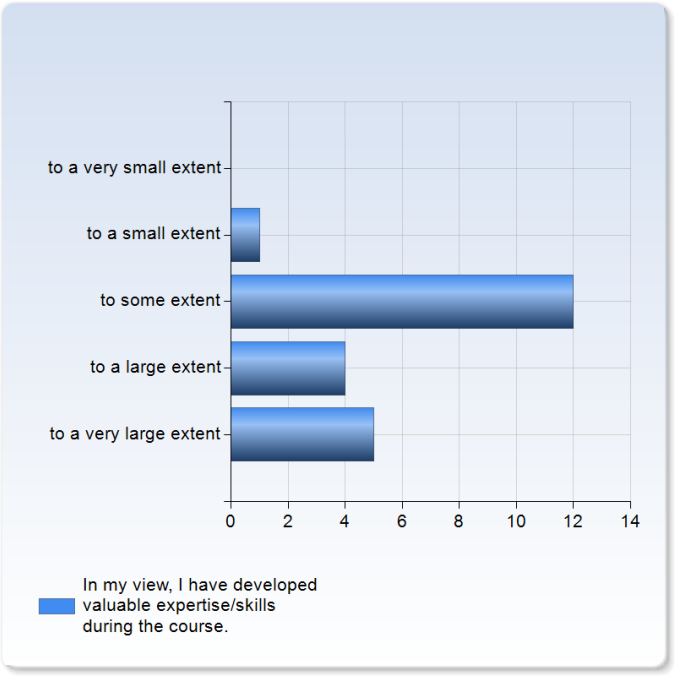
Bioinformatics, 2020

Respondents: 37
Answer Count: 22
Answer Frequency: 59.46%

In my view, I have developed valuable expertise/skills during the course.

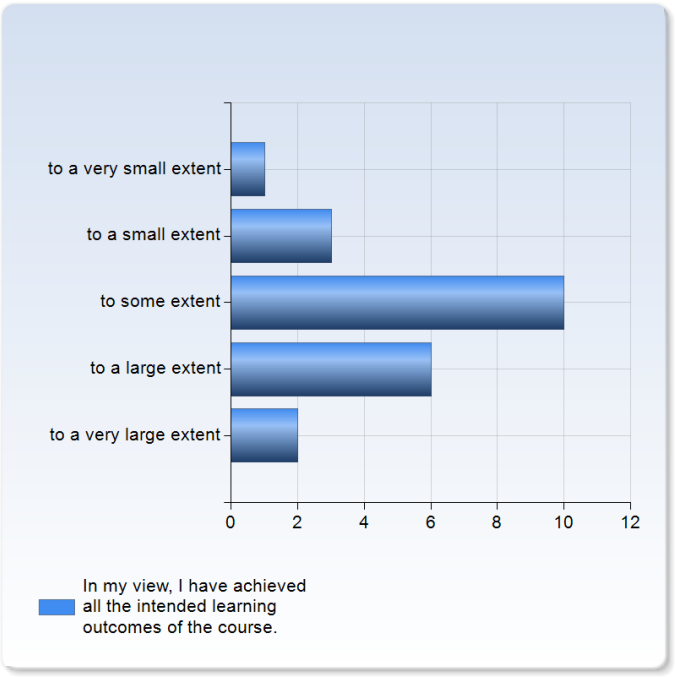
In my view, I have developed valuable expertise/skills during the course.	Number of Responses
to a very small extent	0 (0.0%)
to a small extent	1 (4.5%)
to some extent	12 (54.5%)
to a large extent	4 (18.2%)
to a very large extent	5 (22.7%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In my view, I have developed valuable expertise/skills during the course.	3.6	0.9	25.3 %	2.0	3.0	3.0	4.0	5.0

In my view, I have achieved all the intended learning outcomes of the course.

In my view, I have achieved all the intended learning outcomes of the course.	Number of Responses
to a very small extent	1 (4.5%)
to a small extent	3 (13.6%)
to some extent	10 (45.5%)
to a large extent	6 (27.3%)
to a very large extent	2 (9.1%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In my view, I have achieved all the intended learning outcomes of the course.	3.2	1.0	30.1 %	1.0	3.0	3.0	4.0	5.0

In my view, there was a common theme running throughout the course – from learning outcomes to examinations.

