Environmental geochemistry
MV0218, 20147.2425

15 Hp
Pace of study = 100%
Education cycle = Advanced
Course leader = Jon Petter Gustafsson

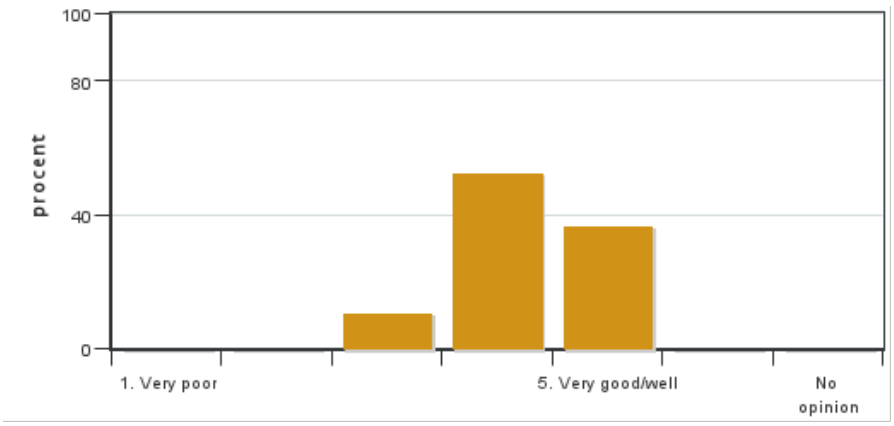
Evaluation report

Evaluation period: 2025-01-12 - 2025-02-02

Answers	19
Number of students	30
Answer frequency	63 %

Mandatory standard questions

1. My overall impression of the course is:

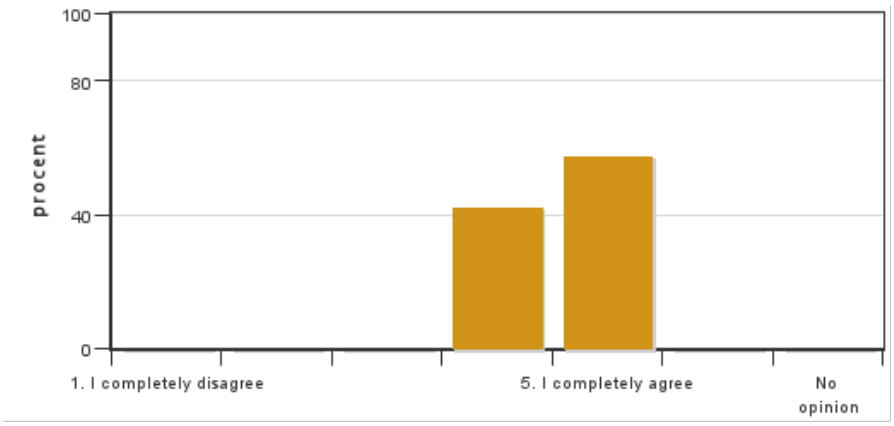


Answers: 19
Medel: 4,3
Median: 4

1: 0
2: 0
3: 2
4: 10
5: 7

No opinion: 0

2. I found the course content to have clear links to the learning objectives of the course.

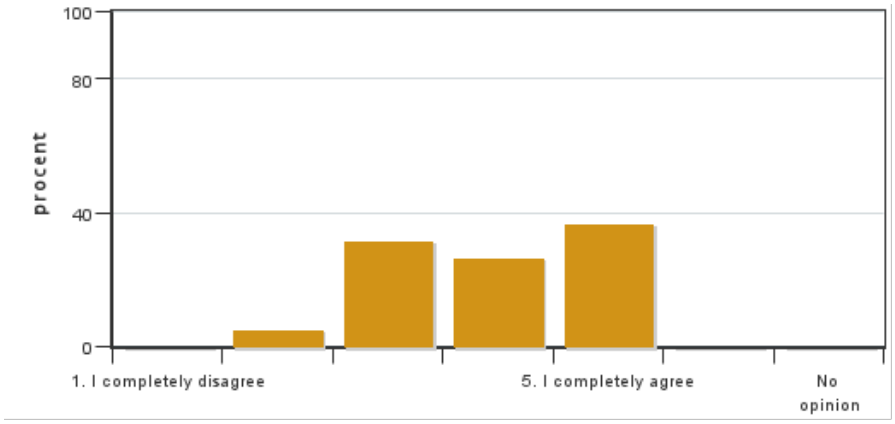


Answers: 19
Medel: 4,6
Median: 5

1: 0
2: 0
3: 0
4: 8
5: 11

No opinion: 0

3. My prior knowledge was sufficient for me to benefit from the course.

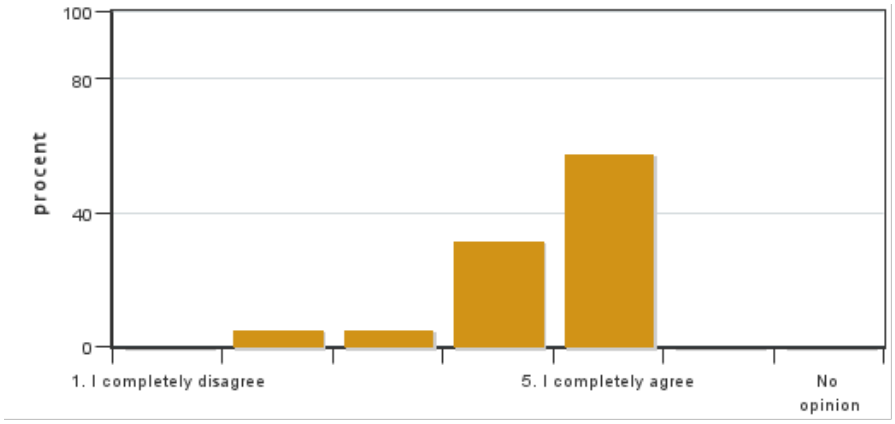


Answers: 19
Medel: 3,9
Median: 4

1: 0
2: 1
3: 6
4: 5
5: 7

No opinion: 0

4. The information about the course was easily accessible.

