**Kursevaluering av KJM5100/9100 Uorganisk materialsyntese høst 2021**

14 studenter møtte til eksamen i KJM5100/9100 (10/4) hvor av en tok opp igjen eksamen, altså 13 aktive deltagere gjennom semesteret. Eksamen ble planlagt til å være «live», men dette ble omgjort like før eksamensdatoen pga innstramninger i koronatiltakene. Oversatt til bokstavkarakterer (også for PhD kandidatene) fordelte karakterene seg slik 5A, 2B, 5C, 1D og 1E.

Ola Nilsen, som underviser den teoretiske delen av kurset til vanlig, hadde undervisningsfri høstsemesteret 2021. Denne delen av kurset holdt med Olas digitale forelesninger fra 2020, men med «live» kollokvier samlet i andre halvdel av semesteret. I kollokviene ble hvert enkelt tema fra pensum belyst med et oppgavesett som grunnlag for diskusjon. Noe av målsetningen med kollokviene var å få studentene i aktiv faglig diskusjon. Derfor ble de frammøtte delt i to grupper som diskuterte seg gjennom oppgavene, i tillegg ble oppgavene repetert i plenum og kommentert av veileder. Dette fungerte stort sett bra da de aller fleste var aktive på gruppene sine og også deltok i plenum. Oppmøte på kollokviene varierte noe, fra 5 til 9 studenter. Kunne mao vært bedre.

Labbkurset ble avholdt etter samme mal som tidligere år. Studentene ble delt inn i grupper av 2-3 studenter som gjennomførte laboppgavene sammen etter den timeplanen som passet best for gruppens deltagere. Som under 2020 versjonen var det problem med en del av labbutstyret, og særlig høytemperaturovnene. Kurset trenger oppgradering av disse for sikre bedre gjennomføring av noen av oppgavene. Så igjen: **Her er det behov for ekstra ressurser før gjennomføringen av kurset til neste år.**

Canvas ble brukt som kommunikasjonsplatform for kurset. Her ble podcasts av forelesninger lagt ut samt all annen skriftlig kommunikasjon med studentene.

Det ble gjennomført en anonym nettskjemabasert spørreundersøkelse rundt innhold og gjennomføring av kurset. For å få sammenligningsgrunnlag ble de samme spørsmålene som foregående år benyttet. Hele undersøkelsen er lagt ved bakerst.

Generelt virker studentene fornøyde med kurset og dets innhold. Årets tilbakemeldinger sammenfaller stort sett med foregående år. Noen anbefalinger/konstruktiv kritikk er sammenfattet under.

- Flere savnet muligheten til å stille spørsmål under forelesning, så digitale opptak er ikke ideelt. Muligheten for å se forelesningene «on demand» verdsettes.

- Det anbefales fra flere å avholde kollokviene temamessig parallelt med forelesningene og ikke samlet til andre halvdel av semesteret,etter forelesningsserien.

- Kursets pensum og bok er ok.

- Flere tilbakemeldinger på at labboppgaven med kjemisk transport reaksjon bør byttes ut. Det etterlyses mer etterarbeid/karakterisering av materialene som framstilles.

**Anonym nettskjemabasert evaluering av KJM5100/9100**

**Flow of information: What has worked and what could be improved with respect to flow of information?**

* It was good.
* Worked very well overall. Can't pinpoint any mistakes.
* Canvas: Please remove all information outside the "modules" i Canvas. It creates confusion on where to find the correct information.
* Canvas worked well, with notifications etc., but sometimes we misunderstood what was to be done in which colloquium. For instance in the last session, we thought we would be working on nanomaterials, but it turned out we should be doing a test exam set instead. It would be nice to have the plan for the semester in a separate document, and then if there are any changes update that. If you had such a document, I did not know about it.
* Canvas and e-mail functioned acceptably as information exchange facilitators.
* There were too many versions of the curriculum/lectures available. Canvas had two different versions (a podcast and 2020 videos) + different sets on the public page of the course https://www.uio.no/studier/emner/matnat/kjemi/KJM5100/h21/timeplan/index.html.
* I think canvas itself is a bit messy, and it was unclear for students whether to follow lectures from 2020 or 2021 as both were out on canvas. They were similar, but not exactly the same so it created a bit of flurry (even though you probably go the same info in the end).