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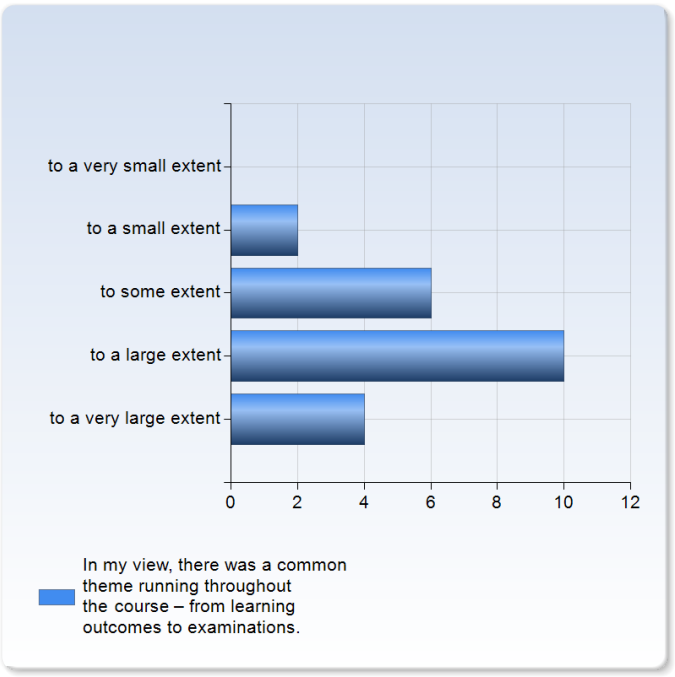
to a very small extent	0 (0.0%)
to a small extent	2 (9.1%)
to some extent	6 (27.3%)
to a large extent	10 (45.5%)
to a very large extent	4 (18.2%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In my view, there was a common theme running throughout the course – from learning outcomes to examinations.	3.7	0.9	23.7 %	2.0	3.0	4.0	4.0	5.0

In my view, the course has promoted a scientific way of thinking and reasoning (e.g. analytical and critical thinking, independent search for and evaluation of information).

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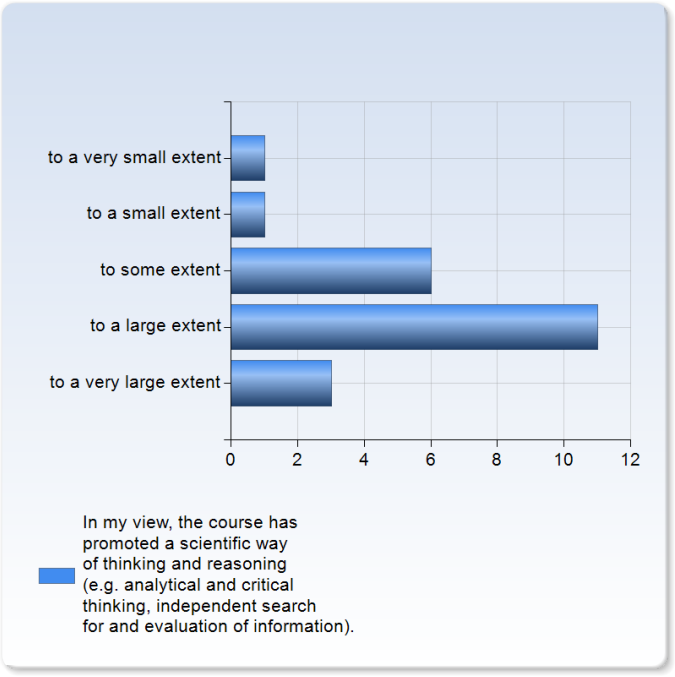
to a very small extent	1 (4.5%)
to a small extent	1 (4.5%)
to some extent	6 (27.3%)
to a large extent	11 (50.0%)
to a very large extent	3 (13.6%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In my view, the course has promoted a scientific way of thinking and reasoning (e.g. analytical and critical thinking, independent search for and evaluation of information).	3.6	1.0	26.2 %	1.0	3.0	4.0	4.0	5.0

In my view, during the course, the teachers have been open to ideas and opinions about the course's structure and content.