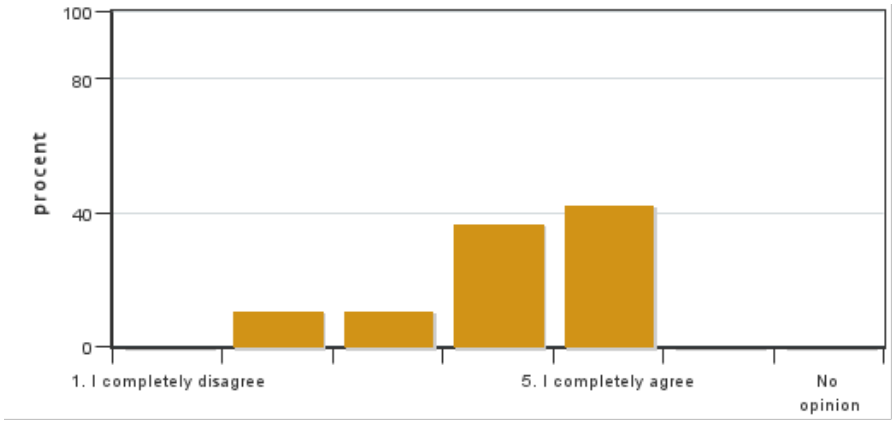


Answers: 19
Medel: 4,4
Median: 5

1: 0
2: 1
3: 1
4: 6
5: 11

No opinion: 0

5. The various course components (lectures, course literature, exercises etc.) have supported my learning.

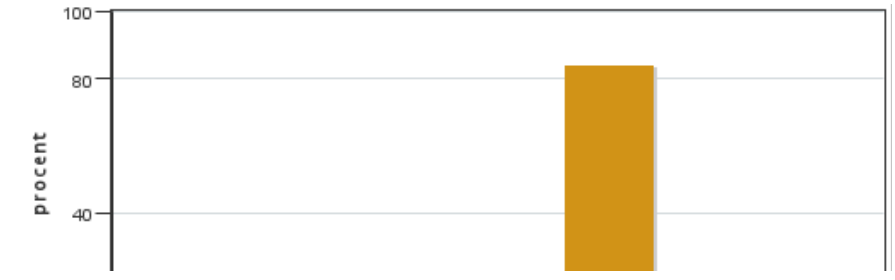


Answers: 19
Medel: 4,1
Median: 4

1: 0
2: 2
3: 2
4: 7
5: 8

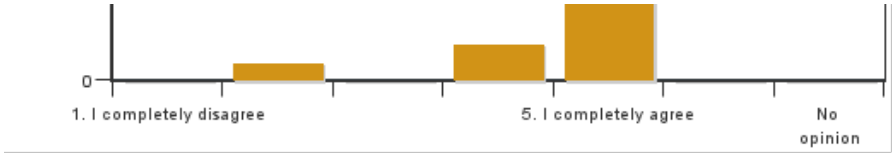
No opinion: 0

6. The social learning environment has been inclusive, respecting differences of opinion.



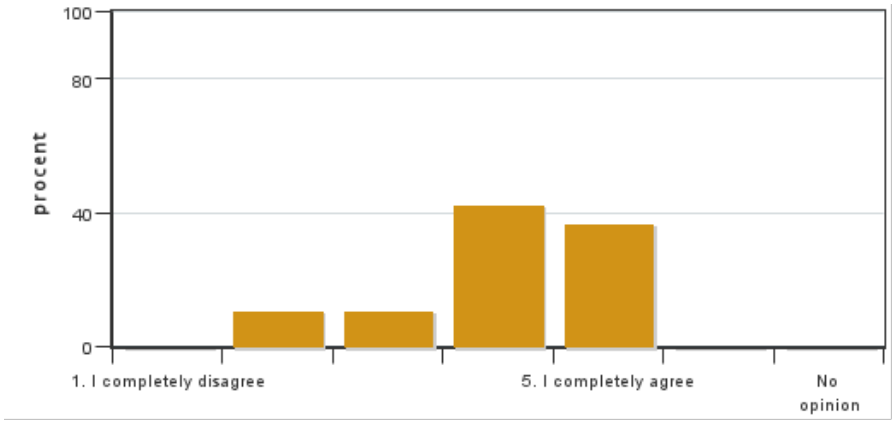
Answers: 19
Medel: 4,7
Median: 5

1: 0
2: 1
3: 0
4: 2
5: 16



No opinion: 0

7. The physical learning environment (facilities, equipment etc.) has been satisfactory.

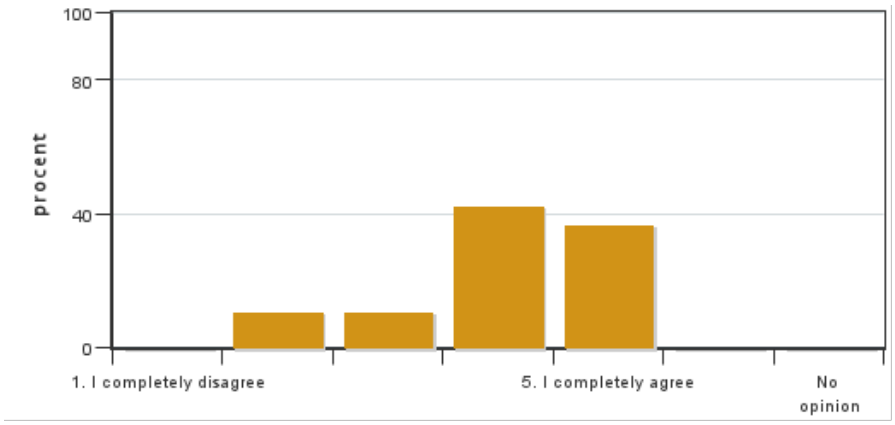


Answers: 19
Medel: 4,1
Median: 4

1: 0
2: 2
3: 2
4: 8
5: 7

No opinion: 0

8. The examination(s) provided opportunity to demonstrate what I had learnt during the course (see the learning objectives).

