital learning environment was good to very good (5) with a mean grade of 4.0. The exam were thought to "reflect the course" (4,4, where 5=totally agree). Top 5 words that students connect with the course were: useful (77%), interesting (69%), structured (62%), stimulating (54%), hard work (38%).

The students could give free text comments, some examples given below.

Group discussions: very good, relevant questions, the best part, worked fine but was stressful, useful to talk through the problems, it didn't work for me – stressed me out.

Laboratory practical: nice to do practical, really well planned and organized, more help could have been given, interesting and fun, good compendium with relevant questions to prepare for the lab.

Bioinformatics practical: fun way of learning different tools, interesting and good, really good practical, some unclear instructions for PBL, instructions a bit unclear, lectures and compendium were helpful in getting an introduction.

Lectures: good summary of important parts of the book, very good lectures and speakers, very helpful, handouts were amazing but the lectures did not add alot, make them clearer, some lectures hard to understand.

Book: good, alot of text to read for just abit of information, good but sometimes hard to follow.

What did you appreciate the most: interesting topics, structured, always one thing ahead of you, lab was well structured, all the efforts by teachers and assistants, Agal lab, all parts were interesting, laboratory part (several), Group discussions, power points & the literature, the compendium.

Suggestions for improvements: everything was perfect, make it more general (details stressful), I don't understand why we need to learn by heart – if I need to know about a reaction I can check it, in the lectures explain more why it matters in the big picture.

II. Teachers comments

In general the teachers think the course went well. Due to that the course were digital, the student interaction was of course less which may affect weaker students more, perhaps more so than in lecture settings. The group discussions worked well, but with declining participation later in the course (perhaps due to report writing deadlines etc.) Some lab reports required alot of (digital) interaction from the assistants, the less "live" time potentially contributed



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negatively here. Some important web pages for bioinformatics portals and tools changed just before and under the course which made some of the printed instructions outdated. Updated instructions were provided via Canvas.

III. Evaluation of changes since HT19

The course (except the lab practical) were digital due to Covid 19. It worked well under the circumstances, but affected the possibility to support some students. The group discussions required hand ins in order to achieve bonus points, which is judged to be beneficial for the students learning. The bioinformatics questions previously provided within the Agal practical were moved to the bioinformatics practical. This seems to have worked better for the students and also eased the workload for the course assistants.

IV. Suggestions for changes to HT21

Most of the course parts are working very well. We will make an effort to put the lectures even better in to context (in a broader perspective). We made an effort on this during the introductory days, but will do this even better in all lectures. This can help to motivate the students "to learn and understand also some important details". During the spring we will also evaluate how we can use the digital platform associated with the course book (eg a library of digital problems that the students can work independently with). This, however, comes with a cost. We will also look after how we even better can guide the students how to prepare a good lab report (this has been progressed during the last couple of years), how to start in good time – during the lab (and make them understand how much they also gain if they do so). The bioinformatics part and the cases are updated each semester.

20210323, compilation by Henrik Stålbrand.....

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