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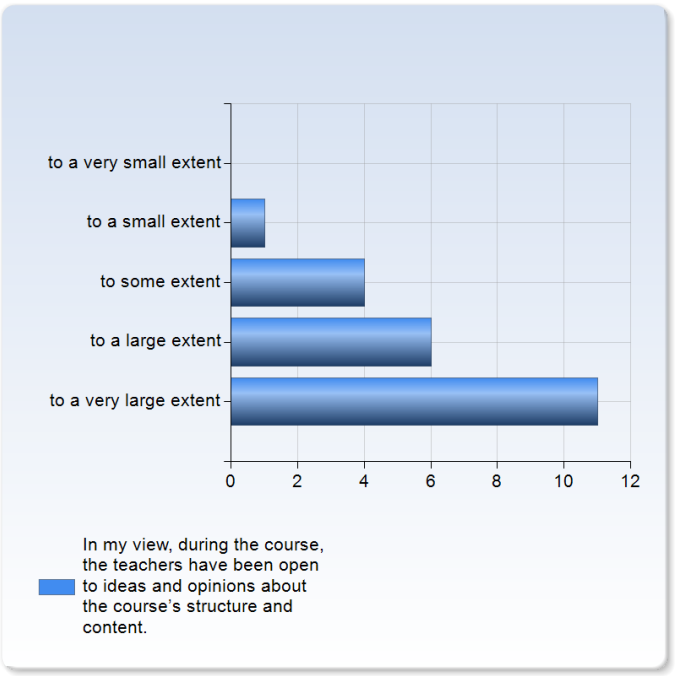
to a very small extent	0 (0.0%)
to a small extent	1 (4.5%)
to some extent	4 (18.2%)
to a large extent	6 (27.3%)
to a very large extent	11 (50.0%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In my view, during the course, the teachers have been open to ideas and opinions about the course's structure and content.	4.2	0.9	21.8 %	2.0	4.0	4.5	5.0	5.0

Have you during the course been subjected to negative discrimination or insults because of your gender, ethnic origin, religion, disability or sexual orientation? If the answer is yes, the programme advises you to contact the study advisor or the student ombudsman; see KI webpage for Contact information.

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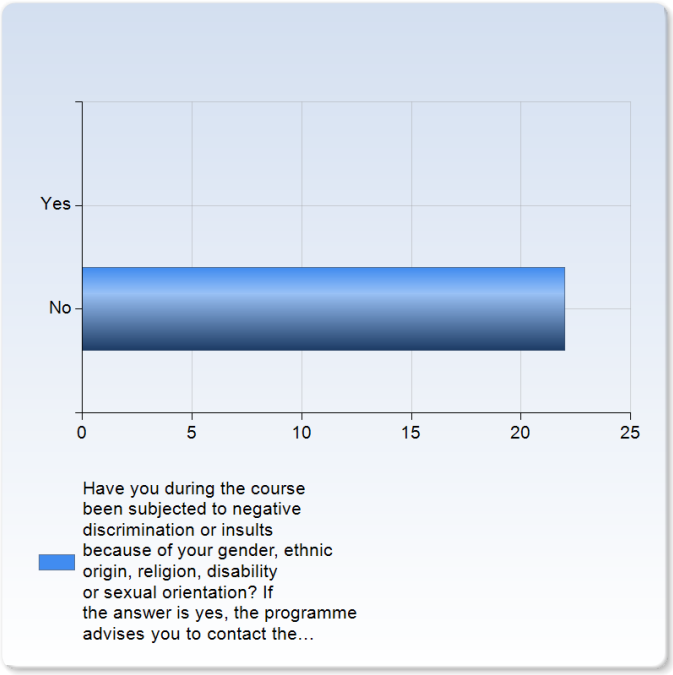
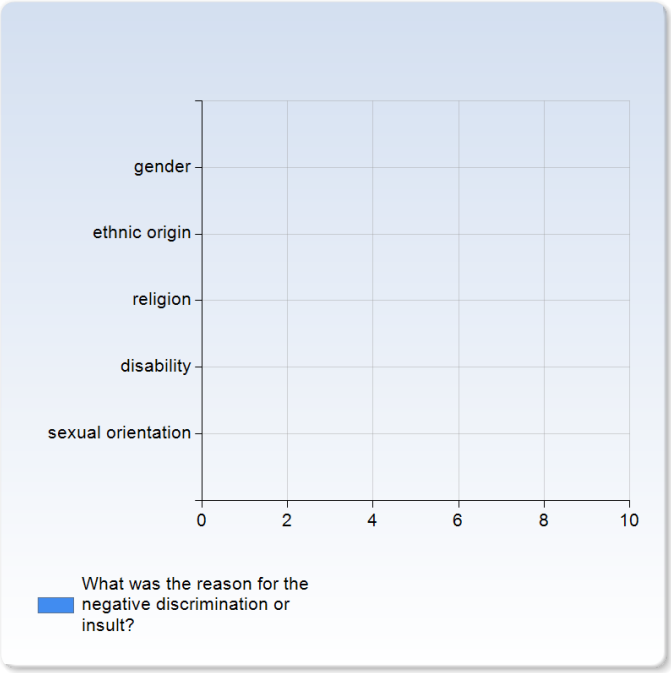
Yes	0 (0.0%)
No	22 (100.0%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Have you during the course been subjected to negative discrimination or insults because of your gender, ethnic origin, religion, disability or sexual orientation? If the answer is yes, the programme advises you to contact the study advisor or the student ombudsman; see KI webpage for Contact information.	2.0	0.0	0.0 %	2.0	2.0	2.0	2.0	2.0

What was the reason for the negative discrimination or insult?

