FYTN04, ht16

Respondents: 23
Answer Count: 14
Answer Frequency: 60,87 %

This form is sent to everyone that was registered on the course. If you have dropped the course please indicate below. Otherwise just continue with the other questions below.

General opinion

Give your opinion in the scale 1-5.

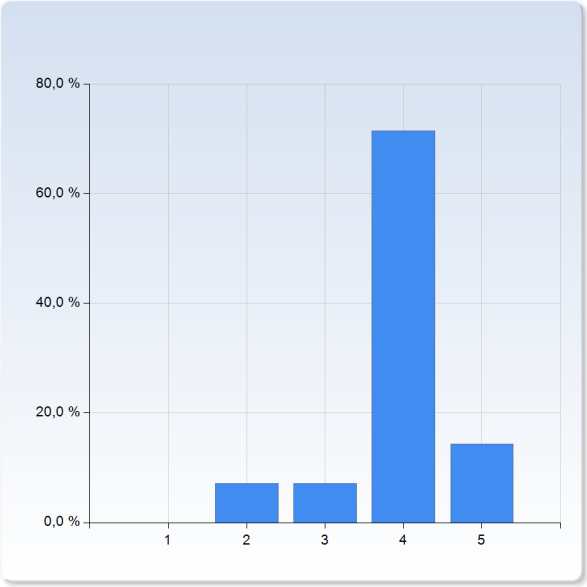
1 = very negative
2 = negative
3 = neutral
4 = positive
5 = very positive

The comment field in the end is very important! **It will help us understand what is to be kept when the grade is good, and what to change when the grade is poor.**

What is your general opinion of...

the course overall?

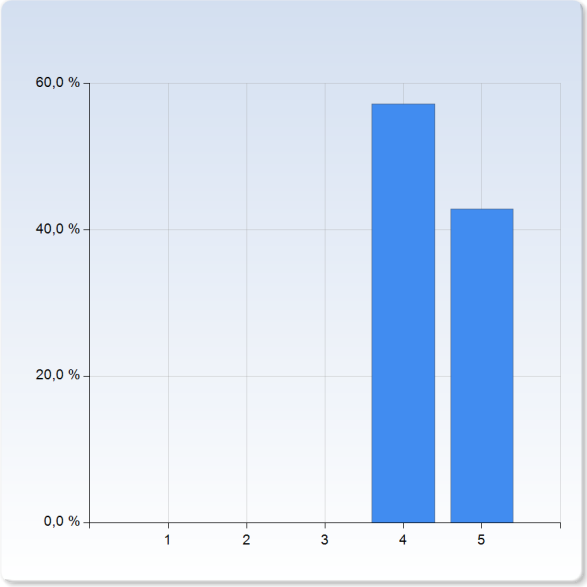
the course overall?	Number of Responses
1	0 (0,0%)
2	1 (7,1%)
3	1 (7,1%)
4	10 (71,4%)
5	2 (14,3%)
Total	14 (100,0%)



	Mean	Standard Deviation
the course overall?	3,9	0,7

the topics covered in the course?

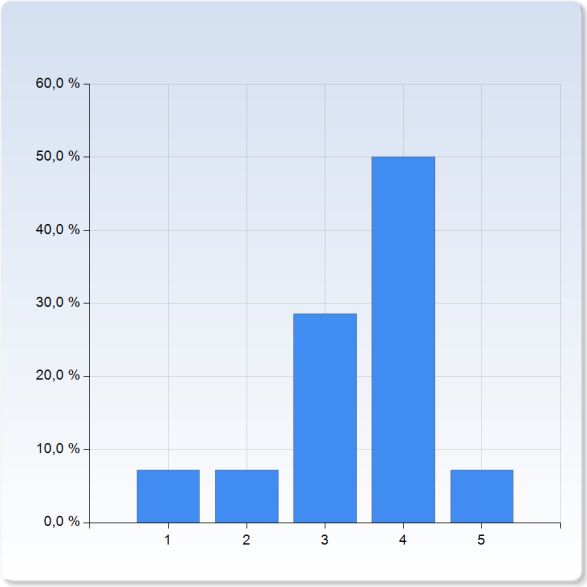
the topics covered in the course?	Number of Responses
1	0 (0,0%)
2	0 (0,0%)
3	0 (0,0%)
4	8 (57,1%)
5	6 (42,9%)
Total	14 (100,0%)



	Mean	Standard Deviation
the topics covered in the course?	4,4	0,5

the structure of the course?

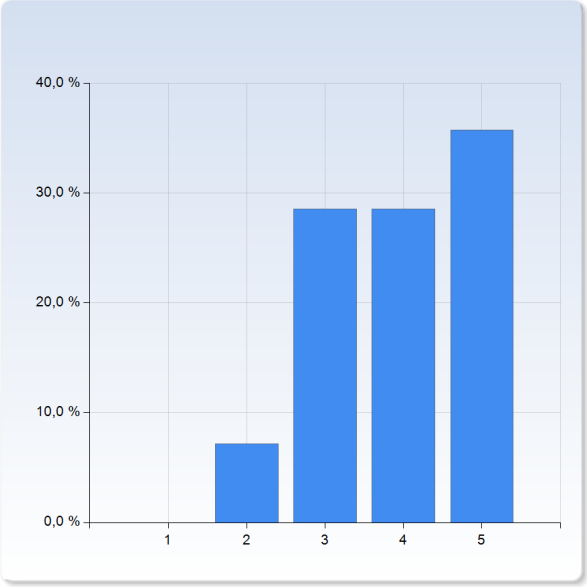
the structure of the course?	Number of Responses
1	1 (7,1%)
2	1 (7,1%)
3	4 (28,6%)
4	7 (50,0%)
5	1 (7,1%)
Total	14 (100,0%)



	Mean	Standard Deviation
the structure of the course?	3,4	1,0

the information about the course when it started?

