Course evaluation template

Course code	Course title	Credits
4FH099	**Systematic Review and Meta-Analysis**	**3.0**

Semester	Period
HT21	September 13-September 24, 2020

Course coordinator	Examiner
Elizabeth Arkema	Elizabeth Arkema
Other participating teachers Lorena Fernandez de la Cruz, Anna Sidorchuk, Tianyang Zhang, Alessio Crippa, Susanne Andermo, Love Strandberg, Narcisa Hannerz	**Other participating teachers**

Number of registered students	Number who have not completed the course	Number passed after regular session
22	0	**15 (2 failed the protocol on the first round, but after edits passed the course. 3 turned in the assignment late)**

Conclusions from the previous course evaluation

The previous course evaluation was very positive but the students would have liked more time for the course. Since this is not possible, I concluded that the schedule could be changed so that the content and assignments would be more manageable. One suggestion was to leave more time for the statistical analysis lecture. Another suggestion was to let students try performing a meta-analysis themselves in a set of exercises or group work. Some students took a long time deciding on a research question which led to less time to complete the assignment based on that question. The students needed more time between receiving feedback from their peers and making changes to the final assignment.

Description of conducted changes since previous course occasion

This year, the statistical analysis lecture was divided into two sessions over two days so that students could process the information and come back on the second day with questions. Because of the short time period for the course, I did not make any other additions/assignments regarding meta-analysis exercises but the lab itself includes exercises one can complete later. Because people had a hard time deciding on a research question, I required that they submit their written research question halfway through the first week. To allow for more time between feedback and the final assignment due date, the peer review was moved one day earlier in the schedule.

Method(s) for student influence

- Students were asked for and gave feedback on the course from the first day. I told them that we really value their feedback and made changes based on last year's

suggestions. Furthermore, I encouraged their feedback since it is only the second time the course has been given. I made time for students' questions and comments during and after the lectures in person and via email as well as during "office hours" online. The teachers checked in with students during group discussions to see how the students were experiencing the course, if it was going too fast or too slow and if the assignment was clear and manageable.

- Students were sent an anonymous online survey for feedback after the course was completed. The survey included overall questions about the course. There was space for free text where the students could offer suggestions on how to improve the course overall and the course activities.
- 14 out of 22 students responded to the course evaluation (64%).

Summary of the students' response to the course valuation

In general, the students rated the course highly, and the majority responded that they developed valuable skills, achieved the learning outcomes, and improved their ability to communicate about the subject. The students felt that the teachers were supportive, the course was well-organized and that the aims were aligned with the course's activities and materials. I am really happy to see that the large majority (71%) said that the course promoted a scientific way of thinking and reasoning to a very large extent. This is a major goal of the course since it works on methods to summarize the literature in a scientific way.

The main theme to the students' suggestions on how to improve the course was to extend the length of the course. Some specific suggestions included: to teach the whole class this course (not just the epi track), to give more guidance or a separate workshop on formulating the research questions (this was surprising since we had a whole group discussion for 1.5 hours on this), give more examples of research questions (this was given in the introduction email), to shorten the stats methods section since it is not required on the final exam, give a few broad topics that are suitable for systematic review to inspire the students (which would help them to focus on the assignment instead of putting a lot of time into finding an appropriate research question and topic).

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

The course was overall a success, and the students appreciated the topic since it is very applicable. The close contact with teachers through group discussions was appreciated. The main weakness of the course is that it feels too short and the students feel stressed to complete the final assignment. Similar with last year, there were some students who really shined when given the opportunity to delve into a topic of their own choice and other students who struggled with finding and developing an appropriate study question. We kept it in mind that they are not supposed to be experts in the topic, and the final protocol was not graded based on the students' background knowledge of the topic, rather on the methods used to conduct the systematic review and meta-analysis. It struck me that there are many students who find it quite challenging to develop a specific and well-written research question, and this is perhaps a skill that should be worked more.