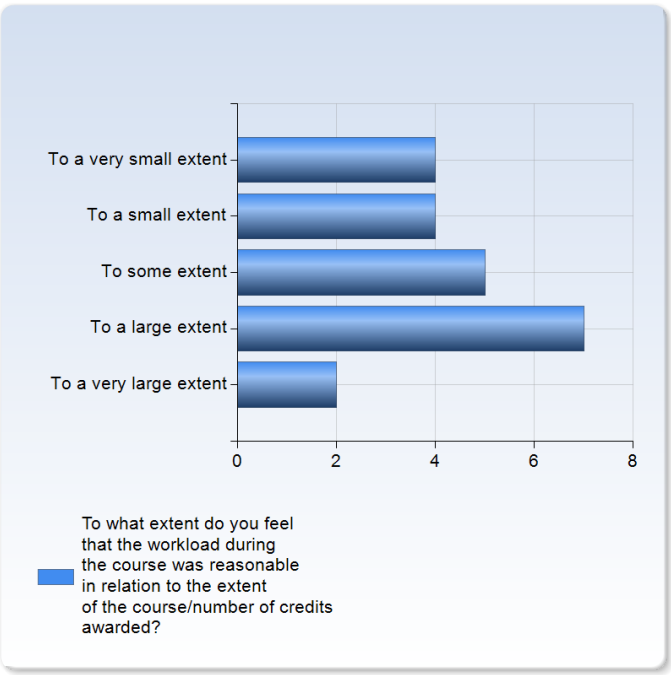
What was the reason for the negative discrimination or insult?	Number of Responses
gender	0 (0.0%)
ethnic origin	0 (0.0%)
religion	0 (0.0%)
disability	0 (0.0%)
sexual orientation	0 (0.0%)
Total	0 (0.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What was the reason for the negative discrimination or insult?	0.0	0.0	NaN %	∞	0.0	0.0	0.0	-∞

To what extent do you feel that the workload during the course was reasonable in relation to the extent of the course/number of credits awarded?

To what extent do you feel that the workload during the course was reasonable in relation to the extent of the course/number of credits awarded?	Number of Responses
To a very small extent	4 (18.2%)
To a small extent	4 (18.2%)
To some extent	5 (22.7%)
To a large extent	7 (31.8%)
To a very large extent	2 (9.1%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
To what extent do you feel that the workload during the course was reasonable in relation to the extent of the course/number of credits awarded?	3.0	1.3	43.7 %	1.0	2.0	3.0	4.0	5.0

The course structure and methods used (e.g. lectures, exercises, seminars, assignments etc.) were relevant in relation to the learning outcomes.

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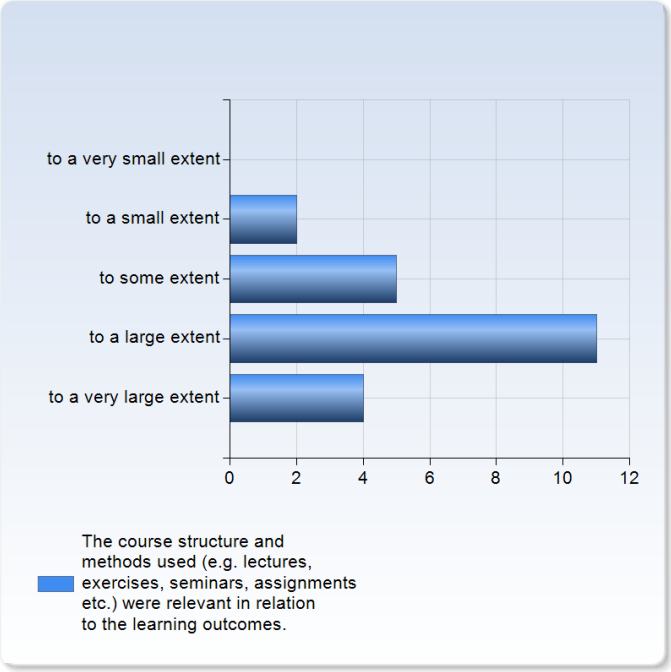
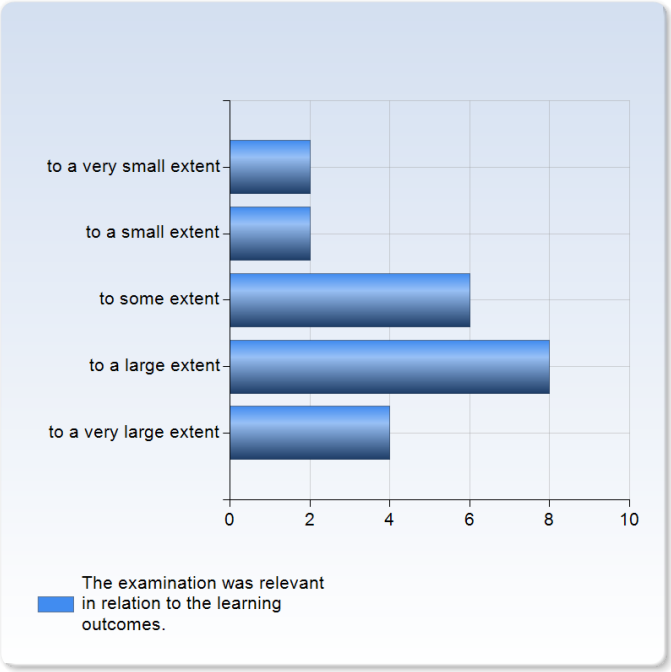
to a very small extent	0 (0.0%)
to a small extent	2 (9.1%)
to some extent	5 (22.7%)
to a large extent	11 (50.0%)
to a very large extent	4 (18.2%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The course structure and methods used (e.g. lectures, exercises, seminars, assignments etc.) were relevant in relation to the learning outcomes.	3.8	0.9	23.0 %	2.0	3.0	4.0	4.0	5.0

