Summary:
These courses deal with advanced theories in modern separation techniques. Both courses are master level courses in science and engineering programs respectively and the overlapping parts (most lectures) are given simultaneously to both student groups. KAK050 is mostly theoretically oriented with a minor part of laboratory work comprising 15 hours per student at the lab. In addition, KEMM06 includes a more substantial part of laboratory work (96 hours at the lab) and a literature project (40 hours). It is the second time these courses are run together and this concept seems to work very well. Out of 47 students 36 students answered the survey and most responses are positive. All survey responses are presented after this summary.

The following paragraph attempts to meet some of the student comments: Student’s expectations are met, both courses are useful and worth to recommend. Live@Lund works well but some students have experienced the database to be slow when retrieving information, the compendia will be available in paper form for purchase next time the course is given. Some KAK050 students asked for more laboratory work, this will be considered if the course budget allows it. The laboratory experiments are under review in order to be modernized. This work started already last year (the LC-MS experiment is a result of this work) and continues this year. Tutorials are thus gradually updated.

KEMM06 exam results:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Grades</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VG</td>
<td>G</td>
</tr>
<tr>
<td>1st (Jan 2015)</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>2nd (Feb 2015)</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

VG – pass with distinction
G – pass
U – fail

KAK050 exam results:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Grades</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>1st (Jan 2015)</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2nd (May 2015)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

U – fail

Margareta Sandahl
(Senior lecturer in Analytical Chemistry)
KEMM06: Student’s comments (16 out of 20)

Did the course fulfill your expectations? Which? How?
- Yes, I wanted labs in there are a lot.
- Yes, I have learned a lot.
- Yes, even though it was too intense.
- Yes, good content about chromatography and optimization with compatible labs.
- Yes, improved my analytical thinking and lab experiment.
- Yes, it did but I think it is too large, too many different topics.
- Yes, the lab part put the theory in practice and gave a deep understanding of the subject.
- Yes, great lectures, laborations and teachers.
- Yes, I learned how to use different separation methods by doing the laboration.
- Yes!
- Yes, more laborative experience to see theory in practice.
- It was a good course, Very comprehensive and lab oriented.
- Yes, fully. I get good laboration experience and strong theory program.
- Yes
- Yes and no. I thought there would be more calculations but I am glad there wasn´t. I´ve learned a lot from all the theory.
- Yes, it was a good and deep overview about the analytical chemistry. Together with the practical I have a good picture about what I can do.

Were there expectations, which were not fulfilled? Which? Why?
- -
- In some cases I miss more practical explanations.
- I expected more MS spectra interpretations.
- No, nothing that I can think about.
- It is a little bit too much with reports and sometimes quiet stressful!
- Yes, all.
- No
- Didn´t seem to be that much new theory
- Yes
- No
- No

Is the course worth to recommend?
- Yes, learned a lot + skills
- Yes, but only if you are not taking another course at the same time.
- Yes
- Yes, Absolutely. Good course to take even though the goal is not to be only an analytical chemist.
- Yes, good knowledge for every chemist.
Course evaluation KEMM06/KAK050 – HT14
Analytical Chemistry, advanced 15 credits / Chromatographic analysis 7.5 credits

- Yes it is but it would be good if some things especially regarding the lab work would be changed.
- Indeed.
- Yes sure.
- Yes, for everybody who wants to learn how to use a GC or LC and wants to have a deeper understanding.
- Yes
- Yes
- Of course
- I would recommend this course.
- Yes
- Definitely. It was really difficult because the course is huge but it is useful when aiming at research in all chemical fields.
- Yes!

Live@Lund: What was good and how can we improve?
- The lectures + the book available are good.
- Yes.
- I am fully satisfied.
- Works fine except some server issues during the Christmas.
- Very good!
- Good, everything was available.
- It works very efficient, but sometimes its too slow, maybe should be improved in that sense.
- It’s fine.
- It is great that all the documents are there. But the homepage has a bug, which mixes up the folders sometimes. The documents are not found in the folder, where they are supposed to be.
- It worked fine. No special comments.
- Good source for compendia information easy to access.
- Very slow webpage. Every time take ages to open.
- Live at Lund is very useful web source.
- No it was good.
- Good to use it. Can put up all the slides in the beginning. Easy to forget to print in the morning.
- Everything worked, a good platform, good that there is a connection from the material, to the email address.

