FYTN04, ht17

Respondents: 23
Answer Count: 12
Answer Frequency: 52.17 %

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.

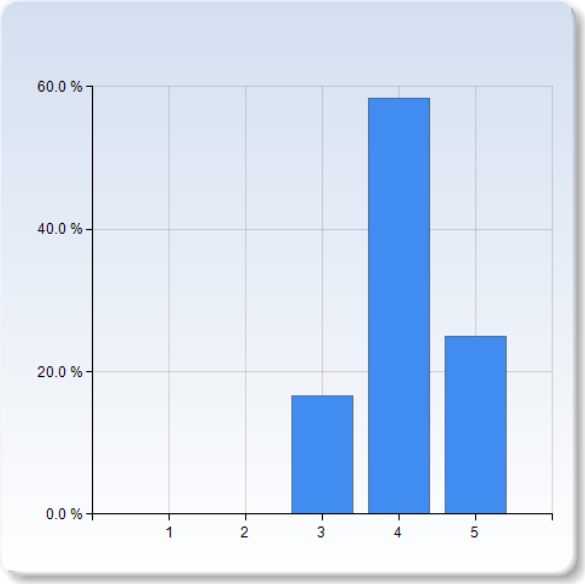
1 = very negative
2 = negative
3 = neutral
4 = positive
5 = very positive

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?

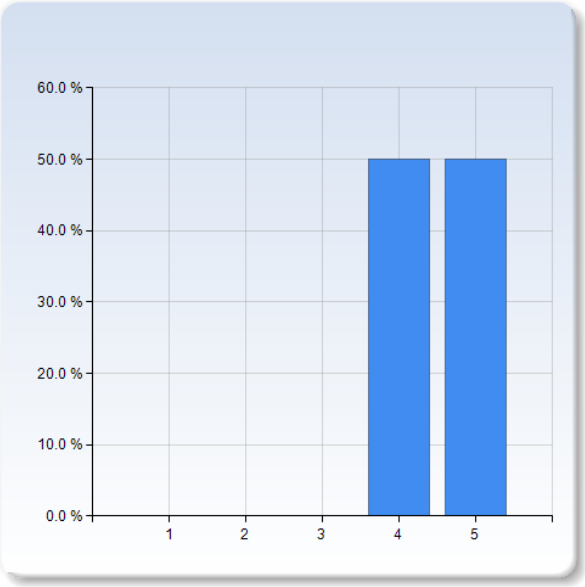
the course overall?	Number of Responses
1	0 (0.0%)
2	0 (0.0%)
3	2 (16.7%)
4	7 (58.3%)
5	3 (25.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
the course overall?	4.1	0.7

the topics covered in the course?

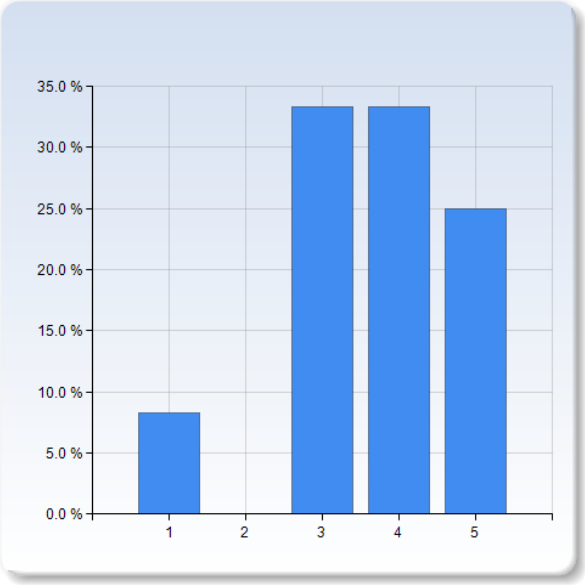
the topics covered in the course?	Number of Responses
1	0 (0.0%)
2	0 (0.0%)
3	0 (0.0%)
4	6 (50.0%)
5	6 (50.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
the topics covered in the course?	4.5	0.5

the structure of the course?