The examination was relevant in relation to the learning outcomes.

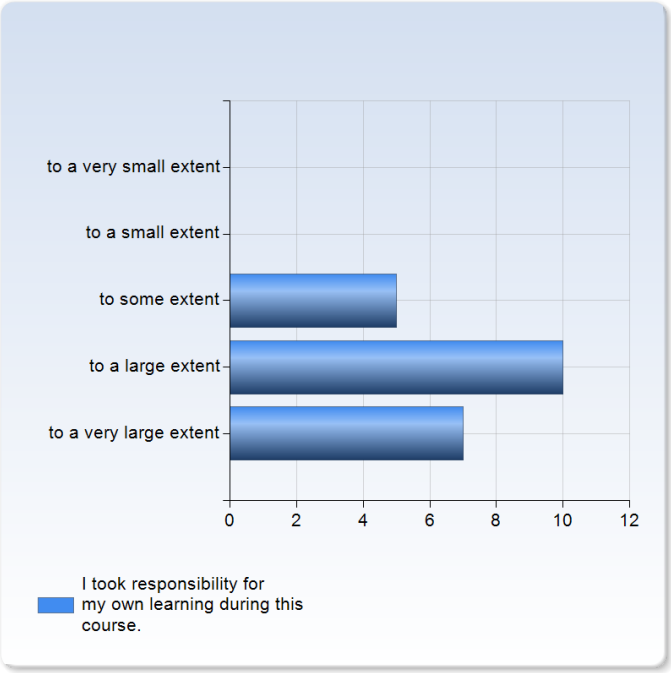
The examination was relevant in relation to the learning outcomes.	Number of Responses
to a very small extent	2 (9.1%)
to a small extent	2 (9.1%)
to some extent	6 (27.3%)
to a large extent	8 (36.4%)
to a very large extent	4 (18.2%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The examination was relevant in relation to the learning outcomes.	3.5	1.2	34.3 %	1.0	3.0	4.0	4.0	5.0

I took responsibility for my own learning during this course.

I took responsibility for my own learning during this course.	Number of Responses
to a very small extent	0 (0.0%)
to a small extent	0 (0.0%)
to some extent	5 (22.7%)
to a large extent	10 (45.5%)
to a very large extent	7 (31.8%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I took responsibility for my own learning during this course.	4.1	0.8	18.3 %	3.0	4.0	4.0	5.0	5.0

When/if I had questions or problems with the course content, I felt that I could turn to my teacher/supervisor for guidance.

