

BIO339 Spring 2015 – Evaluation

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Background and goals

BIO339 Stock assessment models is an advanced course within the “Fisheries biology and management” master program that yields 10 ECTS and builds directly on *BIO240 Fisheries ecology* course. The target group of the course are second year master students and PhD students. In 2015, seven students attended the course, consisting of four BIO master students, one BIO PhD student, and two Erasmus students. There were 20 lectures of 2x 45 minutes plus five student assignments and one presentation to be held by each student.

The goal of the course is to introduce the students to the stock assessment process in connection to the underlying population dynamics as well as the resulting output for fisheries management. Main contents of the course are therefore to deepen the knowledge on concepts of population dynamics and fisheries ecology that were introduced in *BIO240* and learn the mathematical models to describe these processes. Furthermore, background on mathematical models and parameter estimation, the stock assessment process with particular focus on the *International Council for the Exploration of the Sea (ICES)*, and the relevance of stock assessment for fisheries management are presented. Key components of the course are student assignments in form of modelling exercises summarized in written reports. Students are evaluated through the total score of assignments (20%) and an oral exam (80%).

Lecturers

Fabian Zimmermann (BIO; main part of teaching, exercises, examination)

Katja Enberg (IMR; lectures on stock assessment process and models in ICES, examination)

Jeppe Kolding (BIO; perspective lecture on fisheries models)

Kjell Rong Utne (IMR; lecture on multispecies models)

Novelties and changes in 2015

The 2015 course was organized for the first time by Fabian Zimmermann in replacement of Jeppe Kolding (sabbatical). Major changes to the 2014 course were: mandatory student assignments that contribute to the final mark; mandatory student presentations; Norwegian/ICES stock assessment as course topic and introduction of guest lecturers from IMR.

Student performances and grading

Overall student participation was good, including the assignments. All students handed in the necessary reports with sufficient to excellent performances (range of final scores: 65-97.5%). Based on assignments and presentations, all students were eligible for the exam.

Out of seven students, six took the exam. Based on the small class size, the grade distribution can be considered as an acceptable result.

Challenges and issues

In general, the challenge of *BIO339* are the combination of low number of participants, the large variation in student background, competences and interests, and a demanding content of the course, both qualitatively and quantitatively. The major issue of *BIO339* in 2015 remained the large competence spread within the participating students, ranging from PhD students with strong skills in fisheries science to students that lack entirely any background in fisheries ecology (or even ecology as such and/or basic mathematical skills). As a consequence, an inadequate amount of lecturing time was used for repetition of basic knowledge in fisheries ecology and modelling (or even undergraduate biology and mathematics). This was reflected in the assignments where only few students were able to excel beyond minimalistic “cook book” problem solving and show an actual scientific understanding that could be expected on an advanced master level. Furthermore, few students made use of the discussion lectures or the “open door” offer of the lecturer(s) to clarify open question in the student assignments, the written feedback on the assignments, or the general content.

Student feedback

Three out of seven students provided an online evaluation that shows a mixed picture (see below for details). While the relative participation was ok, the low absolute numbers limits the representative power of the evaluation. However, some conclusions can be drawn: 1. Overall satisfaction with the course varied substantially among the three students, potentially reflecting the students’ performance. 2. A main target of criticism are the student assignments, yet the detailed points of critique are contradictory (“recipe” structure prevented individual thinking and understanding vs. wish for more guidance and less individual work through exercise labs). Additionally, one comment asks for a seminar to discuss the exercises, although this was actually part of the course but mostly not used as an opportunity to ask questions or discuss issues. On the other hand, it is acknowledged that the assignments are an integral and potentially useful part of the course. 3. A written exam instead of the current oral exam is suggested.

Conclusions

Specific conclusions from the 2015 course:

1. The changes in the course improved student involvement (mandatory assignments) and relevance/topicality (guest lecturers/ICES stock assessment), and can be therefore considered as a step in the right direction. The main drawback was their first time implementation in combination with the lack of experience of the course organizer, potentially causing a feeling of “experimental” teaching among the students.