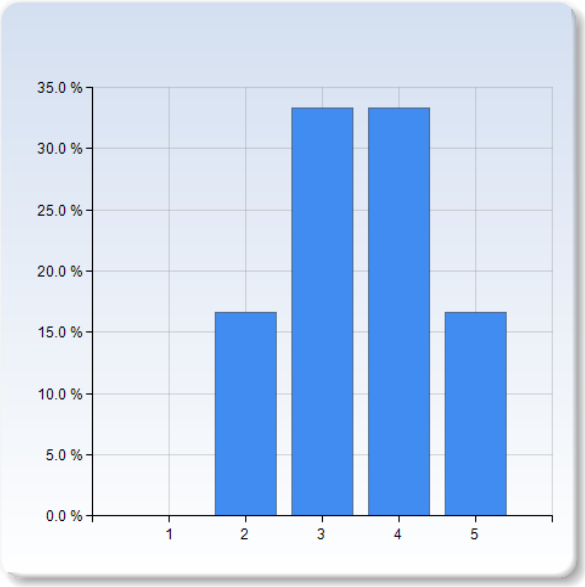
the structure of the course?	Number of Responses
1	1 (8.3%)
2	0 (0.0%)
3	4 (33.3%)
4	4 (33.3%)
5	3 (25.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
the structure of the course?	3.7	1.2

the information about the course when it started?

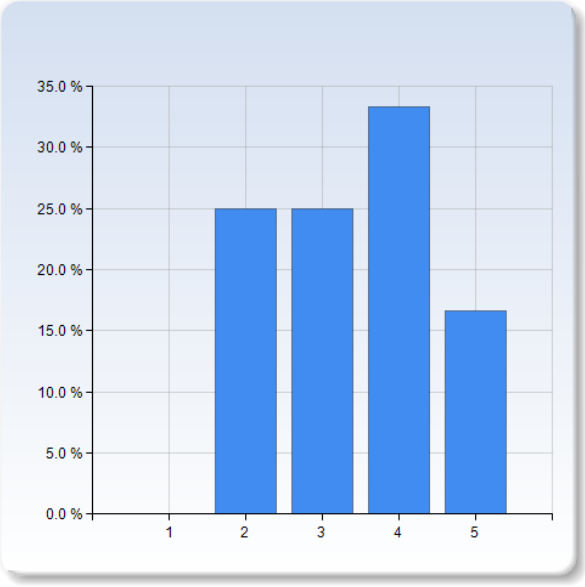
the information about the course when it started?	Number of Responses
1	0 (0.0%)
2	2 (16.7%)
3	4 (33.3%)
4	4 (33.3%)
5	2 (16.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the information about the course when it started?	3.5	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	3 (25.0%)
3	3 (25.0%)
4	4 (33.3%)
5	2 (16.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the information about what was expected of you?	3.4	1.1

Comment (*help us interpret your grades!*)
The topics cover very vastly across this field, which makes it a bit hard to remember everything. But I like the main structure of the course, it is clear and useful to me.
This is a tough yet extremely interesting course. However, one should be prepared to work hard and for long on new and unfamiliar concepts. Once it is finished, you get the feeling you being to understand the way the world of particle physics works, both theoretically and experimentally.
I liked the content of the course, but it was hard to get into the material since it felt like there was a lot of background missing, which at least for me makes it harder. For expectations, it was difficult knowing what the written exam was going to be like, which stresses me out. The oral was better though, since the questions sheet was good.

Teaching and examination

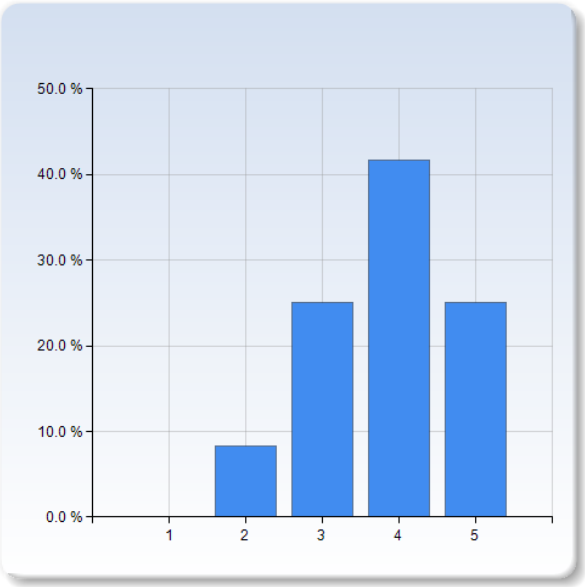
Give your opinion in the scale 1-5.