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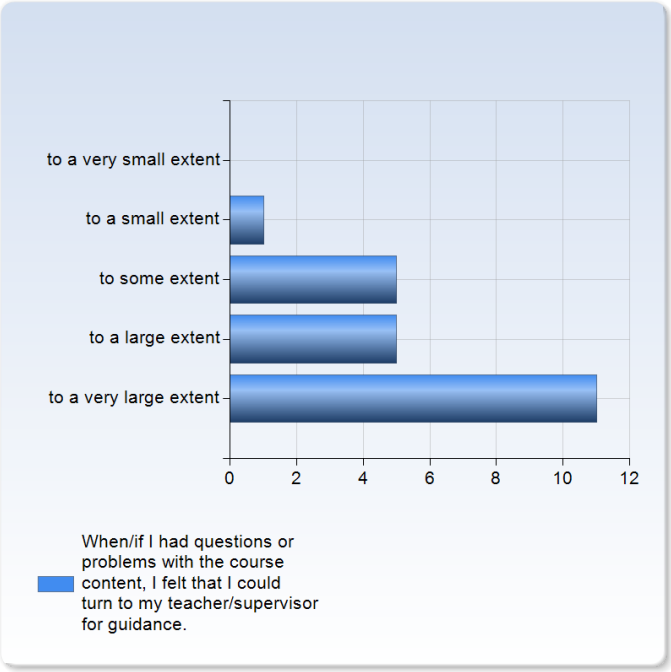
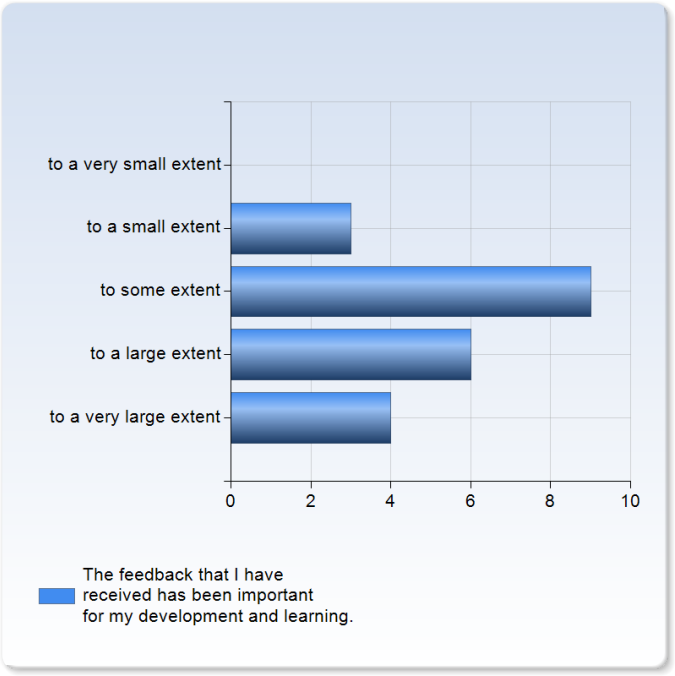
to a very small extent	0 (0.0%)
to a small extent	1 (4.5%)
to some extent	5 (22.7%)
to a large extent	5 (22.7%)
to a very large extent	11 (50.0%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
When/if I had questions or problems with the course content, I felt that I could turn to my teacher/supervisor for guidance.	4.2	1.0	22.9 %	2.0	3.5	4.5	5.0	5.0

The feedback that I have received has been important for my development and learning.

The feedback that I have received has been important for my development and learning.	Number of Responses
to a very small extent	0 (0.0%)
to a small extent	3 (13.6%)
to some extent	9 (40.9%)
to a large extent	6 (27.3%)
to a very large extent	4 (18.2%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The feedback that I have received has been important for my development and learning.	3.5	1.0	27.5 %	2.0	3.0	3.0	4.0	5.0

What were the strengths of this course?

What were the strengths of this course?
The course provided really useful skills and although it sort of forced us to learn something super challenging in short time, but the content is perfect.
I liked how there was not a single exercise done for bo reason, they all had a purpose in terms of learning how bioinformatics works and how it could relate to our future work. Both the chimera and the systems biology lectures and workshops were useful and easy to follow for newbies.
Python programming
Everything new for me, new methods, new topics. So, it is quite challenging
The teachers were very open to feedback. Especially Ian would implement our feedback within a day, which I really appreciate.
In theory, I liked that we were taught some basic programming. I also liked the concept of lectures in the morning and computer lab in the afternoon.
the lab: Ian’s explanation - solution sheets (which helped a lot to understand the issue) the structure of the course: main message at the beginning and towards the end of the course some add on lectures - e.g. lecture about DNA/RNA sequencing (I really enjoyed this lecture) the flexibility of the course: I think the course was planned to be more advanced, but the background knowledge of most of the students was not on a level where they could follow, so I had the feeling that requirements on us to pass the course were decreased.
I liked how during a very short period of time we got introduced to a lot of various bioinformatics methods and tools, from python to different databases, RNAseq analysis etc.
It was awesome to get to know the basics in programing. In fact, this challenging course was my favourite at KI so far and encouraged me strongly to keep learning programming. It was really fun for me and I learned a lot during this short amount of time. I enjoyed working on the assignments independently and being able to ask questions at any point. When I had a question outside of the lab hours, I could still ask via email. Regarding the lectures, a broad range of bioinformatics was covered and we got an idea of how important it is in biosciences today.
Most lectures were done very well and were easily understandable. Other strengths were the assistant during the computer practicals which helped us understand the programs. The course leaders implemented changes very fast after we talked to them. Additionally, they did a very good job with the exam during the corona situation.
It covered a broad range of methods used and provided with useful skills in python, chimera and online databases. It is up to speed with the technological advances of today and is highly applicable to our studies and tasks we will perform in the future.
The afternoon labs for programming and tools.
Good idea to teach basic Python programming. I also liked the way exercises and assignments were structured.
I thought it was a good idea to include python in the course.
New knowledge of bioinformatics broadens my sights and makes me have new ideas for future career. Teachers and assistants helped me a lot when I was struggled with any sort of problems. Thanks a lot!
Novel information regarding usage of bioinformatics in the biomedical field. Very helpful and understanding teachers.
I thought it was great that we learned programming and that there was a time to use the online tools we learned in lecture.