2. The “recipe” structure of the assignments was perceived as problematic for the learning process, on the other hand student performances dropped off substantially in all assignment questions that required them to think beyond simple calculations, connect knowledge and solve actual problems. It is therefore not clear how the assignments could be made more informative and interesting (i.e. challenging) without losing the major part of the students that struggles to solve tasks despite clear step-by-step instructions.
3. The large variation in background, competence, and motivation of students was also in 2015 an issue that is difficult to resolve. Mandatory exercises and presentations, however, proved to be successful in identifying weaker students and partially motivate them to engage more in the course.

Suggestions for future courses:

1. As an attempt to avoid completely “misplaced” students, it could be helpful to make *BIO240* (or equivalent) a mandatory requirement to take *BIO339*.
2. A better coordination of *BIO339* with the other fisheries science courses at BIO, in particular *BIO331*, could provide useful synergies. It is therefore recommendable, to align better the contents, goals, and methods of the different courses (and eventually assemble them under one common roof).
3. The (mandatory) assignments are useful and integral tools for the understanding of the course content, therefore I suggest to develop them further and refine their role. Based on the 2015 feedback, fewer routine tasks and more assignments that challenge the students and provide a better learning experience are recommendable. However, how to implement this is not clear at this point. A dialogue with future students to improve the utility of the assignments might help to provide answers.

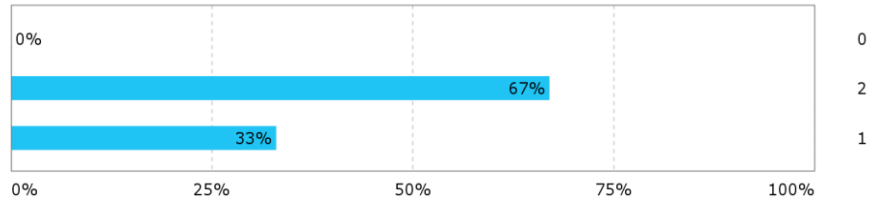
Annex: Student evaluation

Are you a ?

Bachelor's student

Master's student

Other



Are you a ? - Other

- PhD student

How much time did you spend on this course per week? (including lectures, groupwork, labs and independent study)



How much theoretical knowledge have you gained from this course? (1 = none, 5 = a lot)

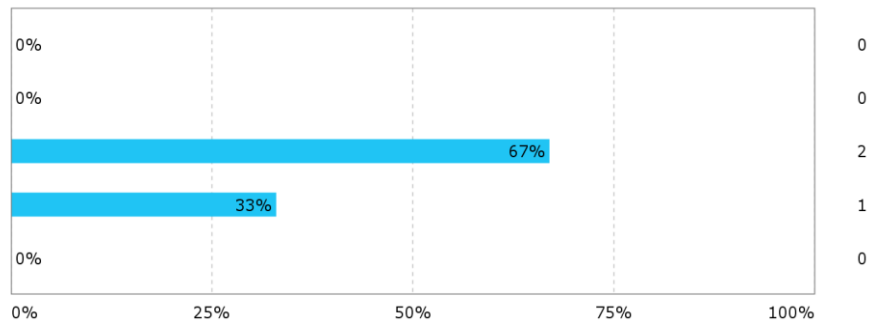
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2

3

4

5



How much practical knowledge have you gained from this course? (1 = none, 5 = a lot)