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

What is your opinion of...

the lectures with Johan Bijnens?

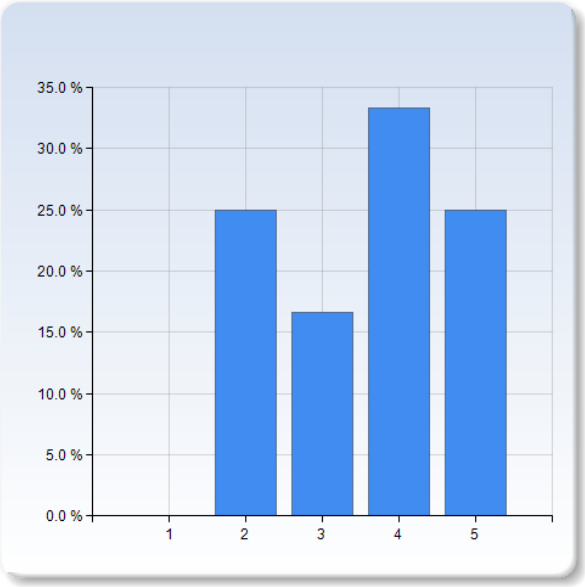
the lectures with Johan Bijnens?	Number of Responses
1	0 (0.0%)
2	1 (8.3%)
3	3 (25.0%)
4	5 (41.7%)
5	3 (25.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
the lectures with Johan Bijnens?	3.8	0.9

the lectures with Leif Lönnblad?

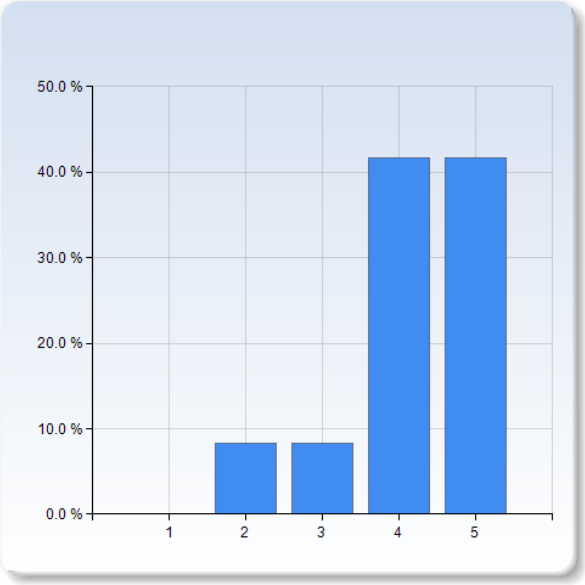
the lectures with Leif Lönnblad?	Number of Responses
1	0 (0.0%)
2	3 (25.0%)
3	2 (16.7%)
4	4 (33.3%)
5	3 (25.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
the lectures with Leif Lönnblad?	3.6	1.2

the problem solving classes?

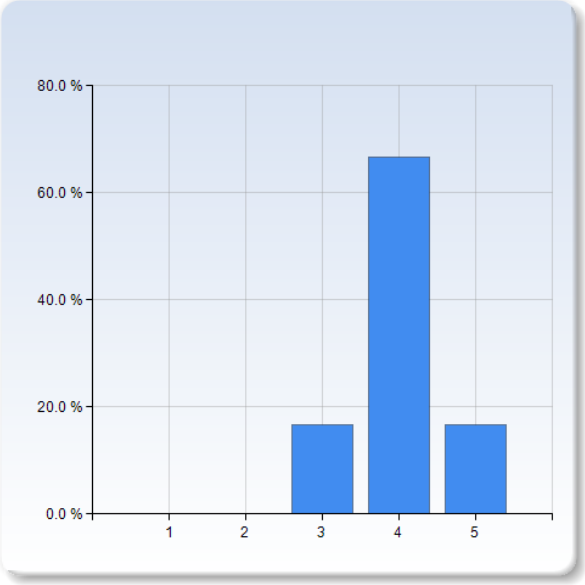
the problem solving classes?	Number of Responses
1	0 (0.0%)
2	1 (8.3%)
3	1 (8.3%)
4	5 (41.7%)
5	5 (41.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the problem solving classes?	4.2	0.9

the balance between lectures and problem-solving classes?