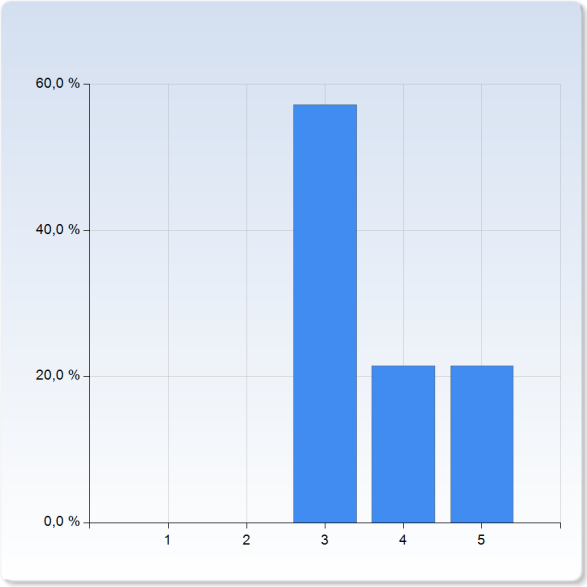
the information about the course when it started?	Number of Responses
1	0 (0,0%)
2	1 (7,1%)
3	4 (28,6%)
4	4 (28,6%)
5	5 (35,7%)
Total	14 (100,0%)



	Mean	Standard Deviation
the information about the course when it started?	3,9	1,0

the information about what was expected of you?

the information about what was expected of you?	Number of Responses
1	0 (0,0%)
2	0 (0,0%)
3	8 (57,1%)
4	3 (21,4%)
5	3 (21,4%)
Total	14 (100,0%)



	Mean	Standard Deviation
the information about what was expected of you?	3,6	0,8

Comment (*help us interpret your grades!*)
The structure and the aim of each lesson was not so clear.
This course is rather unfortunate in that it wants to cover a very broad and advanced field very early. Hans' bitterness over nobody having taken field theory is justified. Still, it manages to keep itself together, even though it makes it one of the hardest courses relative to the typical prior knowlege of its students.
The course is not self-sufficient, which means that you need to read the whole book to pass the exam (or be lucky at the oral exam). Thus I don't see the point of a course where you basically "only" need to read a book and learn some paragraphs by heart in it and where going to the lecture won't give you anything more than what is said on the book and, worse, not allow you to pass the oral exam while some points are not risen in the lectures because they are in the book.
It is a difficult course, covering many interesting topics. To divide the course into a theoretical and experimental section respectively is a good choice to make the distinction towards the students.
The course content is good. Everything it covers is interesting and good to know. However, since the course covers so much, it is difficult to get a good grasp of everything.
I was quite unsure what was required of me in while doing the exercise sheets for the earlier stuff Leif taught, but that that uncertainty disappeared after the first two weeks with Leif.
I like what we covered. I feel like it will really help me in the future. However it felt like the course wasn't adapted to the new course material and many of the questions were easier if you had the old book.
The book by Kane is not part of course literature, but is more or less necessary to get through the course. This was not apparent during the start of the course

Teaching and examination

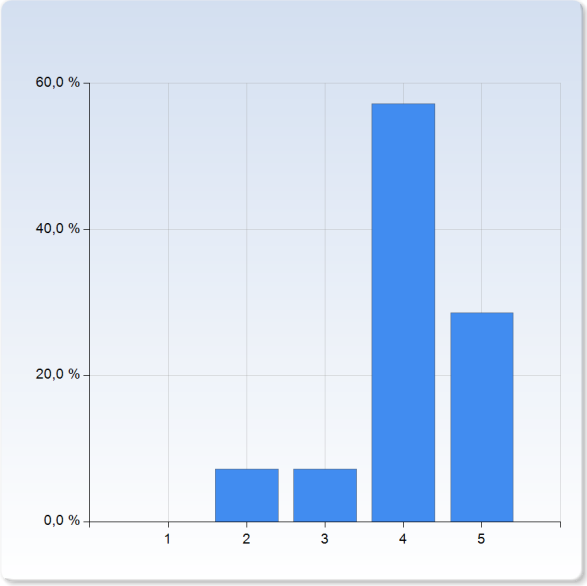
Give your opinion in the scale 1-5.

1 = very negative
2 = negative
3 = neutral
4 = positive
5 = very positive

What is your opinion of...

the lectures with Johan Bijnens?

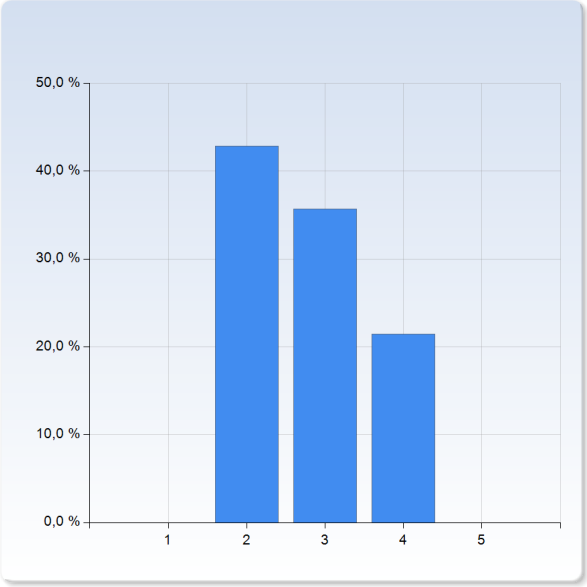
the lectures with Johan Bijnens?	Number of Responses
1	0 (0,0%)
2	1 (7,1%)
3	1 (7,1%)
4	8 (57,1%)
5	4 (28,6%)
Total	14 (100,0%)



	Mean	Standard Deviation
the lectures with Johan Bijnens?	4,1	0,8

the lectures with Leif Lönnblad?

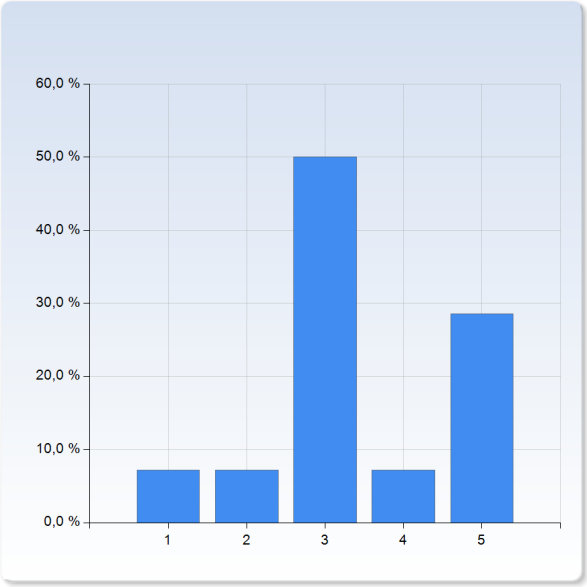
the lectures with Leif Lönnblad?	Number of Responses
1	0 (0,0%)
2	6 (42,9%)
3	5 (35,7%)
4	3 (21,4%)
5	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
the lectures with Leif Lönnblad?	2,8	0,8

the problem solving classes?