1

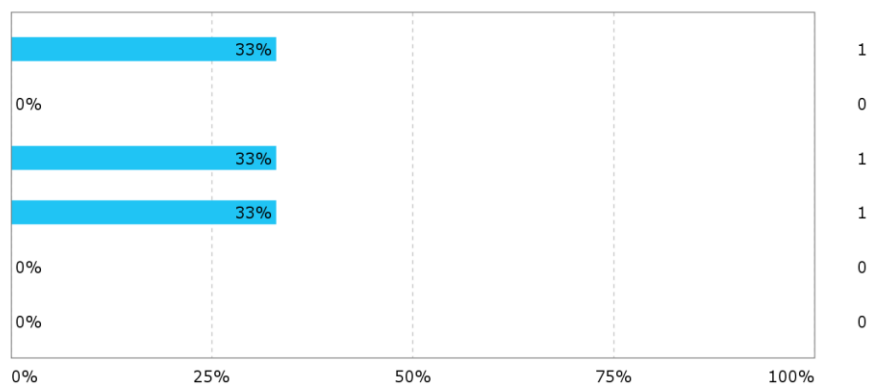
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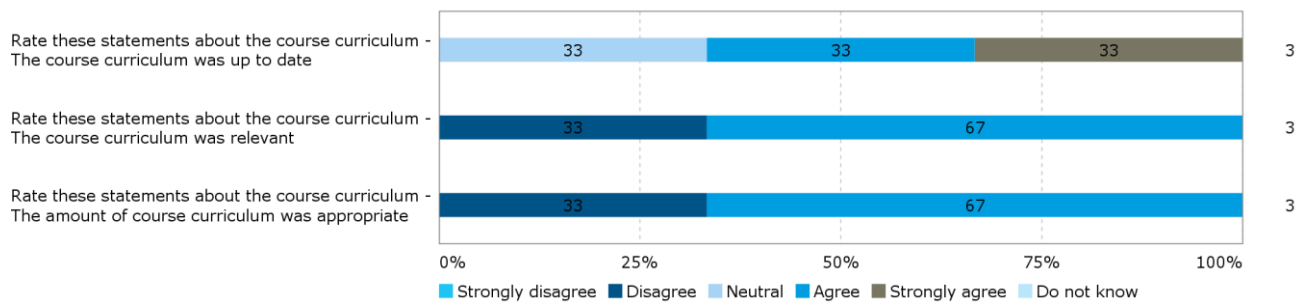
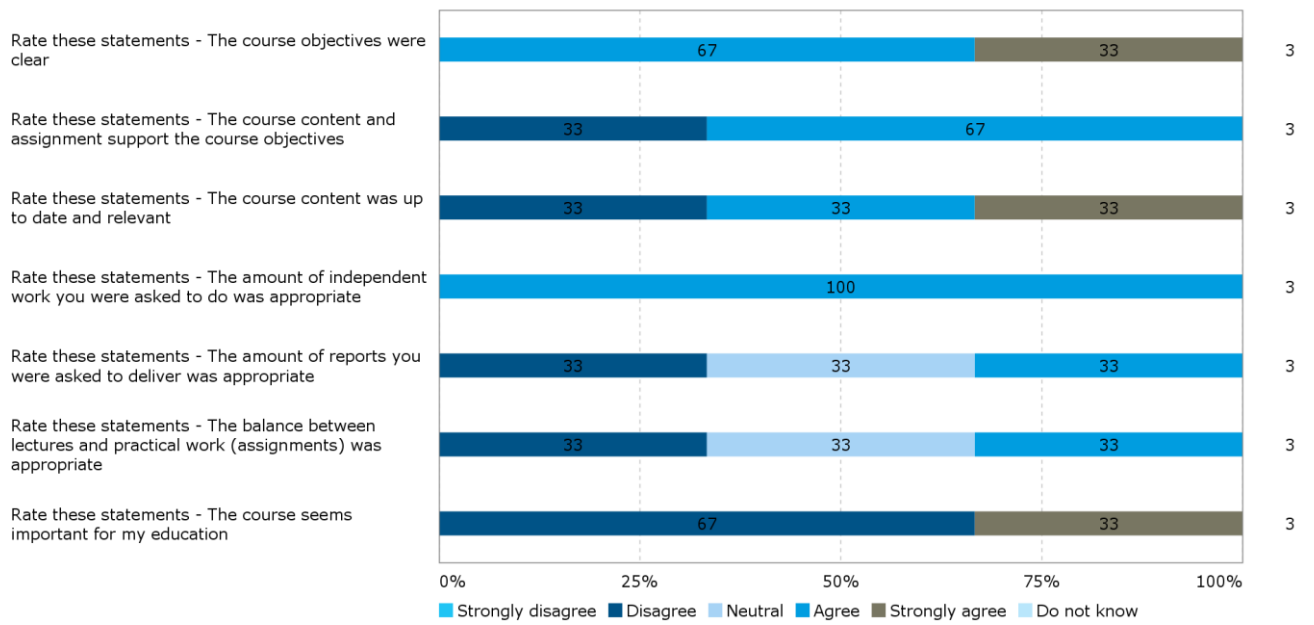
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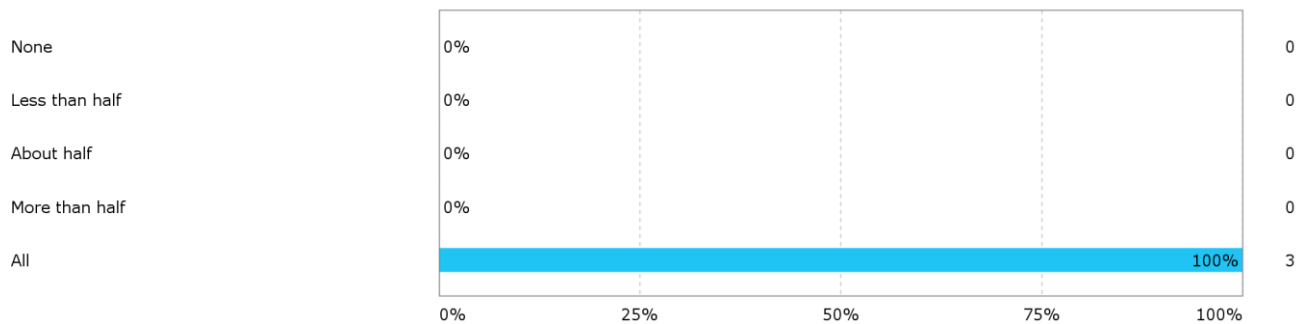
5