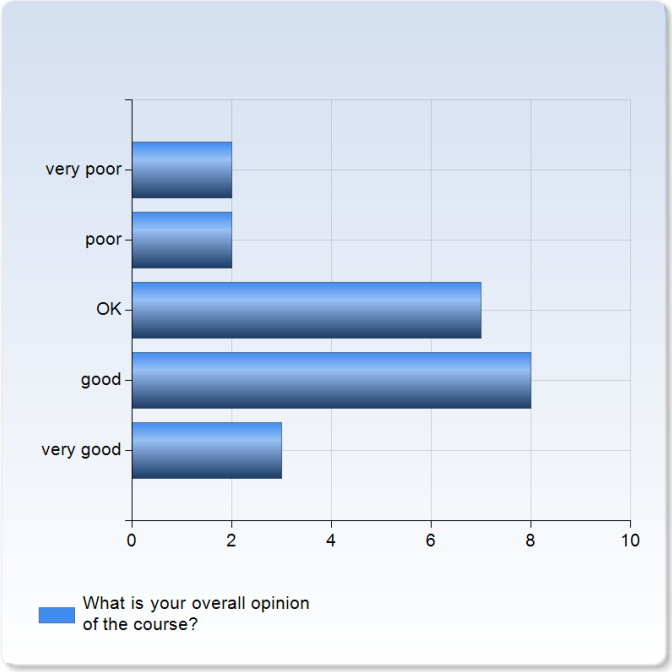
Do you have any suggestions as to how to improve this course? (Give as constructive suggestions as possible!)

