

Example template – Course analysis (course evaluation)

Course code 1BI048	Course title Molecular Medicine – Cardiometabolic and Infectious Diseases	Credits 15
Semester HT2024	Period 2024-11-04 – 2025-01-17	

Course coordinator Hanna Björck (Deputy Course Director) Christopher Sundling (Course Director) Mari Liljefors (Course Administrator)	Examiner Rachel Fisher
Teacher in charge of component Hanna Björck (Cardiometabolic diseases) Christopher Sundling (Infectious diseases) Sherwin Chan and Xiao-wei Zheng (Research application) Magdalena Paolino (Lab – Methods in Molecular Biology)	Other participating teachers A range of teachers, both from within and outside the Department of Medicine (Solna), including both clinicians and researchers (from KI and/or KS).

Number of registered students during the three week check 46 (incl. 9 exchange students)	Number approved on the last course date 42	Response frequency course evaluation survey 65.22 %
Other methods for student influence (in addition to concluding course evaluation) The course had two course councils. One was held three weeks after the start of the course (Nov 19) with course representative, and the second was held after the last learning activity of the course. The last course council/course evaluation was open for all students to attend. Students were encouraged to give continuous feedback either directly to the course leaders or to the class representatives.		
Feedback reporting of the course evaluation results to the students The short summary of the course survey was published on the open course website (drupal) upon survey closure. The course analysis will be made available on the same site. A link to the survey will also be placed on the HT24 Canvas syllabus page. Specific issues brought up by the students in the course evaluation were commented on in the course analysis. Results of the course evaluation from the previous course (HT23) were presented at the introductory lecture for HT24, discussing strengths and weaknesses that were brought up by previous students. Changes that had been made (content and structure) were presented and explained in the context of the results of the survey. The importance of collecting feedback from students for developing and improving the course was highlighted.		

Note that...

The analysis should (together with a summarising quantitative summary of the students' course evaluation) be communicated to the education committee at the department responsible for the course and for programme courses and also the programme coordinating committee.

The analysis was communicated to the education committee on the following date: 2025-04-14

The analysis was communicated to the programme coordinating committee on the following date:
2025-04-14

1. Description of any conducted changes since the previous course occasion based on the views of former students

1) We introduced more lectures on advanced methodology and model organisms to better prepare the students for the research application and later degree project.

2) Based on feedback from previous years, we reduced the content slightly, such as removing one of the journal clubs (now 2 instead of 3) and organized the lecture a bit more into topic-specific blocks.

3) The infection lab had a major overhaul and was completely reworked to increase student engagement also in the planning of the lab and evaluation of the results.

4) The research application was moved to after the course exam due to feedback from the previous year

2. Brief summary of the students' evaluations of the course

(Based on the students' quantitative responses to the course evaluation and key views from free text responses. Quantitative summary and any graphs are attached.)

Overall, the course is going well and almost all scores on the questions in the survey remained at a high level or increased compared with the previous year (Figure). There are still some areas where the score remains a bit low, such as the common theme and the constructive alignment between examination and learning outcomes.

Questions	Mean					Median					Key	
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	1p	Very poor
In my view, I have developed valuable expertise/skills during the course	2,7	3,1	3,3	3,7	3,9	3	3	3,5	4	4	2p	Poor
In my view, I have achieved all the intended learning outcomes of the course	3,1	3,3	3,5	3,7	3,8	3	3	4	4	4	3p	OK
In my view, there was a common theme running throughout the course – from learning outcomes to examinations	2,1	2,6	3,2	2,4	3	2	3	3	3	3	4p	Good
In my view, the course has promoted a scientific way of thinking and reasoning	3,2	4	4,1	4	4,2	3	4	4	4	4	5p	Very good
In my view, during the course, the teachers have been open to ideas and opinions about the course's structure and content	2,4	2,9	3,8	3,2	3,6	3	3	4	3	4		
do you feel that the workload during the course was reasonable in relation to the extent of the course/number of credits awarded	2,6	2,9	3,5	3	3,5	3	3	4	3	4		
course structure and methods used were relevant in relation to the learning outcomes	2,7	3,3	3,4	3,3	3,7	3	3,5	3,5	4	4		
examination was relevant in relation to the learning outcomes	2,6	2,9	3,1	2,6	3,1	3	3	3	3	3		
I took responsibility for my own learning during this course	4,1	4,3	4,1	4	4,1	4	4	4	4	4		
When/if I had questions or problems with the course content, I felt that I could turn to my teacher/supervisor for guidance	2,9	3,5	3,8	3,7	4,1	3	3,5	4	4	4		
The feedback that I have received has been important for my development and learning	2,7	3,6	3,6	3,6	3,9	3	4	3,5	4	4		
What is your overall opinion of the course	2,4	2,8	3,4	3	3,4	2	3	3,5	3	3,5		
I have developed my ability to critically appraise the work of others	3	3,2	3,5	3,7	4	3	3	4	4	4		
I have received critical appraisal of my own work	3	3,6	3,7	4	4,2	3	4	4	4	4		
The course provided me with opportunities to learn about relationships between cardiometabolic and infectious diseases	2,9	3,4	3,6	3,8	3,7	3	4	3,5	4	4		
The digital learning environment such as Canvas, Zoom etc. was adequate.	3	3,4	4	3,8	4,1	3	4	4	4	4		
Sum	45,4	52,8	57,6	55,5	60,3	47	55	59,5	59	61,5		
Overall average	2,84	3,3	3,6	3,47	3,77	2,94	3,44	3,72	3,69	3,844		
Survey numbers												
Responses	21	24	22	27	30							
Students	41	50	47	53	46							
Percent	51%	48%	47%	51%	65%							

Similar to previous years, the students greatly appreciated the research application exercise, the two assignments, and labs. They especially appreciated the cardiometabolic lab as it addressed both planning, execution, analysis, and presentation/writing. Students also expressed that they received and were thankful for all the feedback. The students thought that the course had promoted a scientific way of thinking and reasoning, which is a key goal of the course, and that they felt more prepared for the coming project work.