Not relevant for this course

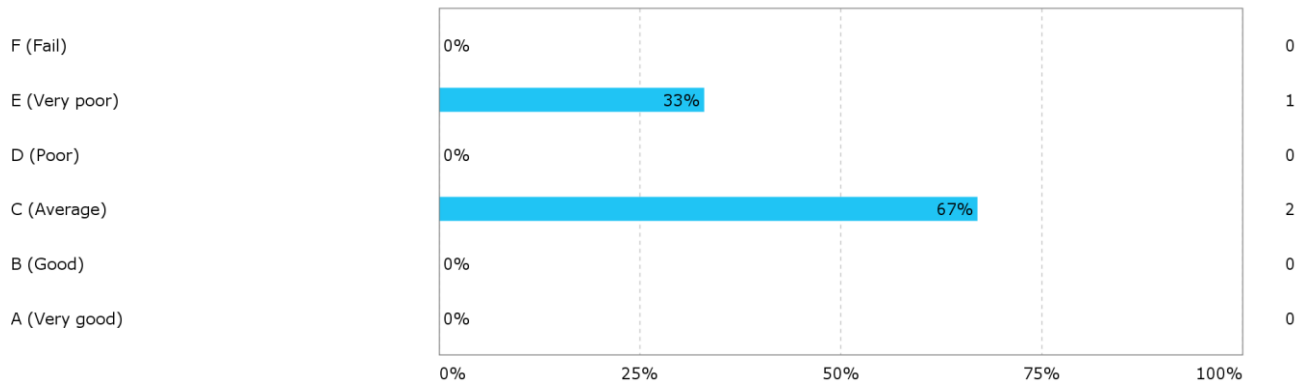




How much of the course curriculum did you cover?



What grade would you give the course



What do you think was the best thing about this course?

- Basic fish model knowledge
- The mix between lectures and exercises

What do you think was the worst thing about this course?