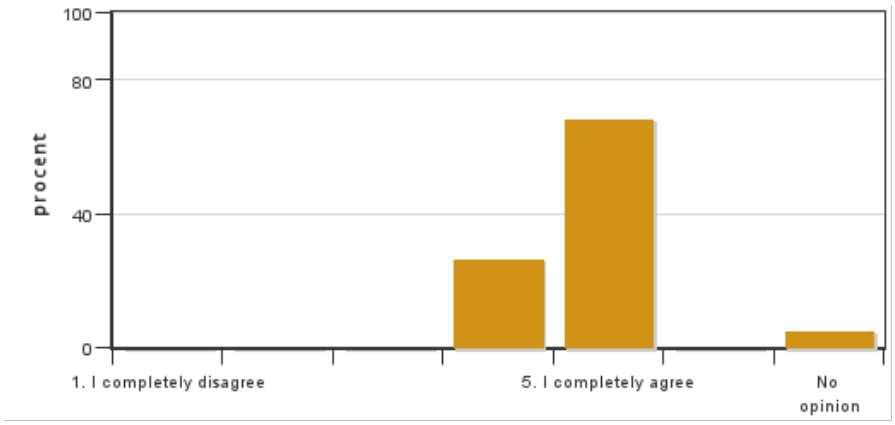


Answers: 19
Medel: 4,1
Median: 4

1: 0
2: 2
3: 2
4: 8
5: 7

No opinion: 0

9. The course covered the sustainable development aspect (environmental, social and/or financial sustainability).

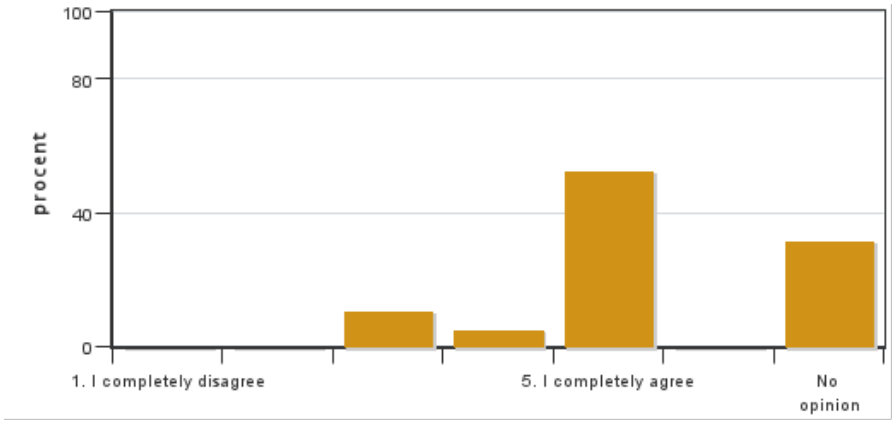


Answers: 19
Medel: 4,7
Median: 5

1: 0
2: 0
3: 0
4: 5
5: 13

No opinion: 1

10. I believe the course has included a gender and equality aspect, regarding content as well as teaching practices (e.g. perspective on the subject, reading list, allocation of speaking time and the use of master suppression techniques).