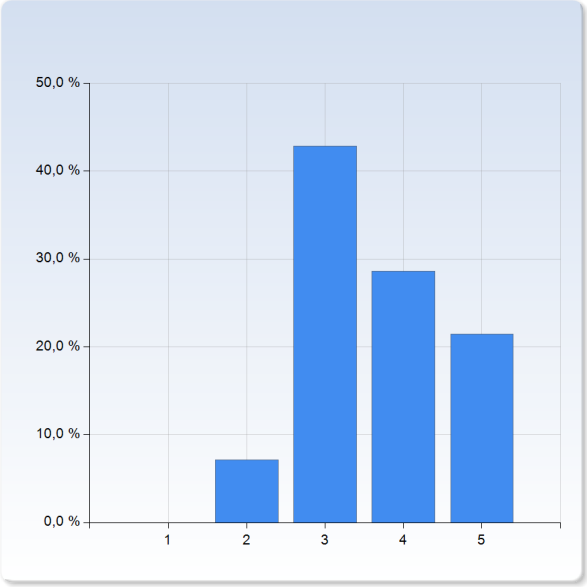
the problem solving classes?	Number of Responses
1	1 (7,1%)
2	1 (7,1%)
3	7 (50,0%)
4	1 (7,1%)
5	4 (28,6%)
Total	14 (100,0%)



	Mean	Standard Deviation
the problem solving classes?	3,4	1,2

the balance between lectures and problem-solving classes?

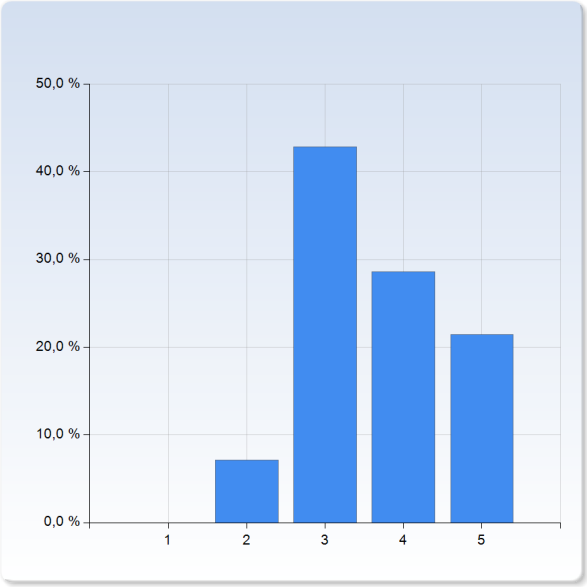
the balance between lectures and problem-solving classes?	Number of Responses
1	0 (0,0%)
2	1 (7,1%)
3	6 (42,9%)
4	4 (28,6%)
5	3 (21,4%)
Total	14 (100,0%)



	Mean	Standard Deviation
the balance between lectures and problem-solving classes?	3,6	0,9

the course book?

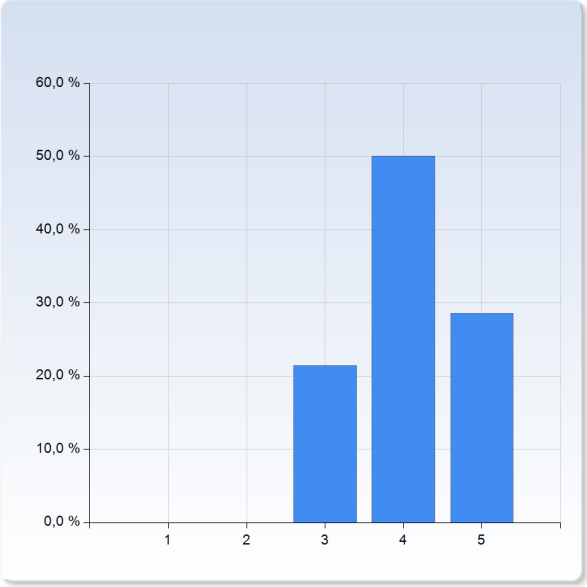
the course book?	Number of Responses
1	0 (0,0%)
2	1 (7,1%)
3	6 (42,9%)
4	4 (28,6%)
5	3 (21,4%)
Total	14 (100,0%)



	Mean	Standard Deviation
the course book?	3,6	0,9

the written exam?

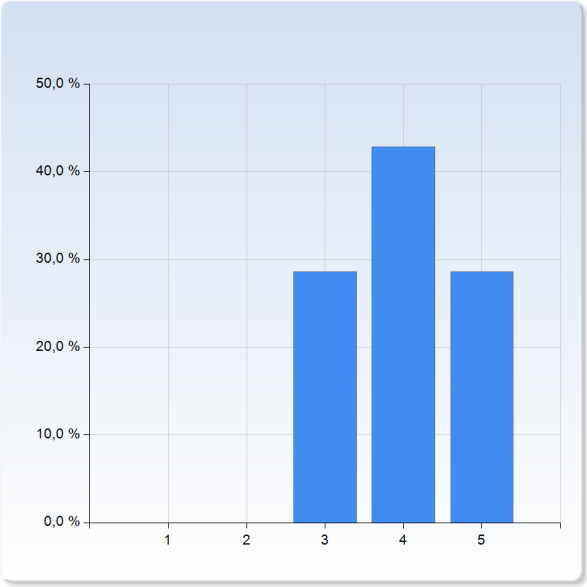
the written exam?	Number of Responses
1	0 (0,0%)
2	0 (0,0%)
3	3 (21,4%)
4	7 (50,0%)
5	4 (28,6%)
Total	14 (100,0%)



	Mean	Standard Deviation
the written exam?	4,1	0,7

the oral exam?