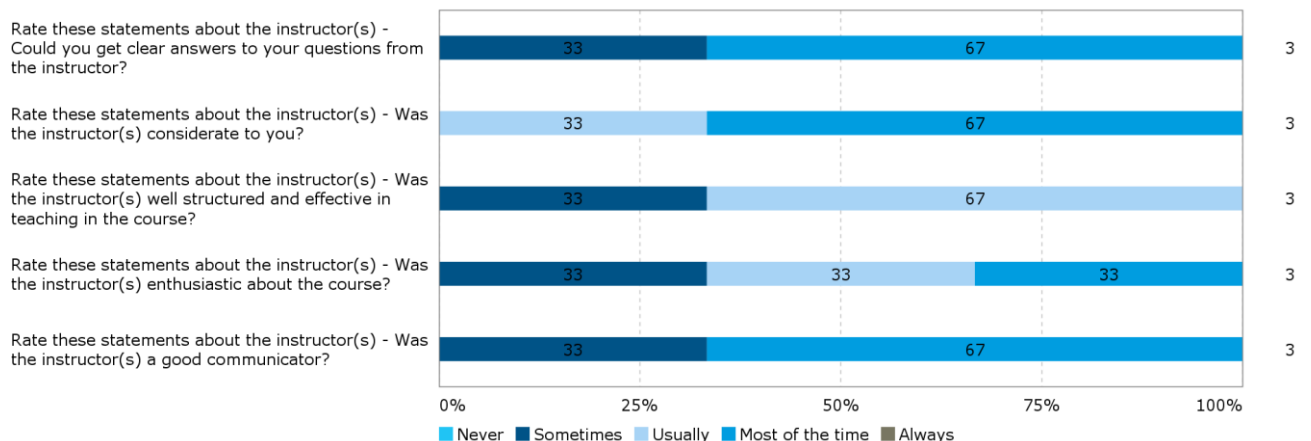
- Way too much in detail during lectures. Poor assignments. Exam questions not covering all the topics.
- The exercises in same part.

Do you have any suggestions on how to improve the course?

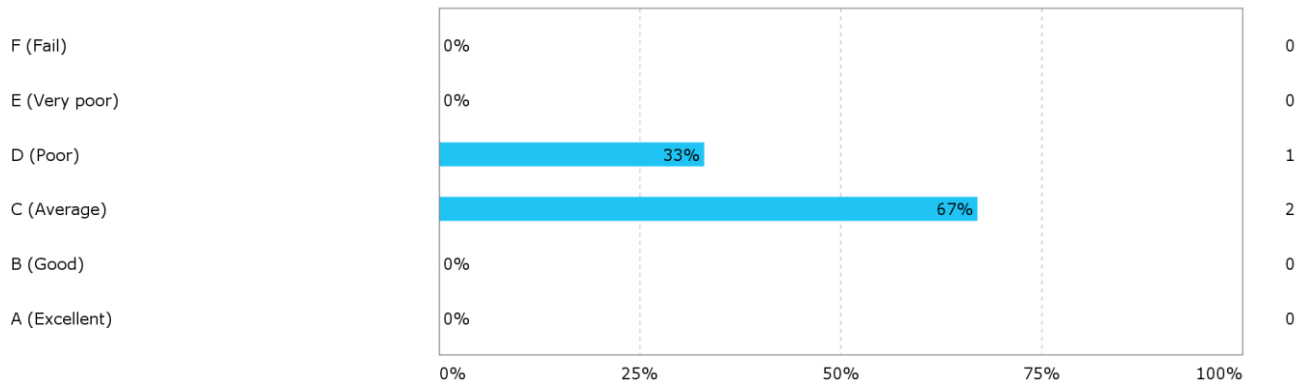
- Make a lab and do the practicals together, learned almost nothing from them now, poor feedback. Improve lectures, way too much time spend on too complex details. Exam shouldn't be oral for such a course and the questions were not as would have expected.
- The exam should be in written form.
- It could be offered an seminar where you explain the exercises in more detail. Now we just received them and did what was said in the assignment, but most of the student did not understand what they were doing. This must be improved

Feedback on practicals

- Poor feedback, didn't learn anything from them, just following a 'recepty'
- I like that it was real date and not "fitted" data to the models which give the "perfect" results. Put more effort in the practical part, because that's what the students have to apply later, not the knowledge. That's something they can look up later quite easy. Even if some sound knowledge are necessary.



What grade would you give the instructor(s)?



What would you recommend to improve the instructor's performance?

- Make lectures more interesting, dont spend too much on one slide and complex details or formulas. Make practicals a lab and assist the students. During exam don't smile/'laugh' if student doesnt know the answer. Genuinely a nice guy but course was poorly set up and 10 ects doesn't make sense. Rather make fisheries management a 10 ects course.
- The exercises should be discussed in detail after each topic.
- Try to finish one topic in the lecture and not continue with the rest in the next lecture. I know sometimes that not possible, but it should not be regular. Which is was in our cases