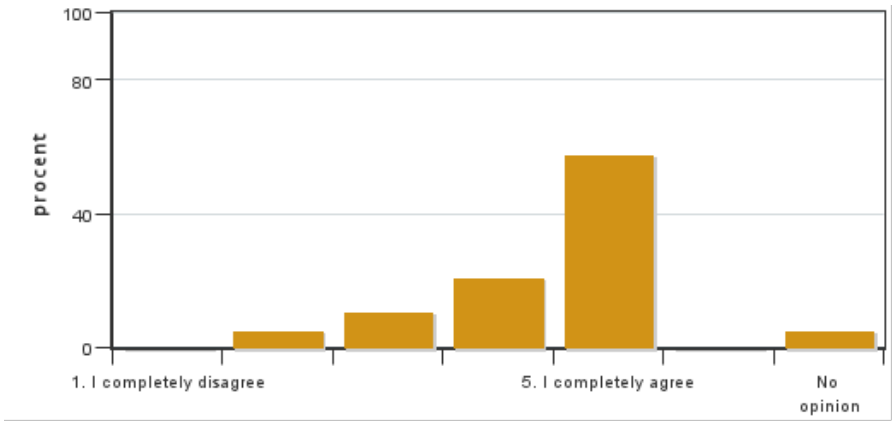


Answers: 19
Medel: 4,6
Median: 5

1: 0
2: 0
3: 2
4: 1
5: 10

No opinion: 6

11. The course covered international perspectives.

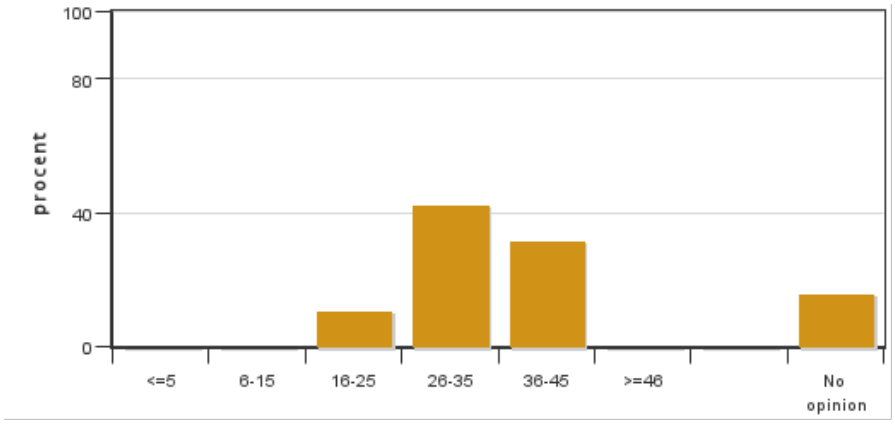


Answers: 19
Medel: 4,4
Median: 5

1: 0
2: 1
3: 2
4: 4
5: 11

No opinion: 1

12. On average, I have spent … hours/week on the course (including timetabled hours).



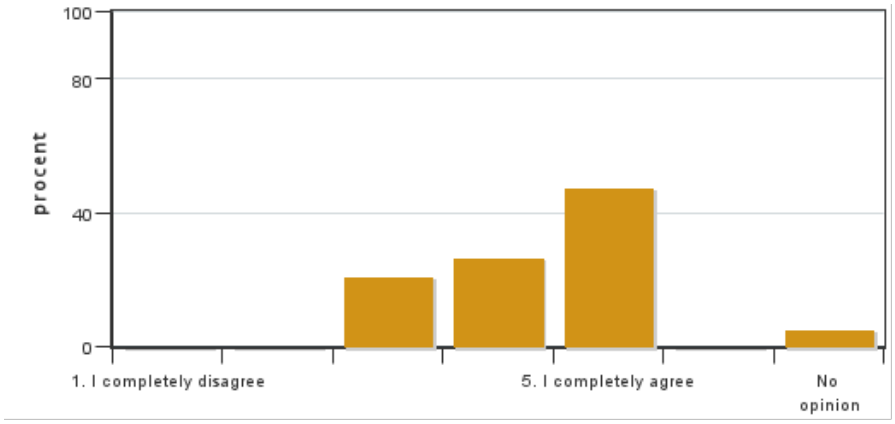
Answers: 19
Medel: 32,5
Median: 26-35

≤5: 0
6-15: 0
16-25: 2
26-35: 8
36-45: 6
≥46: 0

No opinion: 3

Additional own questions

13. An important element of our course is that you do not only learn new concepts of geochemistry but also apply them in a quantitative way. You first solved limited problems on paper in various exercise sessions and then used Visual Minteq modelling on complex problems. How do you evaluate this quantitative approach and more particular the initial step of solving limited systems on paper. Do you agree it is important to your learning or not at all?

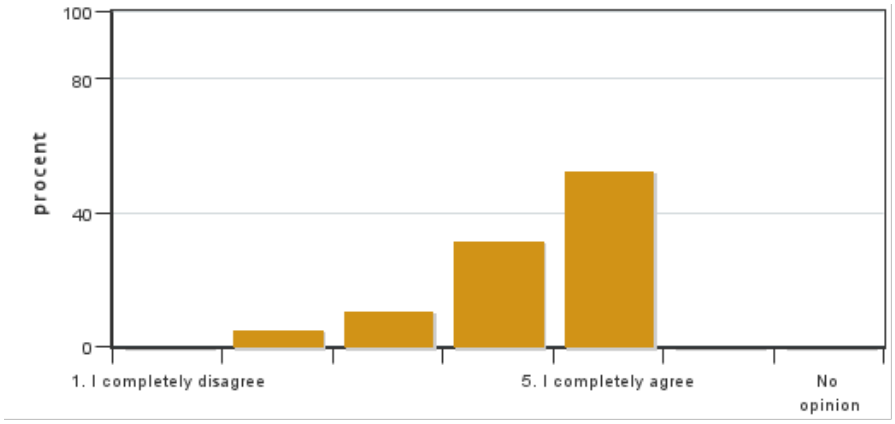


Answers: 19
Medel: 4,3
Median: 4

1: 0
2: 0
3: 4
4: 5
5: 9

No opinion: 1

14. Do you think introduction to chemical concepts is very much needed to prepare you for the rest of the course?

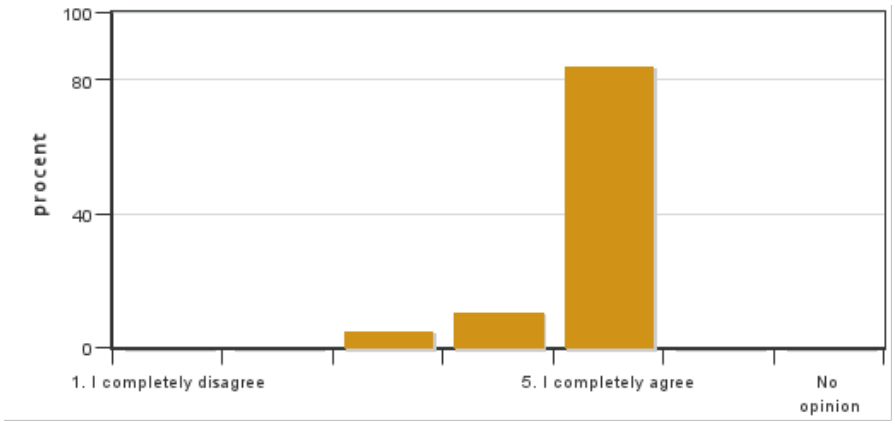


Answers: 19
Medel: 4,3
Median: 5

1: 0
2: 1
3: 2
4: 6
5: 10

No opinion: 0

15. Would agree that "adsorption" is a relevant part of the course and the teacher (Marie Spohn) did a good job? (Organic matter and ion exchange have a separate question)

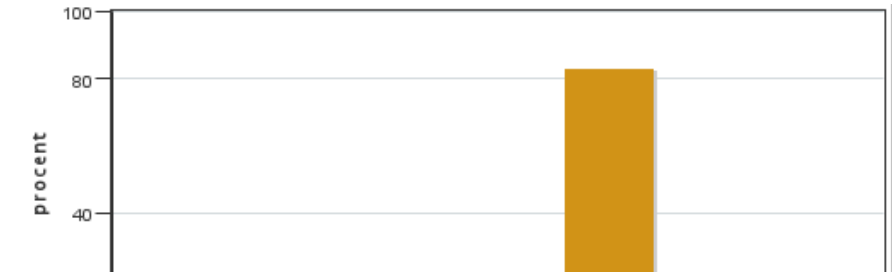


Answers: 19
Medel: 4,8
Median: 5

1: 0
2: 0
3: 1
4: 2
5: 16

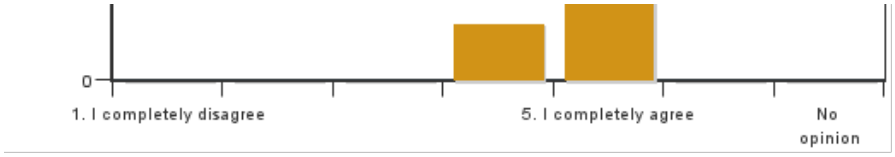
No opinion: 0

16. Would agree that "the carbonate system", "complex formation" and "solubility" are relevant parts of the course and the teacher (Jon Petter Gustafsson) did a good job? ("Phosphate: yield vs. Eutrophication" and Visual MINTEQ have separate questions).