Do you have any suggestions as to how to improve this course? (Give as constructive suggestions as possible!)
The beginning of the lab could be optimized to increase the efficiency of learning and also help to build confidence(doge), because in the computer lab with everyone coming up different questions the TAs were super busy. I felt like everyone needed a tutor stand by to help them with the first some steps, but ofc that's impossible. So either you could extend the time a little bit or you do the lab together on the screen with everyone together.
The python exercises should have been different. Python is a very very useful tool, however, it would have probably been more productive to learn less things but to learn them well. We had a lot of information thrown at us from day 1 which made it very difficult to follow, especially for those like me with no programming experience. On top of that the exercises took a while to figure out so the TAs were almost always occupied with the other students who had the same problems. It may be more helpful to split the class in two (those with experience and those without) and makw sure the ones who are clueless get as much help as possible and less advanced content thrown at them from day 1. Maybe add optional python workshops on top of the computer labs? Another solution would be to remove python from the exam (like we did in this course) and make the workshops divided into different levels of experience and make them optional. This way thw more advanced people don’t need to be bothered with simple exercises and the newbies can get a new skill without the pressure of failing.
The fact that python programming was taught was nice. However, the programming lectures were not helpful in the context of the lab exercises, which were far more difficult than what we had learnt during the lectures. We were not able to solve the problems, even after 2 rounds of hints and finally the answers were just given to us... I believe that it would be helpful to go through all the functions that are important for the labs during the lectures, so that we learn the correct syntax for these functions. Moreover, the time we spent at the computer rooms was not enough to complete both the exercises and the assignments, so more time or simpler tasks would be the way to go. Something else that I would like to point out is the fact that the examination was not exactly relevant to the course, since we spent so much time learning how to code and we finally did not use python at all. I find this unfair! I understand that the decision to not include programming problems in the examination was taken due to the coronavirus situation, but every single modern computer could be used to run a basic python program, since it is not computationally over demanding. Thank you for taking my feedback into consideration.
It would be better to give more time for the assignment and examination. And it would be better if durinf the lab session the teacher could show the solution in the slideshow/projector so that they do not need to move one by one. Sometimes i donot get opportunity to get help since many students also ask the questions.
The intro to python programming could build up a little slower/more gradually. I felt that, for many of us, it quickly became too high level. Also, I felt like during the course itself the focus was on python programming but this did not come back at all during the exam. I understand that this is due to the current circumstances, but therefore the exam did not feel representative for what we did during the course.
To my mind, the thing that was more difficult was to make the professors, teachers and assistants to understand that we had zero knowledge prior to this course. Some of them told us that they thought it was an elative course, and that we would know programming, despite the fact that this was not a prerequisite to be accepted in the Master. Some of them told us that they could not help us more than a level because we should have had prior bioinformatics knowledge to solve the exercices. The result was not useful at all. Personally, I started online courses at the same time, in order to be able to understand -not solve exercices, just understand- the language our professors were using and some other basic principles in programming.
Lectures: I feel like the lectures sometimes didn't really covered what we needed for the computer lab. It would have been helpful to actually see how you use these tools step by step instead of getting a large overview of databases and websites without knowing how to use them. Computer lab: I don't think the programming part was implemented very successfully. Given that most people had no idea how to program, it got difficult way too fast. I think for this to work you have to stick with either programming or the other tools. I don't believe that it is possible to learn some decent python in 3 days if you have never programmed before and the way we did it resulted in a lot of frustration / tears which doesn't facilitate learning and just scares people off. I think it would make more sense to either stick to other tools like the websites we used or make the course entirely focused on python and take more time to lay a good foundation.
I would suggest grouping the students based on their background knowledge for the lab. And each teacher went with one group through the exercise. I realised that some students had the same questions and the teacher had to explain it multiple times. I think it would be easier for everyone when the teacher explains things one time in a small group - because students can also learn from questions of other students. And then the next class would avoid waiting for a teacher/help. In general, I think the course was really good and I am also really happy that the online exam went without any problems. But it would have been nice if we would have received better instructions regarding where we will find the exam on canvas (it was a little bit hectically) and also I found it a little bit unfair that exams that were not submitted on time were still excepted.
Maybe lectures and assignments could be connected more. For example that we already have a computer in front of us when talking about loops and variables etc. Important functions could also be practiced with examples together with all students before starting to work on tasks independently.
The idea of introducing python to us was very nice but as you noticed most of us were overwhelmed with it. I would recommend starting from a lower level and not increase the difficulty of the questions that fast. Personally I would have not been able to successfully finish a lot of the assignments alone without the cheat sheets.
The programming part went a bit too fast for many, and I think it was kind of overwhelming. The instructor could have covered more parts in real time - meaning that it would be nice if they performed some basic introductory coding on the bord along with the students in the computer room throughout the lab sessions to get us started and on the right track. Some of the concepts were also difficult to get regarding the data we were studying itself, which in turn made it even more difficult to code/analyse it as I did not really understand the underlying. Other that this it was a very good and useful course.
I suggest to put more teachers in the lab rooms to help with the programming part. The time given to complete the assignements was ok and should not be shorter, only longer if possible.
The programming segment of the course could have been for a longer duration as some concepts felt a little rushed. With a little more time, the concepts, exercises and assignments would create a much stronger basic understanding in programming, especially for those people who are completely new to the field.
I wish that the python portion had taken up more of the class. There were several lectures that I did not take a lot away from such as the phylogeny lecture. I think it would have been more useful to have taken that time to extend the python section, which would have allowed the pace of the learning to be slower. Overall I wish I had learned more python, but felt that I could not because the time constraints meant that we couldn't cover things as thoroughly as I needed.
Although the python part is really difficult for beginners, I still suggest we should keep this in next year, but with a simpler introduction for students to understand step by step.
As I was trying to do the Python assignments by myself and I spent lots of time for this, I hoped to get a score for that. After all, everyone got the solutions and I felt that my attempts were not taken into account. However, I think it would be helpful to do everything during the lab and receive some advice from teachers. I would also like more time for Python learning. For me, there was not enough time for the exam.

Do you have any suggestions as to how to improve this course? (Give as constructive suggestions as possible!)
I think it would have been more beneficial if we learned the programming later in the course. Towards the end of the course we had online tools to use, and once I understood what those tools did I better understood the programming we had started weeks before. If we had learned the bioinformatics and then implemented the programming I would've learned more effectively.
Coding was great but more time to for lab work.

What is your overall opinion of the course?

What is your overall opinion of the course?	Number of Responses
very poor	2 (9.1%)
poor	2 (9.1%)
OK	7 (31.8%)
good	8 (36.4%)
very good	3 (13.6%)
Total	22 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What is your overall opinion of the course?	3.4	1.1	33.8 %	1.0	3.0	3.5	4.0	5.0