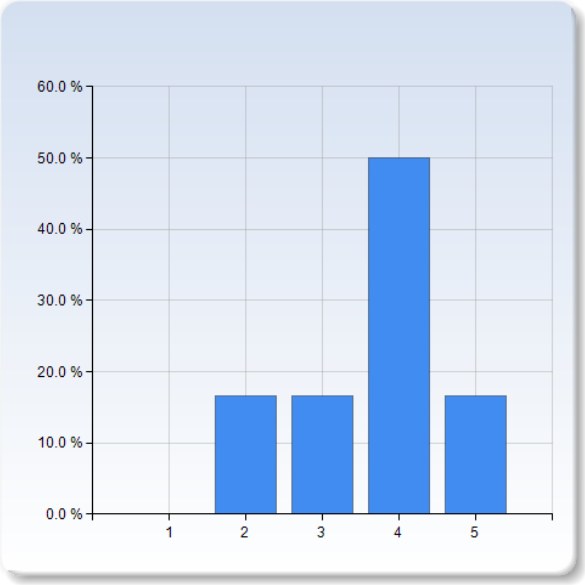
the balance between lectures and problem-solving classes?	Number of Responses
1	0 (0.0%)
2	0 (0.0%)
3	2 (16.7%)
4	8 (66.7%)
5	2 (16.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the balance between lectures and problem-solving classes?	4.0	0.6

the course book?

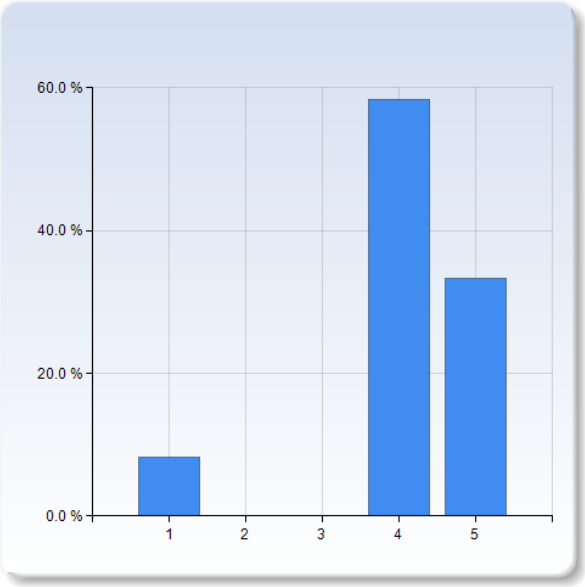
the course book?	Number of Responses
1	0 (0.0%)
2	2 (16.7%)
3	2 (16.7%)
4	6 (50.0%)
5	2 (16.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the course book?	3.7	1.0

the written exam?

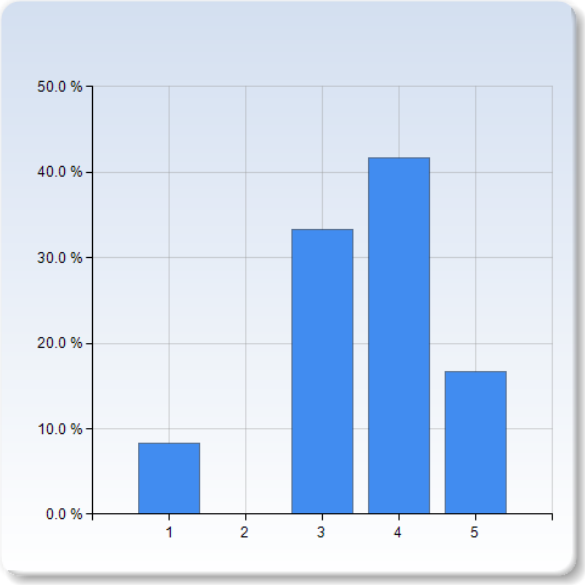
the written exam?	Number of Responses
1	1 (8.3%)
2	0 (0.0%)
3	0 (0.0%)
4	7 (58.3%)
5	4 (33.3%)
Total	12 (100.0%)