the oral exam?	Number of Responses
1	0 (0,0%)
2	0 (0,0%)
3	4 (28,6%)
4	6 (42,9%)
5	4 (28,6%)
Total	14 (100,0%)



	Mean	Standard Deviation
the oral exam?	4,0	0,8

Comment (*help us interpret your grades!*)
Luckily I had both the old book (the book you had before in this class) and I very much preferred that one. Why did you switch?
The lectures should be more structured and maybe a little more formal, or at least the "simplifications" should be well motivated
Leif could have been a bit better prepared and explained a bit better where a formula/equation comes from.
Hans was good, even though you get the impression of constantly disappointing him. The problem-solving classes were decent but not very inspiring. The books were very good and complemented each other well. Kane should stay strongly recommended. If Kane is phased out, the lecture notes and preferably the teaching in general should become more Thomson-oriented, or things get confused. The written exam and oral exam felt misbalanced: firstly the written exam was too big and ambition-inspiring for something that doesn't affect your final grade, and secondly, the written exam focused more on cross-section calculations and less on, say, gauge invariance, which left you very well-prepared on things that were less relevant on the oral exam. Therefore, it'd be nice if you either shared the grading between oral and written (after all, certain competence gained in the course can't be used on such a short notice, but require an hour of thinking), or adapted the written exam so that it either prepares you more directly for the oral, or doesn't take up so much work that you can't study enough for the oral.
Oral exam is a bit too specific and you can basically be examinated on only a few chapters of what you learnt. The problem solving sessions are the only thing you need to go while the lectures are somehow pointless. They are, but, really helpful and interesting.
The lectures with Hans are difficult but well structured. Somewhat because the tempo is quite high, there might be a possibility to take it down just a notch. The lectures with Leif need more structure and continuity, meaning a much more visible time line or "red thread", must be incorporated in order to follow the lectures. The topics covered are important and interesting and confusion should be minimized. "Don't confuse me, I'm already confused enough". The problem solving sessions should, according to me, improve in format. It is not Joels' fault, but to have everyone sitting through, watching for two hours the work, that most people have done is not at all stimulating. I would prefer (and this is definitely personal preference) the format of the SI-sessions, incorporated in the now discontinued courses FYTA11 and FYTA12. This is much more interactive and stimulating to me.
Bijnes was very good and structured. Leif was rather confused sometimes and it was noticeable that it was a long timeago since he last had the course. The course book was pretty good but had a totally other structure than the course. It worked really well if one also had the old course book Kane as complement.
Leif's lectures were very unstructured and difficult to follow. One would have learned almost as much by not going to them. The problem solving classes were ok, felt mostly like one would just recite answers and not learn much.
Sometimes it is quite hard to follow Leif's lectures and sometimes he seemed to skim over important points like taking into consideration spin and colour in calculation of cross-section and rate.
You could have some more notes on the whiteboard about what the equations represent. Would make it easier to follow and understand when reading again. Hans part in the oral exam was better explained in the old book otherwise I liked the new one more. Some extra material, for example handouts, on how the lagrangian in the standard model is constructed would be good.
Again, the book by Thomson is not enough for this course. It takes a completely different approach than the lectures and just leads to confusion. Leif had his good times, but was possibly a bit confused/unclear sometimes. "Don't confuse me, I'm already confused enough." -Leif "The weak force is like Dracula." -Leif

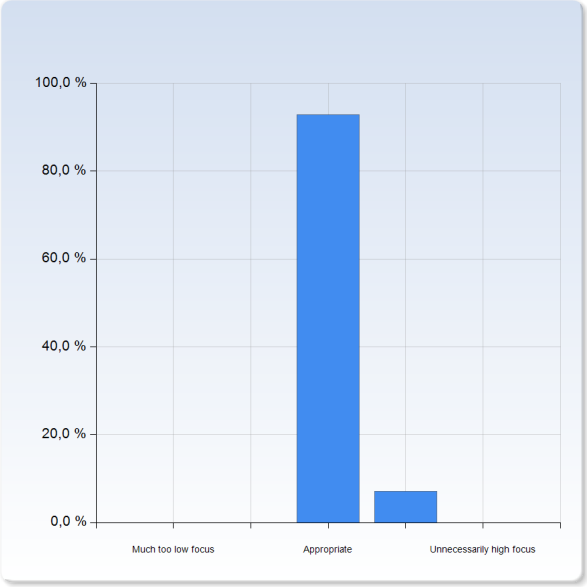
The focus of the course.

Below are learning goals from the course plan. Mark how much focus these goals got during the course, compared to what you feel would be needed.

"The student..."

can give an account of all quarks, leptons and gauge bosons that are part of the Standard Model as well as the ordering in mass of the particles

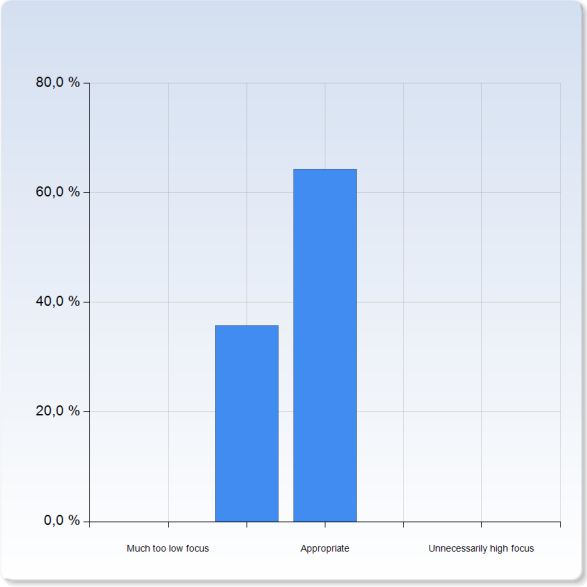
can give an account of all quarks, leptons and gauge bosons that are part of the Standard Model as well as the ordering in mass of the particles	Number of Responses
Much too low focus	0 (0,0%)
	0 (0,0%)
Appropriate	13 (92,9%)
	1 (7,1%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can give an account of all quarks, leptons and gauge bosons that are part of the Standard Model as well as the ordering in mass of the particles	3,1	0,3

understands how local gauge symmetry via covariant derivatives leads to interaction terms in the Lagrangian density.