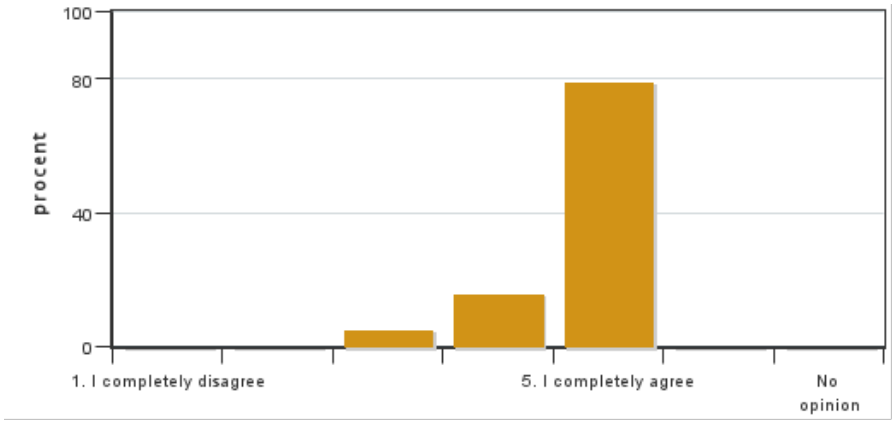
Answers: 18
Medel: 4,8
Median: 5

1: 0
2: 0
3: 0
4: 3
5: 15



No opinion: 0

17. Would agree that "organic matter" and "ion exchange" and are relevant parts of the course and the teacher (Marie Spohn) did a good job? ("soil acidity and countermeasures" has a separate question)

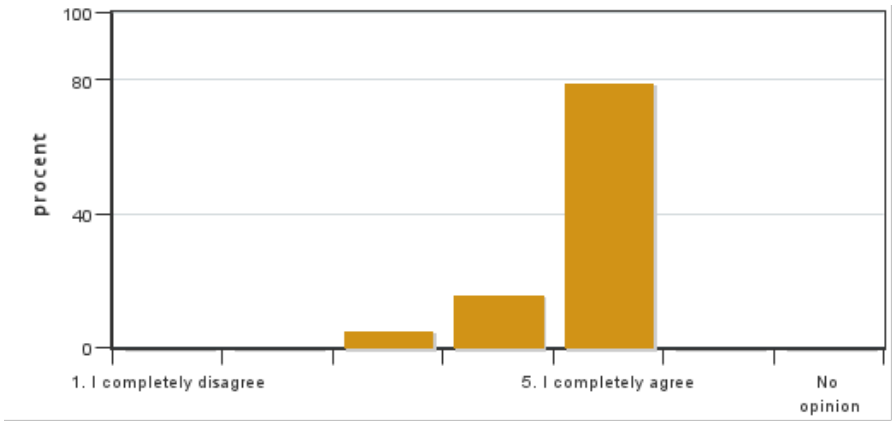


Answers: 19
Medel: 4,7
Median: 5

1: 0
2: 0
3: 1
4: 3
5: 15

No opinion: 0

18. Would agree that "Minerals in soils and waters" and "mineral weathering" are a relevant parts of the course and the teacher (Vadim Kessler) did a good job?

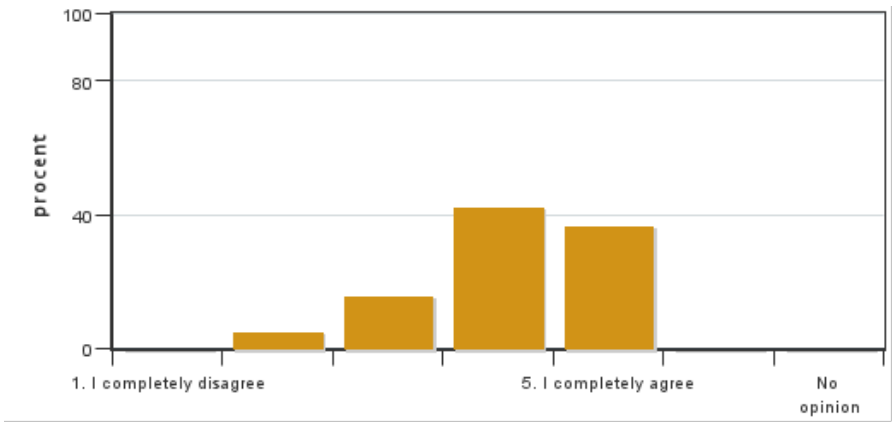


Answers: 19
Medel: 4,7
Median: 5

1: 0
2: 0
3: 1
4: 3
5: 15

No opinion: 0

19. Would agree that "sources and fate of organic pollutants" is a relevant part of the course and the teacher (Georgios Niarchos) did a good job?

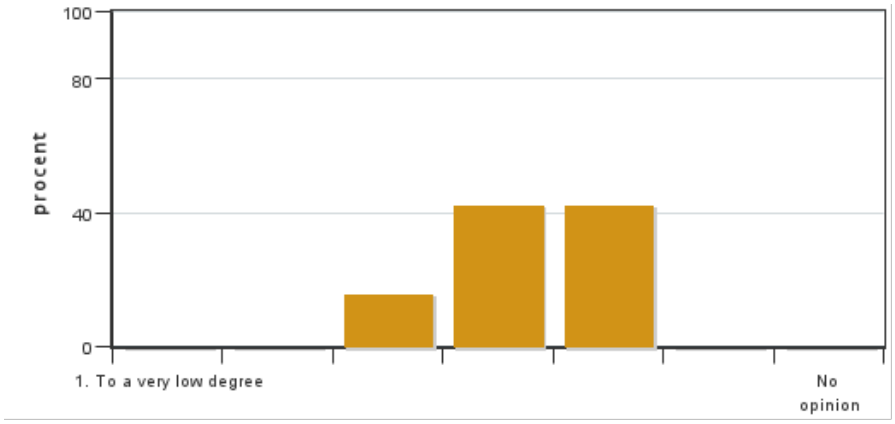


Answers: 19
Medel: 4,1
Median: 4

1: 0
2: 1
3: 3
4: 8
5: 7

No opinion: 0

20. How important do you feel the lab was to the course. The goal was for you to better understand quantitative concepts by handling soils in reality. How well have we succeeded with that goal?