The students' previous knowledge, experiences and prerequisites, were used as a basis throughout the course. The students used their knowledge about study design, bias, and

external validity to evaluate systematic reviews and to plan their own review. The way in which these aspects of epidemiological methods affect a review was discussed throughout the course. This presented a good opportunity to revisit some topics the students learned about in previous courses and address misunderstandings. Systematic reviews focus on the research of research, allowing for students to reflect on the "bigger picture" of epidemiology using their previous knowledge and experiences as a basis.

Different work methods were used to attain the learning outcomes. The course worked well in terms of constructive alignment, with each activity aiming at achieving one or more learning outcomes.

- Lectures – to understand the value, principles and different concepts related to systematic reviews, to identify the strengths and limitations of this method.
- Group discussions – to formulate a study hypothesis, discuss the study protocol template and example protocol to plan and generate a study protocol.
- Journal club with Article Assessment – to interpret and critically evaluate a systematic review and meta-analysis, to understand how to evaluate quality (and the pros and cons of quality assessment).
- Peer review of study protocols – to critically reflect on other students' individual project work and provide feedback in a scientifically constructive way.
- Computer lab – use Stata to apply basic methods of a meta-analysis.
- Workshop with Karolinska Institutet Library – to learn methods of systematically searching the literature.
- Office hours with Elizabeth – to increase understanding of the methods and to aid in developing the study protocol.
- Final exam – To independently formulate a study hypothesis, and plan and generate a study protocol to perform a systematic review and meta-analysis, justifying the selection of the eligible studies and statistical methodology.

The examinations and assessment criteria were developed so that students would achieve the learning outcomes of the course. There were two graded assignments. The first was turning in an article assessment for the journal club so that the student can critically evaluate a systematic review and has tried assessing quality of a study. The second was a study protocol, which included peer review (critically reflecting on other students' work). This protocol incorporated all the sections of a systematic review so that the student can demonstrate their understanding of the methods and justify decisions made in planning a study. A grading rubric was provided to the students to be explicit with how the learning outcomes are assessed in the grading to receive a pass.

Description of how the course works with quality, research-basis and collaboration with other professions

Quality of research was discussed on several occasions, in terms of how to assess quality of the studies analyzed but also evaluating the quality of systematic reviews (completed in the article assessment task). Research ethics were also discussed, and the importance of the researcher's role in taking a high quality and ethical approach. Throughout the course, teachers used examples from actual research to strengthen the students' link to research. The course encourages creativity and independence of the students through their development of a study protocol on a topic of their choice. The development of a protocol also prepares the

students to potentially conduct the planned study, thus engaging them in research further. This course encourages collaboration with information specialists through the workshop by Karolinska Institutet Library.

Course coordinator's conclusions and suggestions for improvement

The course turned out very well. I was somewhat less involved this year (I did not participate in the group discussions) because I was partially on maternity leave. The teachers which took over some of my part did an excellent job and I do not think it affected the course. In comparison with last year, I was surprised that there were not as many students who attended the lectures later in the week and a much lower percentage of students completed the course evaluation. I am not sure if this is by chance, but the engagement of this group of students did not seem to be as great as last year. Changing the peer review date to one day earlier worked well and I will keep it this way for next year's schedule. It did not appear that the students needed the statistics lecture to be over the course of two days, and this was more work for the teacher and affected the rest of the schedule, so I will change it back to one morning instead.

One suggestion from a student which I received in person (not on the evaluation form) was that the students could use a "frequently asked questions" list for the course. Some questions come up every year which I have compiled and will add to the course materials.

Some students have a hard time picking a research question and this slows them down. I will include a list of broad topics and potential research questions which students can also use if they do not feel they can come up with a question on their own.

Views on the course and improvement suggestions from others

Views from the programme committee and the student representative will be collected after this report has been circulated and discussed within the programme.

Description of how the course valuation has provided feedback internally and to the students

The course evaluation will be discussed in the program council where student representatives are present and it will be posted on the course web.