Course analysis (course evaluation)

Course code 4BI109	**Course title** Bioinformatics	**Credits** 7.5
Semester (VT/HT-yr) HT 2023	**Dates** 20231110-20231211	

Course Director Arne Lindqvist	**Examiner** Arne Lindqvist
Teachers in charge of different parts of the course Basic tools: Arne Lindqvist TBL CRISPR: Arne Lindqvist TBL DNAseq: Arne Lindqvist TBL RNAseq: Rickard Sandberg Ethics: Lena Ström, Arne Lindqvist Extra view:, Benjamin Murrell (phylogeny), Claudia Kutter (ATACseq/transposons), Karen Akopyan, Jean Hausser (systems biology).	**Other participating teachers** Basic tools: Nico Dantuma, Niels Krämer, Anna Kouznetsova, Martin Hällberg, Ng Chyan Leong, Jan Grosser, Anais Julien TBL CRISPR: Anna Kouznetsova, Martin Hällberg, Ng Chyan Leong, Aditya Singh TBL DNA seq: Hao Yuan, Nil Campama Sanz, Qirong Lin, Aditya Singh TBL RNA seq: Rickard Sandberg, Daniel Ramsköld, Juliane Mayr, Daniel Borshagovski Intro to R: Niels Krämer, Jan Grosser, Hao Yuan, Nil Campama Sanz, Qirong Lin

Number of registered students at the 3-week check 54	**Number passed at final course day** 49 (53 after re-exam)	**Response frequency course valuation survey** 30/54

Other methods for student influence (in addition to the final course valuation/survey)

-Evaluation discussions as part of feedback at end of each TBL.

-Course director encouraged feedback on course on several occasions, and had discussion with several students

-Canvas discussion forum open throughout course for feedback on course improvement. Was not used.

Feedback reporting of the course evaluation results to the students
Through CANVAS

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 also to the programme coordinating committee.

The analysis was communicated to the education committee on the following date: 2024-01-23
The analysis was communicated to the programme coordinating committee on the following date: 2024-01-25

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

-Streamlining the content to reduce workload, with an aim to more clearly cater for students with no previous experience of bioinformatics.

-Dedicated self-study time within each TBL.

-Basic tool excercises were no longer submitted/corrected, instead answers were provided at end of exercises for rapid feedback.

-Changing order of TBLs to ensure that CRISPR TBL came before Mystery DNA quest.

-CRISPR TBL was updated and refocused. Structure prediction by Alphafold2 is now introduced as a main focus and practical was somewhat more guided.

-RNAseq TBL was updated, materials were changed and a stronger focus was on basic aspects.

-Intro to R was performed in preceeding biostatistics course.

-Etics reflection written without access to internet instead of as a home assignment.

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

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

The student's answers in the course evaluation were in general positive. The overall course rating was 4,1 out of 5. Among others, the TBLs and mystery DNA quest were mentioned as positive. Suggestions for improvement included less ambituos intro to R, less guided practicals during DNAseq and RNAseq TBLs, as well as more detailed suggestions for individual lectures. There were also suggestions to cover fewer areas and focus more in-depth at the remaining ones.

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

Strengths of the course:

-An introduction to bioinformatics involving both theoretical and practical approaches.
-The mix of learning activities.
-Basic tools module to provide a foundation
-TBL structures. Stimulating peer-learning and discussions between students of different levels.
-The mystery DNA quest, a practical assessment of the basic tools section that stimulated learning
-Feedback to students, both as separate aspects of each TBL and during practicals.
-Feedback from students, in particular in the structured form at end of TBLs allowed adaptation of the course while ongoing.
-The teams structure of teachers provided support and enabled discussions, feedback and coordination in planning and executing teaching. It was also very useful as a backup if one teacher could not make it.

Weaknesses of the course:

-The course is heavy, and although a majority did not, some students found the content overwhelming and/or too advanced.
-Schedule is compact with little room for catching up if falling behind.
-Some materials provided could be clearer.
-Some individual lectures could be improved.
-Uneven distribution among TBL groups for how well peer learning worked.

3. Other views

The adaptations that were implemented after last year were generally successful. The shift of order of TBLs were successful for preparing for the mystery DNA quest, although there were comments that the RNAseq TBL could have come earlier. The workload and schedule was more balanced.

In my opinion, the largest challenge is the wide spread of background knowledge among the students. In this sense, the TBLs were successful in engaging discussions among students of different level. Whereas most teams for the TBLs functioned very well, there were room for improved balance among some teams. The composition of the teams is essential, and an extra focus of allocating group members is needed.

4. Course Director's conclusions and any suggestions for changes
(If changes are suggested, state who is responsible for implementing them and provide a schedule.)

This was the third occasion of the course. In general, I believe the concept of the course is good and the changes made has improved the course, in particular for students with little previous experience of bioinformatics. but continued adaptations are required.

Changes include:

- Adapt R to cater more clearly for immediate basics. Enhance coordination with Biostatistics course for need and use of R there. Course director is responsible, implemented 2024.

- Reshape the practical part of both sequencing TBLs to include more open challenges. Course director is responsible, implemented 2024.

- Update the "content covered" section to ensure complete coherence with material taught. Course director is responsible, implemented 2024.

- Adapt some lectures and their materials with an aim to streamline content. Course director is responsible. Implemented 2023.

Appendices:

Course evaluation