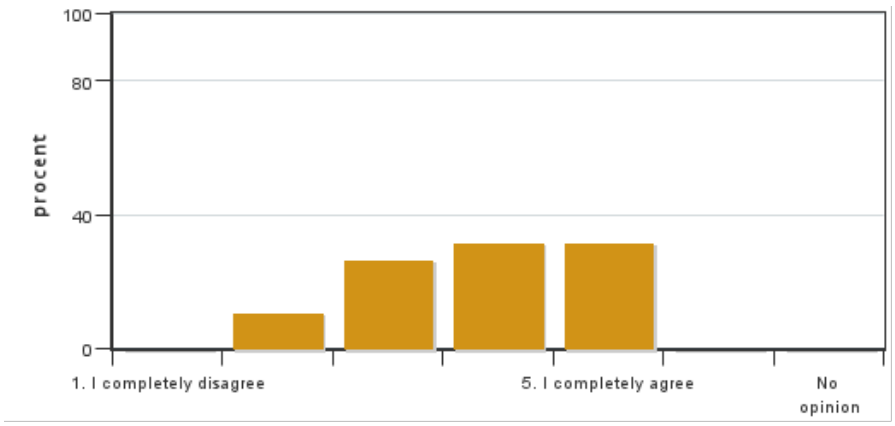


Answers: 19
Medel: 4,3
Median: 4

1: 0
2: 0
3: 3
4: 8
5: 8

No opinion: 0

21. Would agree that "Fugacity concept" is a relevant part of the course and the teacher (Georgios Niarchos) did a good job?

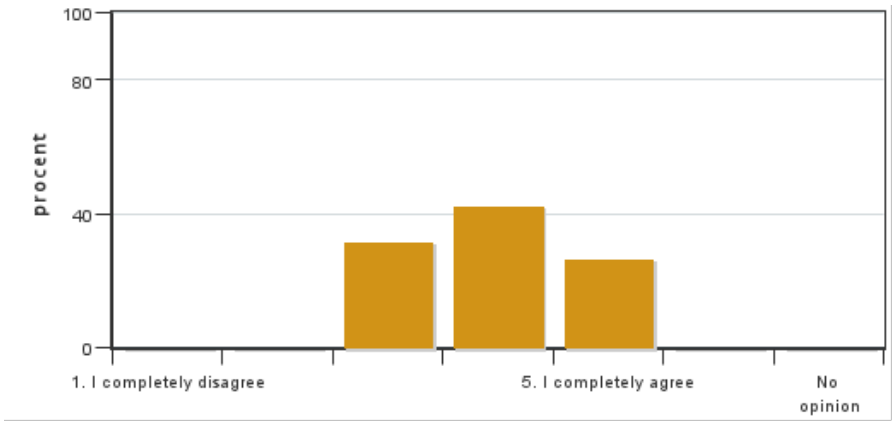


Answers: 19
Medel: 3,8
Median: 4

1: 0
2: 2
3: 5
4: 6
5: 6

No opinion: 0

22. Would agree that "redox" and "remediation of contaminated soils" are relevant parts of the course and the teacher (Dan Berggren Kleja) did a good job?

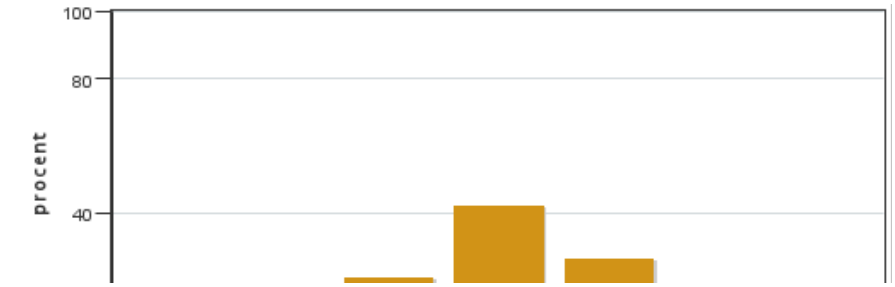


Answers: 19
Medel: 3,9
Median: 4

1: 0
2: 0
3: 6
4: 8
5: 5

No opinion: 0

23. How well did Visual Minteq modelling contribute to the course goals? Did it succeed in combining the different inorganic parts of the course together? Did the teacher (Jon Petter Gustafsson) do a good job?

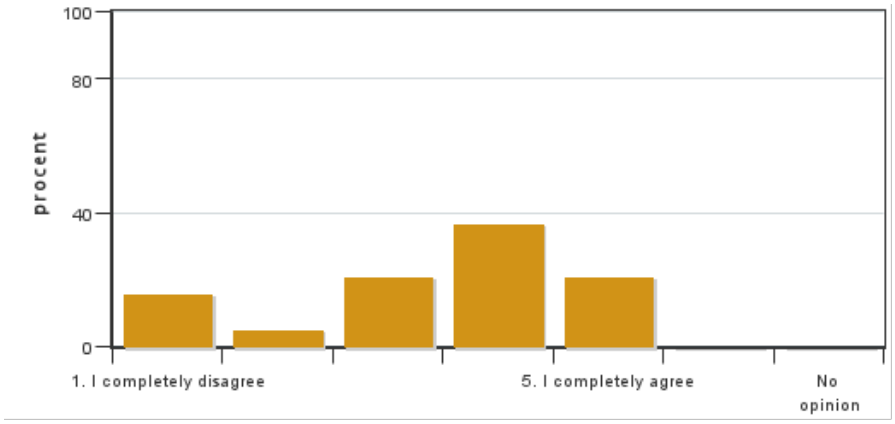


Answers: 19
Medel: 3,8
Median: 4

1: 0
2: 2
3: 4
4: 8
5: 5

No opinion: 0

24. Did you see the risk assessment workshop as an interesting and relevant part of the course? Did the teacher (Karin Norrfors) do a good job?