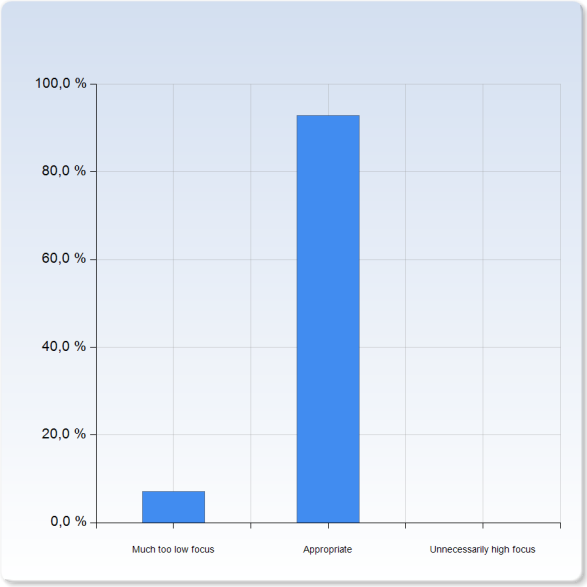
understands how local gauge symmetry via covariant derivatives leads to interaction terms in the Lagrangian density.	Number of Responses
Much too low focus	0 (0,0%)
	5 (35,7%)
Appropriate	9 (64,3%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
understands how local gauge symmetry via covariant derivatives leads to interaction terms in the Lagrangian density.	2,6	0,5

can explain the different terms in the Lagrangian densityand which type of processes these lead to

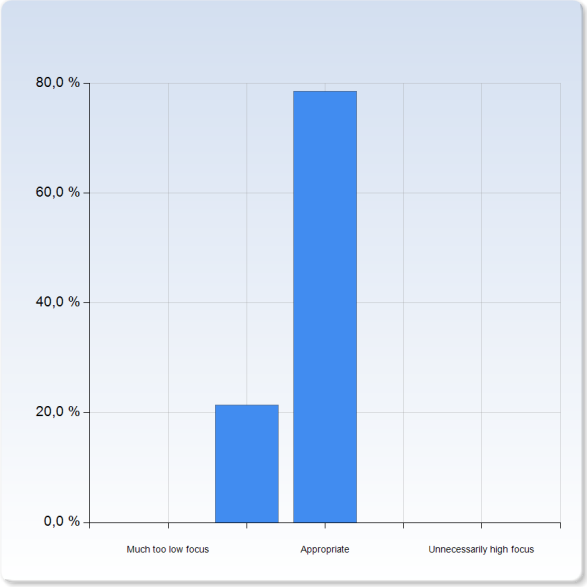
can explain the different terms in the Lagrangian densityand which type of processes these lead to	Number of Responses
Much too low focus	1 (7,1%)
	0 (0,0%)
Appropriate	13 (92,9%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can explain the different terms in the Lagrangian densityand which type of processes these lead to	2,9	0,5

can explain the Higgs mechanism and how particle masses are introduced via it

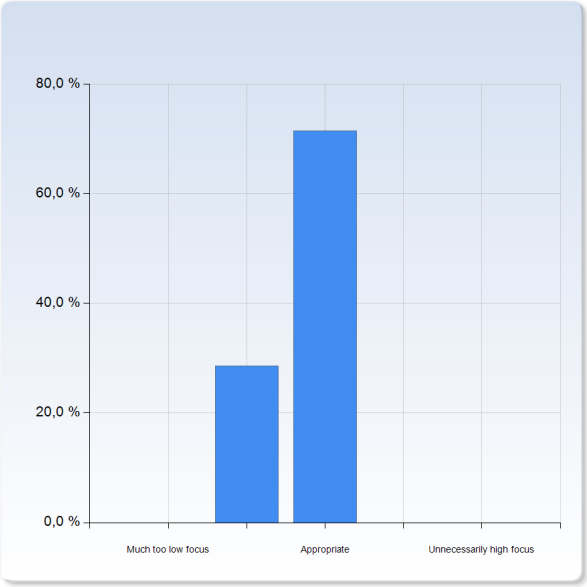
can explain the Higgs mechanism and how particle masses are introduced via it	Number of Responses
Much too low focus	0 (0,0%)
	3 (21,4%)
Appropriate	11 (78,6%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can explain the Higgs mechanism and how particle masses are introduced via it	2,8	0,4

understands how to interpret interaction terms in the Lagrangian density in terms of Feynman diagrams and can use those to estimate cross-sections for various production, decay and scattering processes.

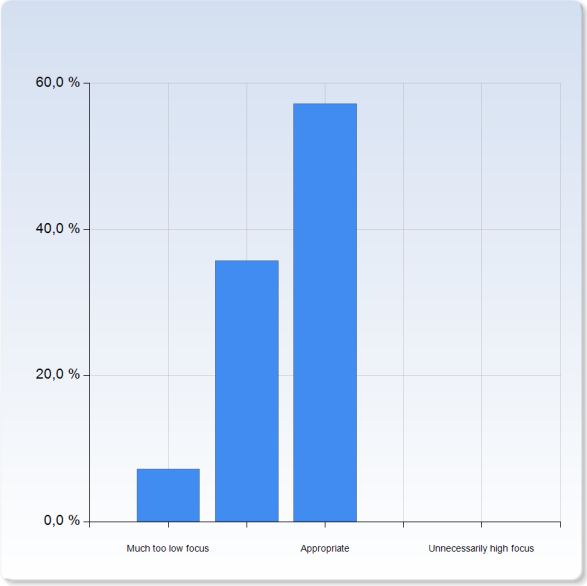
understands how to interpret interaction terms in the Lagrangian density in terms of Feynman diagrams and can use those to estimate cross-sections for various production, decay and scattering processes.	Number of Responses
Much too low focus	0 (0,0%)
	4 (28,6%)
Appropriate	10 (71,4%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
understands how to interpret interaction terms in the Lagrangian density in terms of Feynman diagrams and can use those to estimate cross-sections for various production, decay and scattering processes.	2,7	0,5

understands the concept of asymptotic freedom and that it leads to confinement for quarks and gluons.

