

3-årig emneevaluering

Course: GEOF213

Semester: Autumn

Period: 2018-2021

Emneansvarlig: Elin Darelius (2018-2020), Camille Li (2021)

Introduction

GEOF213 was taught by Ass. Prof. E. Darelius in 2019 – 2020 and by Prof. C. Li in 2021, while E. Efstathiou was teaching assistant 2019-2020 and H. Ramesh in 2021. The course typically has 10-15 students, including a few Erasmus exchange students. In 2020, most of the activity in the course was moved online, due to the pandemic situation. Teaching in 2021 was in person.

1. Beskriv og begrunn pedagogiske valg i emnet, reflekter over studentens læring som følge av disse valgene.

During the relevant period, we've tried to move away from traditional black board teaching towards more active teaching, e.g. by initially introducing quizzes, think-pair-share exercises and more recently team-based-learning elements. To save time for discussions and exercises in class, we've started to move parts of the equation derivation online. Part of the derivations are now available as films, that the students can watch in their own tempo, with the possibility to stop and repeat as needed. I think this has worked well, and that we should aim at making more material available this way – e.g. solutions to some of the exercises – although it is very time consuming. The 2021 course (when E. Darelius was on sabbatical and C. Li had responsibility for the course) was back to a more traditional format, with lectures twice a week and group work (either lab experiment or exercise session) once a week. However, we retained many of the active teaching/learning aspects in the lectures, adding frequency think-pair-share, quizzes and discussions to each class, and providing quizzes and movies to watch afterwards. Derivations were however done in lecture.

An evaluation of the material used in 2020 shows almost all students used the movies and found them useful. This was also the case for most of the TBL – activities, notably the iRAT/tRAT, where the students first solve a quiz on their own and then in a group, and the lab-experiments that's been introduced. Thanks to a set of DIYnamics small rotating tables, the students are now able to conduct their own experiments (in small groups) instead of watching a demonstration.

Due to changing “environmental factors” – notably digital teaching and “home exams” (and the small student groups) it is difficult to compare results from year to year, but the students are definitely participating actively to a greater extent (at least when teaching is physical).

We've made attempts to include programming exercises in the course. The initial attempts were not very successful, since the programming capabilities of the students were very uneven. This will likely improve, as all (uib) students now taking the course will have been exposed to Python-programming throughout their studies. In 2021, simple programming segments were introduced to the mandatory exercises, where students were asked to plot or calculate something simple using their programming language of choice. In 2021, we also added a more substantial programming exercise (in python, as a Jupyter notebook) near the end of semester. We set aside 1 week (3 x 2-hour slots) as group work sessions so that those who had trouble could work with the teaching assistant on the exercise, and this seemed to work quite well. It will still be a problem, however, that Python is not the "native" language of the teachers. In addition, some of the Erasmus students were familiar with Matlab but not python.

The discussion regarding how to organize the "exercises" is end – the students want the solutions presented to them on the black board (by the teacher/teaching assistant), but this obviously does not agree very well with active teaching theories. In addition, we feel this gives the impression that there is only one "correct" solution (there are often several different ways of solving a problem), and this leads to some students trying to memorize this solution rather than understanding the concepts.

2. Oppfølging av tidligere evalueringer

The course has evolved during the last few years as a result of the student evaluations and of the teachers' own experience of what "worked" and what did not. There have been remarks on the poor organization of material on mittuib.no – we now organize the material in modules which works better. There are general complaints about the workload and the organization of deadlines and compulsory activities. We believe this is partly a result of the student's expectations (in a survey from 2019/2020 the majority of the students in the class claimed to spend only 25-30h a week on studies) and a mis-match between what the students are expected to know and what they do know (e.g. mathematics, programming and physics). We have reorganized the course somewhat in response. For example, we removed the mid-way exam and placed more emphasis on understanding and completing the exercises. The organization of the exercise hours has also continuously evolved. However, it seems important to remind students at the beginning of the semester that there is a certain expectation for the amount of work going into a 10 ECTS course.

3. Studentevaluering og andre evalueringer som er relevante for emnet

The evaluations carried out each year are included in an appendix to this document (2018-2020 only, 2021 is not yet available). Most students find that the course material and learning outcomes match well the goals of the course, and appreciate the purpose of the course (to provide the fundamentals of theory for large-scale geophysical flows). There are, as mentioned above, always comments about the total workload and the organization of the material and the lectures. The organization and format for presenting the material are continuously being addressed and most of the new teaching material and activities

developed for the class were deemed useful by the students. The workload is necessary and appropriate, in our opinion, but we have made an effort to organize it better and warn the students to keep up and work steadily throughout the semester.

4. Erfaringer fra andre som bidrar i undervisningen på emnet, både studenter og ansatte

All instructors and teaching assistants agree with students that in-person, physical teaching is much more effective for this course. In 2018-2020, the course had a second instructor filling in for some lectures near the end (Nils Gunnar Kvamstø and Camille Li). This seemed to work well, as the topics were well defined, and the students seemed to enjoy seeing new faces. Mirjam Glessmer helped with the lab experiments in 2021, and worked with the instructor to better streamline the lab exercises/instructions and teaching material.

5. Strykprosenten på emnet

Strykprosent i perioden:

Karaktersnitt i perioden:

12.5%

2.9

Emnegjennomføring oversikt pr år

ARSTALL	Antall kandidater	Antall kandidater be..	Bestått kandidater	Antall kandidater st..	Strykprosent kandidater	Snittkarakter
2019	11.00	11.00	8.00	3.00	27.3%	3.25
2020	18.00	16.00	15.00	1.00	6.3%	2.67
2021	14.00	13.00	12.00	1.00	7.7%	3.08

6. Eventuell fagfellevurdering

There has been no fagfellevurdering of GEOF213.

7. Vurdering av samsvar mellom emnets læringsutbyttebeskrivelse og undervisnings-, lærings- og vurderingsformer

As mentioned above, there has been a shift to include more active teaching/learning components to the course. Also, the evaluation is now focused more on understanding/practicing the concepts along the way, as we have (1) removed the midterm, (2) made 30% of the course based on exercises, labs reports and lab presentations, and (3) reduced the final exam weight from 80% to 70%. The exercises and labs, as well as think-pair-share, group discussions and quizzes, are all aligned with the lecture material. We feel there is a good correspondence between the description of the course's learning outcomes and teaching, and also that the methods for teaching, learning and evaluation are all geared towards the learning outcomes as well. The student evaluations are in agreement.

8. Vurdering av om framdrift og opplegg for emnet er i samsvar med de fastsatte målene for emne og program

We feel that GEOF213 is in accordance with the established goals for the course, and the student evaluations that we received agree. The same is generally true for the established goals for the program. However, we noticed that the progression of dynamics through the Bachelors programme at GFI was not as well coordinated as it could be, meaning that some students seemed unfamiliar with concepts we thought were already covered in earlier courses, while other concepts are repeated in several courses. The instructors of the dynamics courses at UiB are in the process of reviewing the coordination of material throughout the Bachelors and Masters courses, so that we ensure topics follow from one course to the next.

9. I de tilfellene det er tilknyttet praksis eller arbeidsrelevans i emnet, skal det evalueres om ordningen fungerer tilfredsstillende.

This is not applicable.