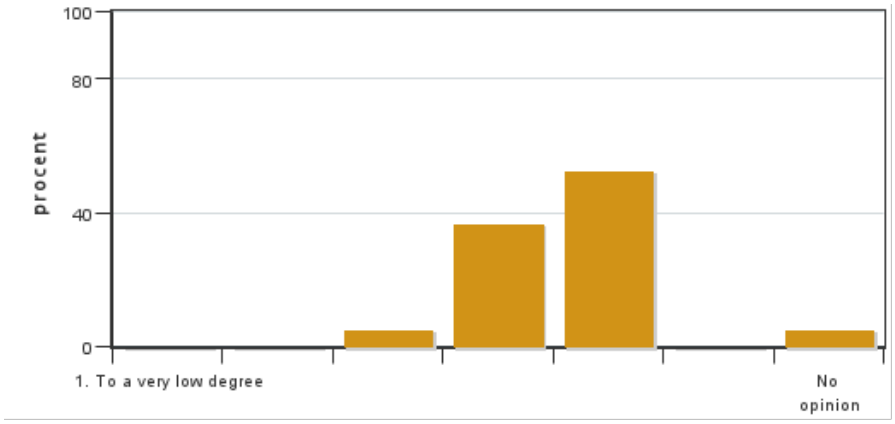


Answers: 19
Medel: 3,4
Median: 4

1: 3
2: 1
3: 4
4: 7
5: 4

No opinion: 0

25. To which degree is "soil acidity and countermeasures" (Marie Spohn) an interesting and relevant part of the course?

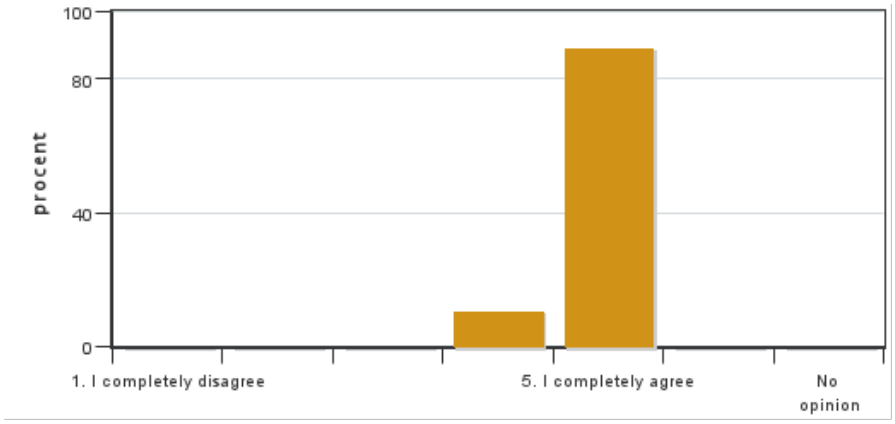


Answers: 19
Medel: 4,5
Median: 5

1: 0
2: 0
3: 1
4: 7
5: 10

No opinion: 1

26. Would agree that "PFAS" is a relevant part of the course and the teacher (Lutz Ahrens) did a good job?

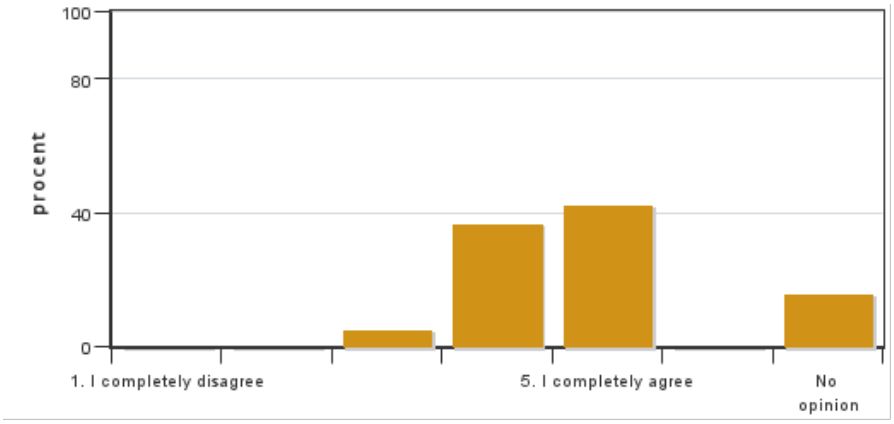


Answers: 19
Medel: 4,9
Median: 5

1: 0
2: 0
3: 0
4: 2
5: 17

No opinion: 0

27. Do you agree that "Phosphate: yield versus eutrophication" (Jon Petter Gustafsson) was an interesting and relevant lecture?

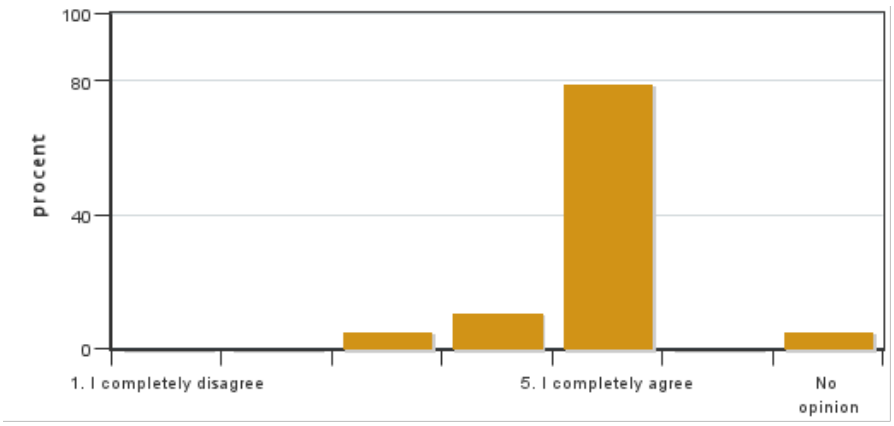


Answers: 19
Medel: 4,4
Median: 4.5

1: 0
2: 0
3: 1
4: 7
5: 8

No opinion: 3

28. Do you agree that "Microplastic fate in environmental systems" (Wiebke Mareile Heinze) was an interesting and relevant lecture?