Where the compendia useful? Which are good? Any improvements?
- Lecture pdf are enough.
- Compendia were quite different sometimes. Articles about Grob solution and ion exchange chromatography (among others) are impossible to understand. Sample preparation is good.
Course evaluation KEMM06/KAK050 – HT14
Analytical Chemistry, advanced 15 credits / Chromatographic analysis 7,5 credits

- The Grob solution literature is not good. It takes too much time to read it and during this period with all the labs it will be easier if there will be a better written article about that method.
- Yes, Good information of all parts of the course especially the CE compendium, which was not included in the course book.
- Not all of them were useful! The one for Grob solution was the worst one. Not helpful, it took a long time to figure out the important things.
- Very helpful in giving a perspective of the subject. It would be better to elaborate some parts little more.
- I actually did not read, but they seem very good.
- I almost haven´t read any of them.
- Since we only had the compendia on L@L I didn´t read it as good as I should have. Maybe it is worth the money to buy it as a paper version.
- There are plenty of information sources (book, lectures, compendia) it is easy to feel that some of it is redundant.
- Yes, it was good. However literature related to MS was although good for learning however it was not helpful for exam.
- Yes compendia were useful.
- Yes
- Can´t really have an opinion.
- Yes, they were useful!

Suggest improvements or changes concerning i.e. lectures, literature, experimental work, teachers and attitudes.

- Exp. Work: more feedback for report, good points.
  Literature: Old for a field which evolves (HILIC, UPLC, MS)
- Lectures should be more in amount, with the same material but more classes are needed. I missed practical work as an exercises about interpreting chromatograms. More seminars should be done. Maybe the teacher would ask for exercises twice at month or provide us with them. Experimental work helps to clarify ideas about theoretical background but deadlines are not good. Only 3 days having that much work from lecture, preparing labs and so on are not enough. Some corrections should be done in lab guides.
- The tutorials for the lab work are not as good as they could be with the exception of CE tutorial.
- Maybe a newer course book? Needs some improvement in the lab tutorials, different information in the tutorials and in the hand-in sheets. LC1, think over the optimization with acetonitrile, did use methanol in part 1 which was indirect the optimum.
- Nice and positive teaching! Thanks!
- I found that the lab work was so efficient, too less help from supervisors too many experiments in short time. 3 days for reports are not enough. Lab seminar should not be 1 day after Christmas holiday.
- It would be really helpful to make lab parts as clear as possible, since the tutorials are sometimes unclear and confusing.
• There should be more instructions be given when starting GC1 experiment. It was not clear how settings could be made (important ones such as the split ratio, or splitless time). “Just try” was not too helpful.
• Would much rather buy a compendium than printing them one by one (and still paying for it). Having everything on L@L is handy but for practical applications a piece of paper is always better.
• Awesome.
• Course program is very saturated. It would be good to have experimental work after all lectures.
• I would have wanted a “pärm” with all the lectures and compendia in from the beginning. Maggan could send out a question to the registered students in advance of the course, giving them an opportunity to sign up for a pärm. Of course the signup is bindande.
• It was good at the beginning the theory and then the labwork, but the time of the labwork was sometimes too short.

Further comments
• I think it will be also important to have another experiment, just in case the lab experiment that you have that day doesn’t work. Moreover, I guess that solutions of exams in seminars will help us in order to study.
• Everything was ok 😊
• The tutorials for lab could be better the laborative work is very concentrated to December maybe a little more dispersed.
KAK050: Student’s comments (20 out of 23)

Did the course fulfill your expectations? Which? How?

• Yes, It gave a deep understanding of concepts.
• Yes, it was a very good course, which taught me a lot of chromatography theory, which I needed to understand processes I have faced in experiments.
• Yes, broad insight in chromatography while being demanding but fair.
• Yes. Before taking this course, I want to know more about the principle of the analysis method.
• Yes, I expected to be much better at chromatography over all and I surely am!!
• Yes it covered all aspects I expected and on a suitable level.
• Ja, var en fortsättningskurs på grundkursen vi läste i 3an.
• Ja, jag förväntade mig att den skulle vara lik analytisk kemi (åk3) fast svårare och det tyckte jag att den var.
• Yes, very educational. Builds well on the basic course.
• To learn more about chromatography.
• Yes! I wanted to learn stuff in different parts of analytical chemistry and I did!
• Yes, I learned about different methods and techniques. I didn’t have so many expectations.
• Yes, I learned a lot more about chromatography and it was interesting with good lectures.
• Yes, Chromatographic analysis course fulfilled the expectations by teaching related theory and through lab sessions.
• Better than expected. Good laborations, and had low expectations on analytical chemistry.
• Yes, interesting but also challenging.
• Yes, it went deep into chromatographic analysis and process optimization.
• Yes
• Pretty much, continuation of the basic course.

Were there expectations, which were not fulfilled? Which? Why?