Areas of improvement indicated by the students included that there were still many deadlines and many different learning activities making it difficult to keep track. They wished that the overall structure and alignment would be better optimized. This was especially the case between the examination and the other course content. It was also suggested that to reduce difficulty with content and increase a more clear alignment, parts could be examined separately.

3. The course coordinator's reflections on the implementation and results of the course

Strengths of the course:

Overall, the course contains several different learning activities that aim to promote a high level of student engagement and "real-world" exercises and experience. These are usually also appreciated by the students and include:

- A **research application** that encourages independent thinking and gives the students practice not only in designing an appropriate experimental setup but also in working together as a group. Students are also practising peer reviewing, which is known to enhance students learning.
- **The two main labs** cover important methodologies for molecular studies and disease diagnosis. Especially the first lab takes the students through the whole process from set up and design of experiments, acquiring and analyzing data, interpretation of results, as well as presentation and communication of conclusions. The second lab now also includes a more student-driven experimental design and decision process to increase engagement. The methodology is largely overlapping between the lab, but the students usually do not think this is a problem as the approach/questions are different. Peer-reviewing, which is incorporated in the first lab, further enhances students' learning.
- **Assignments**, which include a complex research-based problem, provide a forum for discussion, and are highly appreciated by students. The discussion enables misunderstandings to be clarified and the student to achieve a better understanding of how different areas of biology are interconnected.
- **Journal club seminars** provide training in scientific reading, analysing and critically discussing published articles, which promote the development of critical thinking and presentation skills.

Weaknesses of the course:

- Although the course's objectives and learning outcomes have been improved over the past few years, there are still problems with the constructive alignment of the course and we need to work to improve the coherence between learning outcomes, learning activities and lectures, and the final examination.
- **Lack of a course textbook** (this makes it difficult for the students to know exactly what they should learn for the exam). This makes the students even more reliant on the lecture handouts, which have varying quality as study material.
- Journal clubs are used to highlight the **connections between cardiovascular/metabolic and infectious diseases**. Additional lectures have been introduced, but many students still find it hard to see how the topics overlap. This is potentially further exaggerated by the many different learning activities which focus on slightly different things topic-wise making it difficult for the students to see how different types of information fit together in a coherent manner.
- **Overlap** in topics to previous courses in the program. During the course introduction, we emphasize that some previous course content may re-appear during the course but deepened and in a disease context rather than from a physiological perspective. Also, although we try to make it clear that the topics cardiometabolic and infectious diseases are used as springboards to focus the students' learning in critical thinking, rationalization and deductions, experimental design, and scientific writing, the relatively large overlap seems to reduce student engagement in the topic. This is very different between students though, as some think there is much overlap, while others little. Some also think the overlap is good while others do not. Since the feedback is not clear, we will not further remove lectures at this stage.

3. Other views

Based on the course councils the student had an overall good impression of the course and many even had a very good impression. It was suggested it was perhaps scored down a bit because the course before (MM-Oncology) was exceptional. Some specific suggestions where the course could improve was for example in reducing course content (i.e. high workload at times) or maybe spreading out difficult parts over a longer time. This was seen as quite important as the students were on relatively different levels (with a proportionally quite large number of international students that partly had to do extensive self-study to catch up). It is clear that students sometimes also have difficulties with having many and sometimes overlapping deadlines. This comes

largely from the many different learning activities of the course, including the research application, labs, journal clubs and assignments. These are all important parts of the course and tend to be mentioned as excellent parts of the course. One of the ILOs in the course is to take responsibility for your own learning, and being able to handle multiple deadlines is a key skill in later work life. However, since this is a recurrent comment, we need to think further on how we can organize the activities so that they contribute to a continuous learning progression while also being manageable for the students.

4. Course coordinator's conclusions and any suggestions for changes

(If changes are suggested, state who is responsible for implementing them and provide a schedule.)

Student feedback indicates that topics related to experimental and study design are valuable and could be expanded further. This is currently addressed in different manners, including lectures, labs, JC, RA, and assignments, however, the students may not see the connection as clearly as the course coordinators. It could therefore be of value to further clarify the course layout, and how we use different learning activities to train similar skills in different contexts. For the coming year, we will work with visualization of learning outcomes in relation to activities to clarify this better for the students. The two course leaders Christopher Sundling and Hanna Björck will lead the work and implementation.

We repeatedly have student feedback indicating low constructive alignment between learning outcomes and examinations. The course leaders will during 2025 develop a strategy for implementing a new examination setup for 2026.

We have had an R workshop that has been very appreciated. We would like to expand this further but will have a switch in the teacher for this activity this year. We will therefore likely wait until next course in 2026 to expand.