3-year course evaluation

Course MOL204

Semester and year for completed course evaluation: FALL2026

Name of course coordinator(s): Håkon Dahle

Pedagogical choices in the course, and reflection on the students' learning as a result of these choices.

The course consists of lectures which focus on fundamental theoretical aspects of bioinformatics, and seminars which focus on practical use of python and unix for hands on bioinformatics analyses. In the seminars students are given concreate assignments rooted in topics explained during lectures, so there is a strong connection between lectures and seminars.

A challenging part for the students seems to be the programming part. Teaching programming can be difficult as students motivations and background knowledges vary considerably. Python and Unix can only be learned by actively using these tools – it is a bit like learning any other language, and hence difficult to learn only by passively listening to a lecturer. Based on experiences from previous years many students seem to be motivated by having a clear goal with their work (e.g. a graded assignment) instead of spending time on activities that are designed only for learning (i.e. non obligatory assignments that are not directly connected to the grade).

On the seminars we therefore let students start directly on working on graded assignments. For some students this is fine. Other students struggle. However, we provide tutorials as on MittUiB that are tailored towards building the competence they need. The idea (which is also communicated to the students) is that if an assignment is hard to do, students should (re)visit their preferred sections of tutorials at their own speed and with guidance from instructors if they ask for it. An important pedagogical point here is that we want the students to learn how to learn and to understand how programming can be learned without having an instructor around. Some students pick up on this idea, others seem to get a bit upset because i) they don't understand how to do the assignment, ii) they don't feel that the instructors provide enough information for them to succeed.

I have considered to remove the Unix / Python part completely, but I don't think this is a good choice. Many students are very happy about learning about applying programming in molecular biology context and I think most MOL204 students will (at some point in the near future if not during the course) see the importance and value of having basic programming skills.

Student evaluations and follow-up of previous evaluations

A fundamental problem of the evaluations is that so many student (~80%) do not respond. There also seems to be a tendency that the number of respondents increase when students are less happy suggesting that unhappy students provide feedback more often than happy students and that feedbacks therefore are highly biased.

Nevertheless, it is interesting to see feedbacks regarding the merging of BINF100 and MOL204 (common lectures for students) which happened Spring-25 and Spring-26. In Spring-26 course responsible for MOL204 (H.Dahle) and BINF100 (S. Roblitzt) gave lectures together and in Spring-26 there was only one lecturer from II (F. Gortler). The reason for our attempt to merge the courses was i) large overlap ii) it can be inspiring and constructive to be two lecturers working together rather than teaching 'alone', iii) MOL204 students and BINF100 students have different backgrounds and skills and can potentially learn from each other. It appears like the merging created some confusion among students particularly in Spring-26. The merging the way it works now is not optimal. To improve the situation either i) MOL204 and BINF-100 needs go back to being fully separate courses or ii) the merging needs to be extended so that courses are merged into one course with common activities and syllabus for all students (i.e same book, common seminars, common assignments). The advantage of the first option is that MOL has full control over the course and can develop it as needed. The advantage of the second option is that UiB has a less redundant course portfolio and lower teaching costs.

Some students say that they struggle with using unix and python. Admittedly, some of the graded assignments have been rather challenging, particularly in spring 2026. This was partly a consequence of trying to make assignments that cannot easily be done with AI (with little learning outcome) so that the grades achieved were more diversified and to a larger extent reflected the efforts and competence of the students than in previous years.

The introduction of seminars centered around graded assignments seems to have had a large effect on students attendance. Before this change <10% of the students followed the seminars. In the recent years I estimate ~60-70% attendance.

What I think should be considered in the future is to have some seminars in the beginning that work as a more slow hands on introduction that most students can easily follow. Moreover it should be considered to go back to non-graded assignments ('godkjent / ikke-godkjent'.) A consequence of doing this may be that i) students don't show up and ii) students showing up will complain because progress is too slow (and then stop showing up). But it's worth a try.

Assessment of correspondence between the course's learning outcome description and teaching, learning and assessment methods.

Learning outcomes, assessment methods, and teaching methods are described in detail in the UiB web pages (https://www4.uib.no/en/studies/courses/mol204). I feel that there is a good correspondence between learning outcomes versus assessment methods, teaching methods, lectures, seminars, and the exam. Based on student's own evaluation it appears like most students would agree with this.

Assessment of whether the progress and structure of the course is in accordance with the established goals for the course and program.

The progress of the course is well aligned with course objectives: "The course provides an introduction to the use of bioinformatics tools, including retrieval of information from databases, pairwise and multiple sequence alignments, phylogenetic trees, analysis of protein structures, recognition of

sequence patterns, as well as an introduction to the use of Python and Unix for bioinformatics analyses." (https://www4.uib.no/en/studies/courses/mol204). The objectives are met during lectures, seminars, and assignments. During seminars and when working with assignments students apply knowledge about protein structure, alignments, and programming etc. to obtain and analyze data from external sources.

The course also well aligned with several of the program objectives:

- "kjenner til evolusjonsteorien og det molekylærbiologiske dogmet"
- "har brei kunnskap om viktige molekylærbiologiske, biokjemiske og bioinformatiske metodar som til dømes genteknologi, proteinreinsing og sekvensanalysar og kjenner prinsippa for desse"
- "har brei kunnskap om viktige molekylærbiologiske faguttrykk og prosessar som til dømes makromolekylar og deira funksjonar, metabolske prosessar og omsetjing av genetisk informasjon til biologisk funksjon"

(https://www4.uib.no/studier/program/molekylaerbiologi-bachelor/plan)