**Organization of time: Have we managed a good distribution of lectures, colloquium and labtasks? What can be improved?**

* Yes, the distribution is good.
* The colloquia could have started earlier to give a better connection to the lectures, through the autumn.
* I believe it was well organized, though I could not follow the lectures in the due time. In the end, Colloquia helped me to catch up and understand the content better. Lab ideally should be after lectures as it helps to consolidate the content, but considering time constraints for everyone I believe it is really hard to do that.
* Distribution was mostly good. I would have liked to have colloquiums all through the semester, with perhaps more at the end.
* No comments of significance.
* The distribution was good. That was especially important this year since the lectures were online and we didn't get the chance to discuss with the lecturer.
* Yes. The colloquiums were very helpful. I would prefer to do colloquiums following the lectures.

**Curriculum itself: Any parts that should be expanded on, removed, or added to the course? Choice of book?**

* no, I think the book worked well
* The book was good.
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* The book is ok. The curriculum is very diverse, with little connection between some themes (other than that it's all synthesis). But I think that is unavoidable in this course. I can't make any very good suggestions about what to remove, but the part about nanomaterials at the end perhaps deserves more time and a more thorough treatment.
* The book assigned as curriculum itself is comprehensive and well structured. It should be noted that the book will often refer to the glossary for more technical terms, yet often the relevant term is not present in the glossary. Personal subjective impression would state that the book does put a significant emphasis on highly specific, yet less important, minutiae, and reads like a prolonged list of points to note; it makes an aggressively boring read at times.
* I found the book to work well.
* The book is fine.

**Labtopics: Any labtasks that should be changed, added or removed?**

* GeO2 lab should be swapped with something that works every time, like CdSe quantum dots. It's always good to see that quantum effects actually work, and I think it has at least the same relevance to the curriculum as gas transport reactions.
* The lab-exercise ALCVD/MnO2 was not finished as described in the text. The last part was not done by the students. When the course is named "Inorganic materials syntesis", it is expected that all exercises are to be done in the lab by the students, or demonstrated by the professors.
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* Chemical transport can be removed. Maybe instead focus on how the resublimation in Mn(CVD)-task is pseudo-chemical transport, and get some more CVD into that task as well.
* Some laboratory tasks failed to produce any (functional) product (Gas transport and superconductor tasks). Exchanging these tasks for more reliable procedures might be worthwhile.
* In general, I think that some of the lab tasks were missing the "final step" to understanding the whole process. For instance, we did not get the chance to see the resulting high-viscosity gel during the gelefication in the BaTi sol-gel process. It would also be great to be get demonstrated the creation of a thin film and not just see the equipment. Since the last part of the curriculum is focused on self-assembly, templating and nanomaterials, it would be very cool if there were a lab task about creating nanomaterial! E.g by amphiphiles/ reverse micelles. PS: I know that the ferrofluid task was nano-particles, but it did not feel like the most stereotypic method.
* Remove the CTR-lab and add something else, or add more time for analysis of the products.

**Technical performance: Do we use appropriate tools while lecturing/lab-working? Suggestions for alterations?**

* Big fan of recorded lectures! "Knowledge on demand" is nice.
* All lectures on video from last year was demanding for the learning prosess. Zoom could have been used to give the students the opportunity to ask questions, and also to use break-out rooms for discussions. In the colloquia, in the covid-situation, zoom could have been used to organize the discussions better together with the lectures.
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* I don't know because all the lectures were recordings, but it would have been nice to see more actual examples of different material types, maybe even simple demos/more videos.
* The tools utilized were appropriate for the tasks carried out.
* It would have been very useful with a lecture on XRD analysis and the open source tool you mentioned. This was new for me and the short intro was given after I wrote the report.
* Yes, the lab could use a thorough clean out/up though.

**Exam: Did you feel that you managed to explain what you want?**

* Yes
* No. I will suggest to ask the students to present a topic or a small project based on the lab's, as a part of the oral exam, and then ask some questions related to the specific learning outcomes for the course.
* Yes
* Yes.
* Yes, sufficiently to answer the stated questions to a degree where adequate understanding of the subject was demonstrated.
* Yes, oral exam works well for this course.
* Yes. A nice mix of explaining myself and getting pointers if I forgot something obvious, but having to come up with it myself.

**In one sentence, how would you summarize the course?**

* Fun labs with useful curriculum.
* The course is good, and the professor is motivating and a good teacher. Some adjustments can be done to make the connection between the lectures, collocvia and the lab even better, see above. The lab was messy and should be cleaned.
* Excellent introduction on the main aspects of inorganic synthesis in both theoretical and practical aspects
* A bit messy, but turned out very well.
* It is another course to fulfill formal diploma requirements.
* I really enjoyed the course!

A very nice introduction to many different synthesis techniques, perfect for someone going into a job within chemistry.