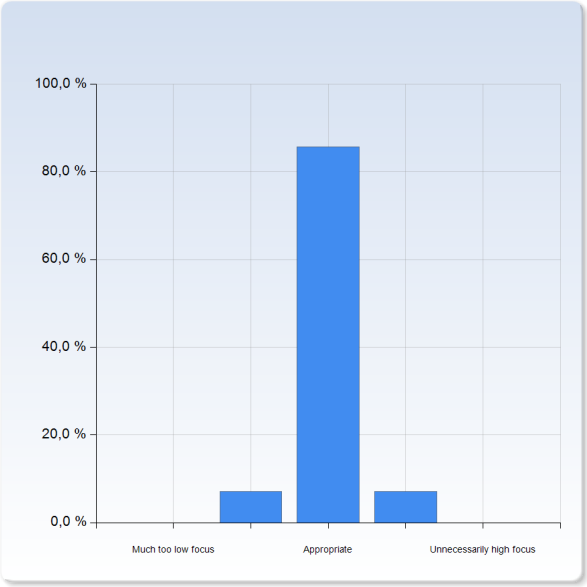
understands the concept of asymptotic freedom and that it leads to confinement for quarks and gluons.	Number of Responses
Much too low focus	1 (7,1%)
	5 (35,7%)
Appropriate	8 (57,1%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
understands the concept of asymptotic freedom and that it leads to confinement for quarks and gluons.	2,5	0,7

understands the concept of parton densities and their use in calculating cross-sections in hadron collisions.

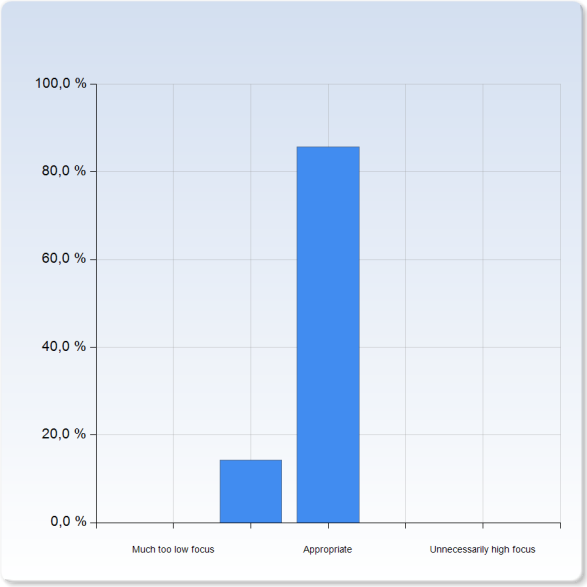
understands the concept of parton densities and their use in calculating cross-sections in hadron collisions.	Number of Responses
Much too low focus	0 (0,0%)
	1 (7,1%)
Appropriate	12 (85,7%)
	1 (7,1%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
understands the concept of parton densities and their use in calculating cross-sections in hadron collisions.	3,0	0,4

can calculate lifetimes and decay widths for the electroweak vector bosons and the Higgs particle, as well as estimate productions cross-sections for them.

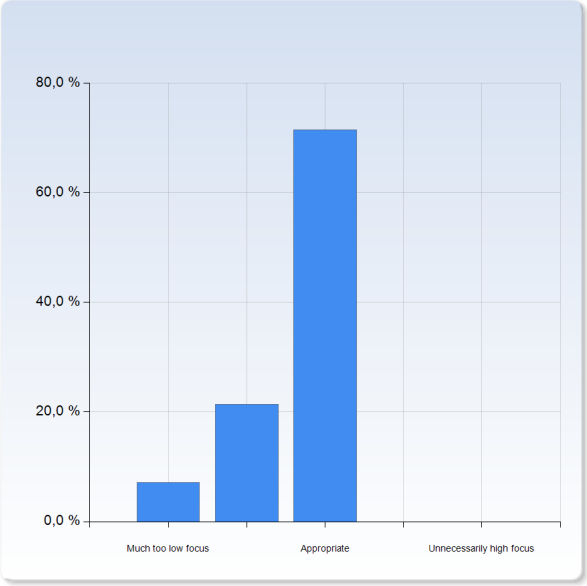
can calculate lifetimes and decay widths for the electroweak vector bosons and the Higgs particle, as well as estimate productions cross-sections for them.	Number of Responses
Much too low focus	0 (0,0%)
	2 (14,3%)
Appropriate	12 (85,7%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can calculate lifetimes and decay widths for the electroweak vector bosons and the Higgs particle, as well as estimate productions cross-sections for them.	2,9	0,4

can explain why the coupling constants can vary depending on the energies involved in a process.

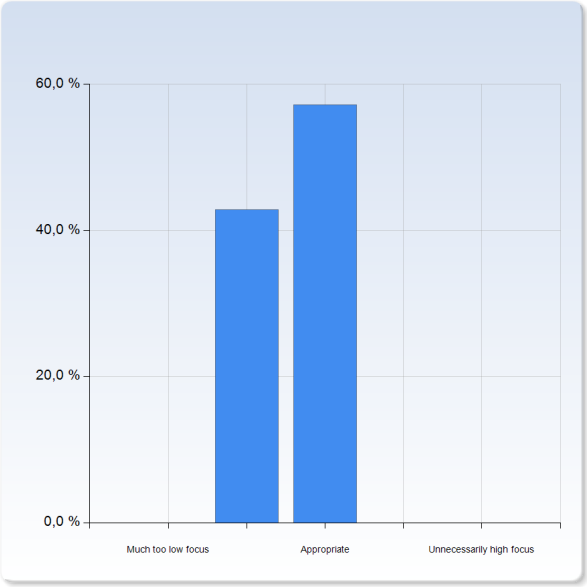
can explain why the coupling constants can vary depending on the energies involved in a process.	Number of Responses
Much too low focus	1 (7,1%)
	3 (21,4%)
Appropriate	10 (71,4%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can explain why the coupling constants can vary depending on the energies involved in a process.	2,6	0,6

can describe the mixing between quark families and how the mixing between three quark families leads to the breaking of CP symmetry.