• Many times there was too much to take in at a time, also teaching may have been a better to make sure everyone is on same page.
• No
• Would have wished to be more active/familiar with the instruments more lab sessions.
• Know the principle of the analysis method.
• No. As student it is hard to have to much expectations before the course.
• No
• No
• There were no such expectations that were not fulfilled.
• None
• No
• Better supervision in lab
• Thought it might be more labs.
Course evaluation KEMM06/KAK050 – HT14
Analytical Chemistry, advanced 15 credits / Chromatographic analysis 7,5 credits

Is the course worth to recommend?
- Yes! Definitely.
- Yes
- Yes
- Yes. It’s well organized, and give a lot of information about the analysis method.
- Yes. I have learnt to solve problems and it feels like I am way better now than before.
- Yes
- Ja
- Ja
- Absolutely.
- Yes
- Yes ☺
- Yes
- I would recommend it to people with a genuine interest in chromatography.
- Yes, it gives clear idea and knowledge about chromatographic technique in depth, thus recommendable.
- Yes, good analytical chemistry course.
- Yes, is interested in the subject otherwise maybe to demanding if one doesn´t feel like the subject.
- Yes
- Yes
- Yes

Live@Lund: What was good and how can we improve?
- No complaints.
- It´s always good to use Live at Lund because it is structured and all information can be found there.
- Everything online on-time! General statements rather in e-mails, because L@L does not “inform” about those.
- We can find all the information related to the course in time.
- It was good that you added all papers there. It was easy to find and the organization there was good.
- Nothing was bad.
- Mycket bra!
- Bra att all info hamnade där och att man kunde välja själv om man ville skriva ut kompedierna eller inte.
- Good.
- Good to have literature and lecture notes on the page.
- I like the whole thing with live@lund. Good to have all info at one place.
- Good that all lecture notes are available.
- It was easy to use live at lund to apply for lab groups and I think that was really good.
- Lecture notes and other information were obtained on time.
- Helpful with everything in one place.
- Pp being there on time.
- Good! Everything uploaded and on time.
Course evaluation KEMM06/KAK050 – HT14
Analytical Chemistry, advanced 15 credits / Chromatographic analysis 7,5 credits

- Good.
- Good
- Might want to start encourage us to use the discussion forum.

Where the compendia useful? Which are good? Any improvements?
- Very helpful. Especially “General concepts of chromatography” and “Retention modes”.
- Yes, except for the compendia about detectors. Otherwise, they were good.
- Very useful to give more insight and understanding.
- Yes, they are related to the lecture and help us for deep learning.
- We need compendium for FFF and the L12 about the environment and so on. I liked the compendium for GC-detectors, LC-modes and sample preparation most. They were easy to read.
- All good but CE too long to be a compendium.
- Läste inte i dom så mycket, kollade mer upp i boken.
- Jag använde bara några av dem och tittade hellre i kursboken.
- Yes! Liked the ones that really were compendias the most. The “articles” where not that good. And the structure of sample prep. was a little bit weird.
- Yes, but some were hard to read. Those who were copied form a book.
- Yes, the compendia were useful because they gave a lot of information.
- Compendia were helpful.
- Not as useful as slides/notes/books.
- No, most of them were very confusing and bad written.
- Yes, sometimes not detailed enough.
- Yes.
- It would be better to get one complete compendium instead of many different papers.
- Yes, especially the CE compendium. They weren´t always in tune with the lectures.

Suggest improvements or changes concerning i.e. lectures, literature, experimental work, teachers and attitudes.
- I think it will be easier to understand if the content is cut down a bit. Too much information sometimes. Loved the teachers. But lab assistants were not very helpful, hope something can be done about that.
- Everything was well organized. Due to personal time limitations I could not go to many lectures. However, those I went to were very good and interesting.
- 3 days for lab report was a bit short-timed. Still manageable though. Literature for technology students is a bit too expensive to buy maybe give cheaper alternatives. More lab work/familiar with instruments. Teachers and attitudes were great!
- For the experimental work, it is better to have more practice and 3 students in one group is better then 2 in one group.
- I would like an exercise in MS and maybe in LC due to the RP and NP. I think it would be easier to solve some problems of that kind with possibility to get help. Also as mentioned about the compendium that is needed. Attitudes and lab work was
good!! Maybe some labwork of LC modes. Maybe would be easier to understand that case.

- I prefer to have the lectures more spread over the week in order to have time to prepare better. Mon, wed, fri. instead of mon, tue, wed.
- Vissa av föreläsningarna (ppt) var lite svåra att avgöra vad som var huvudrubriker till vad och liknande. Vissa av LC och GC föreläsningarna.
- It was good to see the advanced equipment at kemicentrum but i more hand-on experience in the HPLC lab would have been good.
- It would be good with opportunity to buy printed compendia. The literature in FFF wasn´t enough. It was more or less just the pp and that wasn´t totally clear. Just pp is MS as well but that worked well. ☺
- I would have appreciated more info on how important different chapter is, it’s hard to read both the book and the whole compendia, one have to select what is most important (to prepare of exam).
- Try to make sure that the lab quipment works even for the first group. That would have made the lab much more funny.
- Professors were all helpful specially lab related teachers.
- All good!
- To use only the book or only the compendium, less teachers.
- For labs: better prepared lab assistants would be good.
- More structure in the slides, adapt slides to book, more focus on general understanding
- Better documentation on finding the things said in lectures in the compendias/textbook.

Further comments
- Never!