Kursanalys av SF2704 Differential Topology, våren 2021

1 Kvantitativa data

Moment	ÖVN1
Poäng på moment	7.5hp
Antal registrerade	10
Antal godkända på moment	4
Prestationsgrad	50%
Antal med slutbetyg	4
Examinationsgrad	50%

Förklaring:

- Prestationsgrad är antalet studenter som klarat momentet vid första examinationstillfället som andel av antalet registrerade som gjorde något.

- Examinationsgrad är antalet studenter med slutbetyg som andel av antalet registrerade som gjorde något.

  Tre studenter hoppade av efter vecka 1 eller 2, av de 5 resterande blev 4 godkända (80%).

Betyg	A	B	C	D	E	F
Antal	1	1	0	2	0	1
Andel	20%	20%	0%	40%	0%	20%

2 Övergripande om kursen

Kursen handlade om en introduktion till differentialtopologi, d.v.s. topologi av glatta mångfalder. Kurshemsidan med information om lärandemål, innehåll och struktur finns på `https://canvas.kth.se/courses/21924`.

3 Undervisningen

Undervisningen skedde genom klassiska föreläsningar (via zoom), övningar (via zoom) och veckoliga inlämningsuppgifter.

3.1 Ansvariga lärare

Tilman Bauer
Eric Ahlqvist (övningsassistent)

4 Examination

Kursen examinerades genom inlämningsuppgifter. Det krävdes även att varje student presenterade minst tre uppgifter vid övningstillfällena.

4.1 Löpande examination

Det fanns 12 inlämningsuppgifter under kursens gång (i stort sett varje vecka). Av dessa, de 10 bästa räknade till slutbetyget.

4.2 Tentamen

Det fanns ingen tentamen i denna kurs.

5   Studenternas syn på kursen

Återkoppling i denna mindre kurs skedde genom direkt kontakt med läraren och en slutenkät. Studenterna tyckte att materialet var givande och stimulerande.

5.1   Kursenkät

Tre studenter (60%) svarade på enkäten.

1. *What was good?*

Student 1 I thought that the lecture was good and the content of the course was interesting. The homework assignments related to each lecture were good and ensured that I followed along, and I got feedback on my understanding of the content.

Student 2 The lectures were really good. Even if I often did not understand all the details of the proofs during the lectures, they were often accompanied by drawings, examples and brief intuitive explanations of the general idea which really helped. I also liked how when new concepts were introduced they were always well motivated and related to things we have done previously. Basically, the flow of the course and the lectures felt good and natural.

Student 3 I liked the set of subjects. It feels like I got a better geometric understanding of topological concepts throughout the course.

The lectures and exercise sessions were also very good.

2. *What can be improved?*

Student 1 One thing that comes to mind is that in the current setting, there is no way for me as a student to go back and show that I've understood parts of the course that I previously failed to understand, more explicitly If I performed poorly on homework then there is no way for me to redeem my self. As a suggestive solution, there could be an oral exam at the end of the course, mandatory or optional, where I the student could demonstrate my overall understanding and maybe talk about a specific subject in the course in-depth. If anything, it would probably be a good teaching moment.

Student 2 As someone who hasn't taken algebraic topology, even though it says that no background in algebraic topology is required in the course description, many parts of the course felt tailored to those who have. Maybe it was because some people in course already had taken algebraic topology and those who have not, like me, did not speak up enough when we did not understand, but some exercise sessions for example I could not follow at all because everyone was speaking in algebraic topology lingo I did not understand and we had not covered on the lecture. Especially when we were treating different kinds of line bundles.

Also, I don't know how much easier the course becomes if you have taken algebraic topology, but considering the difficulty of the questions I think it might have been too much with homework every week. This course took up more time than my other courses this semester by far. The TA also seems to have trouble keeping up the pace with correcting the homework, so maybe homework every other week or so is worth considering the next time this course is given.

Lastly I think it would have been nice to make clear for everyone what we can use in our solutions to the homework. For example, several definitions given in the lecture were different from the course book so I was not always sure if I had to use the definition given in the lecture or could use either one etc.

Student 3 Maybe controling that the homework problems don't contain mistakes a bit more carefully, but on the other hand, having mistakes there gives an opportunity for us students to learn by finding them so this isn't an extremely big problem in my opinion.

3. *Other comments:*

Student 1 One thing that I missed was seeing some theoretical applications of the subject. There were some mentions of how Lefschets index theory can be used in dynamics and so on. Maybe some links on the course page could help with that.

Student 2 Even though I wrote quite a bit on what could be improved I have to say that I really liked the course!

Student 3 Nothing comes to mind at the moment, thanks for a nice course!

6 Analys av ansvarig lärare

Svårighetsgraden har tonats ned sedan förra omgången (2018) och en annan bok har använts (Guillemin-Pollack i stället för Hirsch). Detta gjorde kursen mer tillgänglig. Något material har bytts ut (Morseteori åkte ut, i stället var det mer snitteori och Liegrupper). Det tycker jag var en lyckad förändring.

Från enkäten framgår att studenterna var i stort sett nöjda med både innehåll och format och de fick lära sig en hel del.

Som en student anmärkte i kommentarerna så fanns det några fel i lydelser till inlämningsuppgifterna och det kan ju bli förvirrande för vissa studenter. Men uppgifterna stämmer nu och kan återanvändas. Att det fanns övningstillfällen tillförde mycket till kursen – förra omgången fanns de inte, och studenterna tyckte om att de fanns.

Jag tycker att kursens innehåll är bra och relevant och kursen borde ges i framtiden igen då och då (möjligtvis med ytterligare förändringar). Jag tror att kursen skulle kunna attrahera fler studenter om den fick en egen kurskod och -namn istället för "Valda ämnen i matematik". En sak jag tycker skulle kunna förbättra kursen är att rikta ut den mer mot ett "mål", ett viktigt resultat som integrerar alla lärda metoder. Just nu består den av olika, någorlunda skilda delar. Men jag vet inte riktigt vad det skulle kunna bli för resultat.