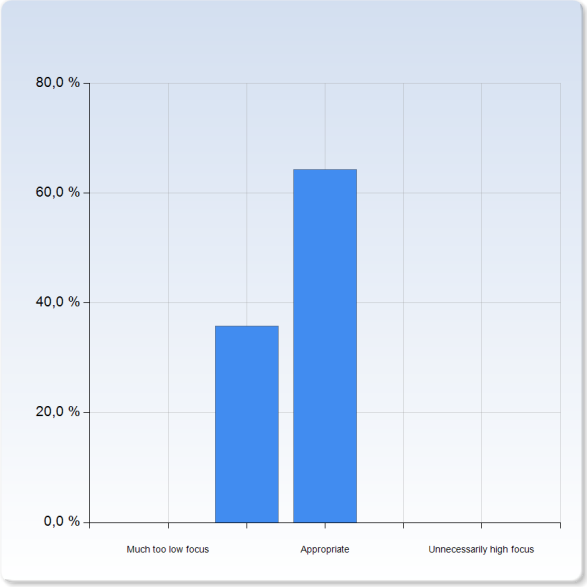
can describe the mixing between quark families and how the mixing between three quark families leads to the breaking of CP symmetry.	Number of Responses
Much too low focus	0 (0,0%)
	6 (42,9%)
Appropriate	8 (57,1%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
can describe the mixing between quark families and how the mixing between three quark families leads to the breaking of CP symmetry.	2,6	0,5

understands how the existence of neutrino masses may lead to neutrino oscillations.

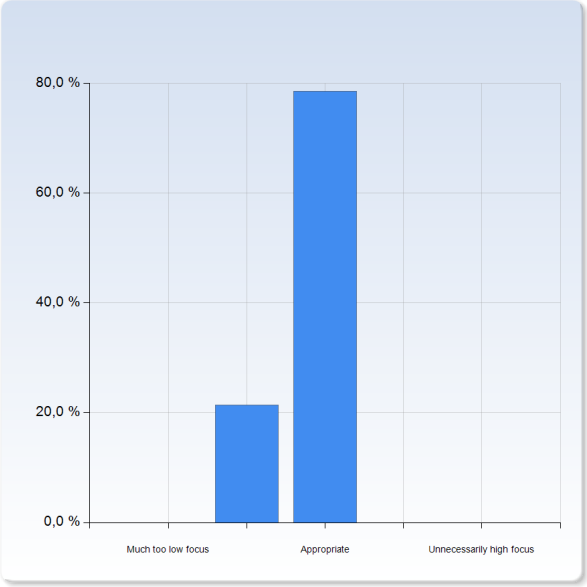
understands how the existence of neutrino masses may lead to neutrino oscillations.	Number of Responses
Much too low focus	0 (0,0%)
	5 (35,7%)
Appropriate	9 (64,3%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
understands how the existence of neutrino masses may lead to neutrino oscillations.	2,6	0,5

is able to describe all parameters in the standard model and give examples of how these can be measured.

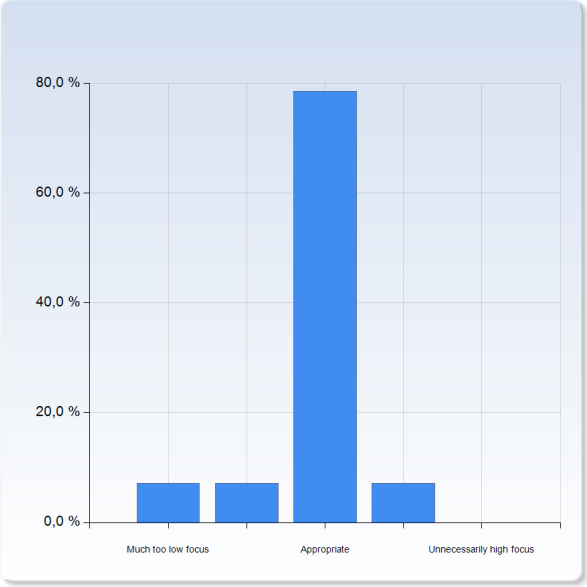
is able to describe all parameters in the standard model and give examples of how these can be measured.	Number of Responses
Much too low focus	0 (0,0%)
	3 (21,4%)
Appropriate	11 (78,6%)
	0 (0,0%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)



	Mean	Standard Deviation
is able to describe all parameters in the standard model and give examples of how these can be measured.	2,8	0,4

understand the basic assumptions underlying Grand Unification and supersymmetry.

understand the basic assumptions underlying Grand Unification and supersymmetry.	Number of Responses
Much too low focus	1 (7,1%)
	1 (7,1%)
Appropriate	11 (78,6%)
	1 (7,1%)
Unnecessarily high focus	0 (0,0%)
Total	14 (100,0%)

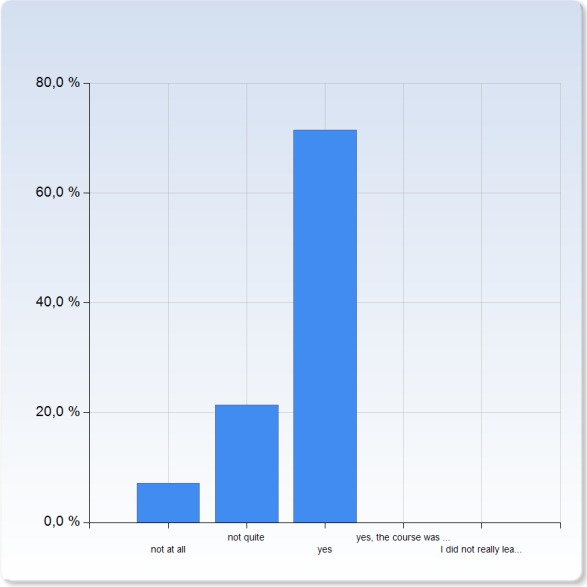


	Mean	Standard Deviation
understand the basic assumptions underlying Grand Unification and supersymmetry.	2,9	0,7

Comment
The phenomological part could be more structured.
Not much wrong. Perhaps some small adjustments are needed where indicated.
It is just a tough course, and I feel that the time is too short to "appropriately" assess all the above topic, in order to get the understanding desired.
It was hard to understand the lagrangian properly since it only appeard in the end of the book.
As stated before, the amount of content in the course is too much for the amount of time spent on teaching it.

Did you have enough prior knowledge for this course?