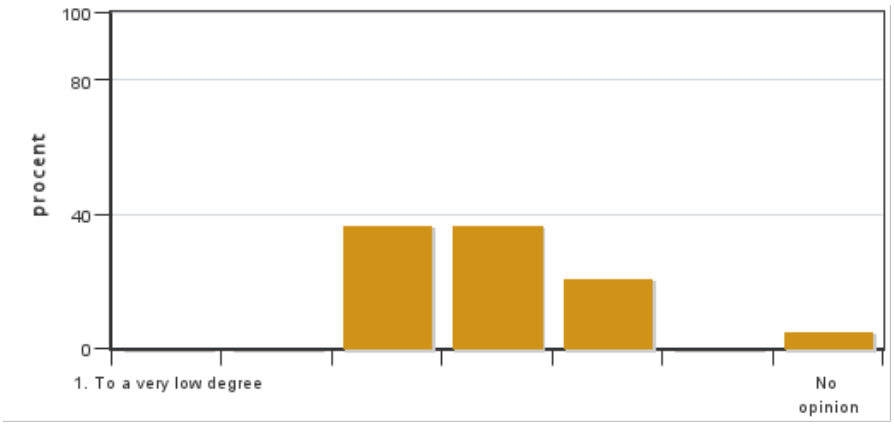


Answers: 19
Medel: 4,8
Median: 5

1: 0
2: 0
3: 1
4: 2
5: 15

No opinion: 1

29. Do you experience the literature seminar, at the end of the course as useful and relevant?



Answers: 19
Medel: 3,8
Median: 4

1: 0
2: 0
3: 7
4: 7
5: 4

No opinion: 1

Course leaders comments

The course had a bit of a chaotic start, as the main course leader fell ill a couple of days before the course started. As a result, the examiner stepped in as the acting course leader, and various last-minute changes in personnel were made. One thing that was forgotten in this early phase was to review the allocated rooms, some of which turned out to be too small for the comparably large size of the group. This was, however, corrected during the first week.

Still, overall the course went very well, which is shown by the course evaluation report, and also by the good exam result (19 passed, out of the 23 who wrote the exam). The atmosphere in the group remained positive throughout the course. In particular, the students valued the lectures very highly – in this regard it is notable that some of the lecturers were relatively “fresh”, which is an encouraging sign for the future. However, some students asked for more “real-world” examples, particularly from the agricultural sphere, and this should be considered by the lecturers.

In addition, there is room for improvement especially concerning the computer labs and the literature seminar, which received somewhat more mixed reviews from the students. As for the computer labs (Visual MINTEQ, risk assessment, fugacity lab), the students could be better introduced to them during the preceding lectures, and the teaching materials for the labs could be improved. The general format of the labs should also be critically reviewed. However, these labs probably have a role to play to fulfil the course objectives, so my assessment is that all of them should be left in the course in some form or another.

Concerning the literature “Research themes” seminar, the large size of the group (27) meant that there were many groups, and with the current format of the seminar, the time to discuss the results was not really adequate. The seminar is designed with smaller student groups (12-15) in mind. Clearly, the format of the seminar needs to be reviewed to work for both small and large student groups. Student opposition may also be considered.

Finally, as both students and teachers feel that the course works well, there is no need to make any major changes in the course syllabus. However, to improve the course further, the above aspects should be considered.

Student representatives comments

Overall impression
Students provided highly positive feedback, with an average rating of 4.3 out of 5. They praised the quality of teaching, balance of lectures and practical exercises, and the course leader's ability to manage the course. Some students suggested a greater focus on agricultural applications. Additionally, most students were able to finalize the course after the first exam, which contributed to a sense of achievement and effectiveness in the course structure.

Course content and learning objectives
The content was well-aligned with learning objectives, earning 4.6 out of 5. Many students found the chemistry repetitions helpful. Some, however, struggled with computer-based exercises like Visual Minteq and suggested more structured guidance.

Course organization and teaching methods
The course was generally well-organized, with an average rating of 4.4 out of 5. However, some students found the Canvas materials difficult to navigate. Lectures and assignments supported learning effectively (4.1/5), though students requested better-structured problem-solving sessions, particularly for complex calculations and software exercises.

Learning environment
The social environment was rated highly at 4.7 out of 5, with students appreciating inclusivity and respectful discussions. The physical learning environment received a lower score of 4.1 out of 5 due to overcrowded classrooms, prompting suggestions for securing larger spaces in future courses.

Examination
The exam was in line with the course content (4.1/5), but some students found it unexpectedly difficult. The grading process was praised for its efficiency. Some students noted discrepancies between topics covered in lectures and those included in the exam.

Sustainability and international perspectives
Sustainability aspects were well integrated (4.7/5), though students wanted more case studies in agriculture. The international perspective (4.4/5) was generally appreciated, but students requested additional case studies outside Sweden.

Key course components
Mathematical exercises were helpful, but Visual Minteq was difficult to grasp without additional guidance. Lectures on adsorption and ion exchange (4.8/5) were well-received, but students wanted more agricultural examples. The PFAS and microplastics sessions were among the most engaging, particularly the field visit to Bäcklösa.

Laboratory work and calculations
Many students expressed the need for more scheduled time for laboratory work, both in the lab and for subsequent calculations. With many students requiring assistance, additional time would help reduce stress (for both teachers and students) and allow for better understanding of the material without feeling rushed.

Risk assessment workshop
This session received mixed feedback, with some students finding it useful and others questioning its relevance. Some suggested modifying or removing it.

Recommendations for improvement
Students suggested improving Canvas material organization, providing more structured problem-solving sessions, and securing larger classrooms. They also recommended clearer guidance for Visual Minteq and additional case studies related to agriculture.

Final remarks

The course was well-received, with engaging lectures and knowledgeable instructors. Minor structural improvements, better teaching materials, and additional support for software exercises could further enhance the learning experience.