Did you have enough prior knowledge for this course?	Number of Responses
not at all	1 (7,1%)
not quite	3 (21,4%)
yes	10 (71,4%)
yes, the course was a bit easy	0 (0,0%)
I did not really learn anything new	0 (0,0%)
Total	14 (100,0%)

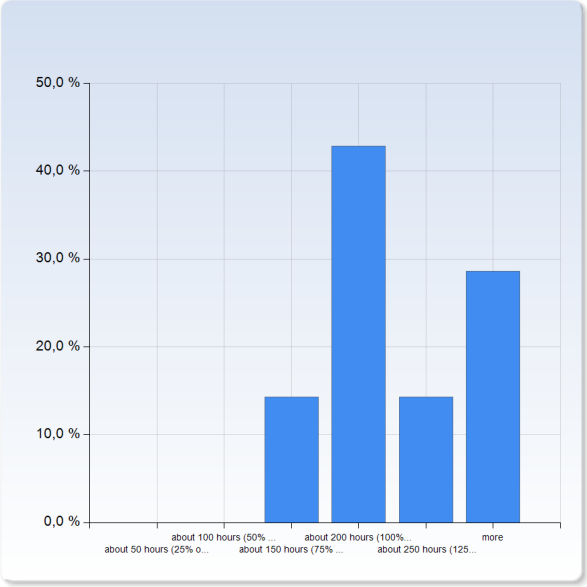


	Mean	Standard Deviation
Did you have enough prior knowledge for this course?	2,6	0,6

If your prior knowledge was not fairly appropriate, please comment! What prior knowledge was missing/overlapping? What is your background (year of higher education, relevant courses)?
Field theory would have been nice, though.
I did not take any introductory course on particle physics or quantum field theory.
If we do not count the QFT-lecture. Otherwise, the math was not hard, only some introduced concepts.
I had taken classical mechanics (FYTA 12) before which was good since I then new about lagrangians and 4-vectors. It would however be good if one new of QFT, groups and symmetries before as well.
This was my first teal theoretical physics course. So I lacked knowledge about Lagrangian and other basic knowledge which the theory is built upon.
The course was quite heavy, and contained a lot of new knowledge. Still it was not unreasonable.

How much time have you spent on the course? (In total you are supposed to spend about 200 hours or 25 work-days on a 7.5 hp course)

How much time have you spent on the course? (In total you are supposed to spend about 200 hours or 25 work-days on a 7.5 hp course)	Number of Responses
about 50 hours (25% of intended time)	0 (0,0%)
about 100 hours (50% of intended time)	0 (0,0%)
about 150 hours (75% of intended time)	2 (14,3%)
about 200 hours (100% of intended time)	6 (42,9%)
about 250 hours (125% of intended time)	2 (14,3%)
more	4 (28,6%)
Total	14 (100,0%)



	Mean	Standard Deviation
How much time have you spent on the course? (In total you are supposed to spend about 200 hours or 25 work-days on a 7.5 hp course)	4,6	1,1

Comments (for example on the distribution of the workload and whether you feel you have been able to perform at the level you wanted to)
Less in the beginning due to Cosmology and Astroparticle Physics, followed by a ~80-hour take-home exam.
While you had to read the book, it was a lot of work, the problems were also quite long (at least for the written exam).
During the course I probably did 100% but from the day we got the home exam until the oral exam it was probably more like 200%.
In order to get an understanding of all of the content within the course, one has to spend far too much time on learning it themselves.
I feel like I have not performed at the level I wanted, but that was not really the courses fault, so I do not know if I should mention that here.
It was very heavy. I am very tired after the course. But it might just be because I lacked knowledge before taking it. But it is probably also because there is so much covered in the course.
Not sure. Might be more.

What did you particularly like with the course?

What did you particularly like with the course?
The first few lectures, after that everything went kind of too fast for me.
Acquire the knowledge needed for the oral examination. truly interesting.
Gauge invariance, but I feel like it could have been explained a bit further.
The teaching of cross-section calculations were nice.
Problem solving sessions.
The topics covered. This was my first course to adress particle physics in some detail, and it is an interesting and a fascinating model, the SM.
To learn particle physics.
I liked all of the content of the course and the oral exam. The content was very interesting and pretty fundamental in order to have an understanding of particle physics.
I think the course was well structured and streamlined. I liked the subject.
I learned much and feel happy that I took the course.
Higgs mechanism.
The idea of local gauge invariance has completely blown my mind. Also group theory <3

What in the course do you think could improve? If you have found additional material that you found very useful, please mention it.

What in the course do you think could improve? If you have found additional material that you found very useful, please mention it.
I think the old book was better for this class
The structure of the board.
The exercises for the weekly problems and written exam were a bit unclear sometimes. Try to be more clear by for example using phrases like "find/derive an expression for" or "calculate numerically" etc.
Let's be honest, the course was held on the old book by Kane, even tho great efforts was made to point out every relevant section in Thompson, for every lecture. That system did not work for me. I felt that it was impossible for me to read Thompson, only reading relevant sections, trying in that way to understand the lectures. So I decided to read Thompson cover to cover, which took a long time. Thompson is a great book, reading it in that way, but is was very difficult to only read sections of it. After that, in order to study for the oral exam, I read Kane cover to cover, which worked vey well, after I had read Thompson. My point is, that in order for the course to be structured as was done, the importance of buying both books should be stressed. Neither is good on its on.
It would be good to see more examples of how one is actually supposed to do calculations and solve exercises. When one got the exercise sheet one had no idea how to solve it and many hours were spend on figuring that out. I like the concept of exercise sessions where you solve eercises in groups and can be guided by the exercise leader.
The only improvement I can think of would be to either increase the time spent teaching and learning it or reduce the amount of content in it. I do realise though, that this is very difficult, since the course is already at the limit for both of these conditions.
I think some short examples of cross-section/decay rate calculations would have been useful.
Tailor the course more to the new material.
Some parts of the course were better explained in the previous course literature, especially the first part of the course.
Either make Kane part of the course literature, or at the very least make it ABSOLUTELY clear that it is necessary for the course. Preferably both. The general impression was that Thomson was enough. This is however not even remotely the case. Without Kane the course is unreasonable. Everything else in the course is fine though.