	Mean	Standard Deviation
the written exam?	4.1	1.1

the oral exam?

the oral exam?	Number of Responses
1	1 (8.3%)
2	0 (0.0%)
3	4 (33.3%)
4	5 (41.7%)
5	2 (16.7%)
Total	12 (100.0%)



	Mean	Standard Deviation
the oral exam?	3.6	1.1

Comment (*help us interpret your grades!*)
In regards to the lectures, Leif did a good job for the most part, but his first lecture in this course was a disaster where it was extremely hard to follow what he was trying to explain. In hindsight, all of the content of the lecture was necessary to derive the formulas we would later use extensively, but there were so many digressions (on things like properties of the Dirac delta function...), that I quickly lost track of how one equation led to another. The problem solving sessions helped me a lot in understanding the things that were too cursory in the lectures.
For the written exam, we have all the reference (books and notes) so it is fine, but for the oral exam, I found myself sometimes get things a bit mixed together and less clear. This might indicate I should have spent more time. The oral exam question sheet is a good indicator but might be too detailed to prepare for. Perhaps it can come in form of keywords and such for each chapter so that we can go through them more easily and less struggling?
Lectures with Johan are extremely theoretical (classical blackboard lectures) because of the very nature of the part he explains while Leif's lectures are easier to digest in that they are focused on the experimental side of particle physics. In either case, you need to read the Kane in advance if you want to be able to follow the class. Otherwise, just be prepared for two hours where you copy yet don't really get what is going on. I personally don't like the course book, the Kane, mostly because when I have already studied a simmilar course using Griffith's and I think it beats Kane's in every aspect. However, it is true that the course HEAVILY relies on the Kane and that you stand no choice. You NEED to buy the book.
Leif's lectures were really hard to follow when he did derivations or math, but were otherwise good. I personally don't really like the problem solving class set-up. I also think the problem sheets could have been formulated better for some of the questions, sometimes it took an hour and asking some questions to understand a problem. Most of the course book was well written, BUT there were some mistakes here and there, which made it harder to trust the book. Despite what I said in the previous box, I liked the exam when I actually got to see it, since it was formulated like a normal written exam, and I like normal written exams.
Both lecturers could be more structured, it is hard to follow completely new subjects without proper breakdown and headlines. It would be good with more overall discussions in the beginning and end of lectures to grasp the whole picture.
would be better if some old exams
Make it clear that the grade is only determined by the oral exam

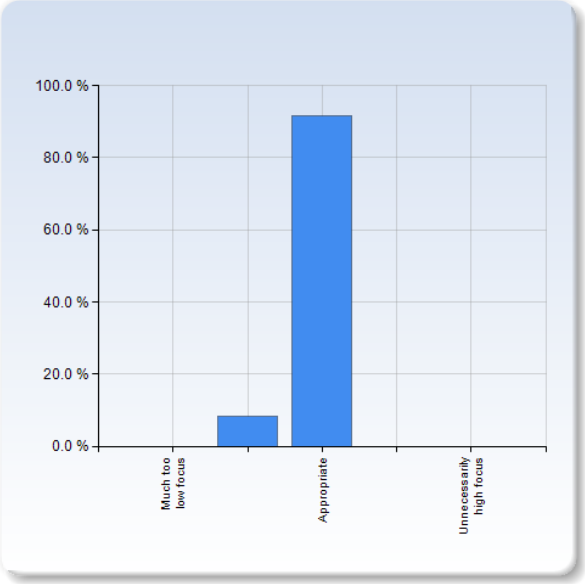
The focus of the course.

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

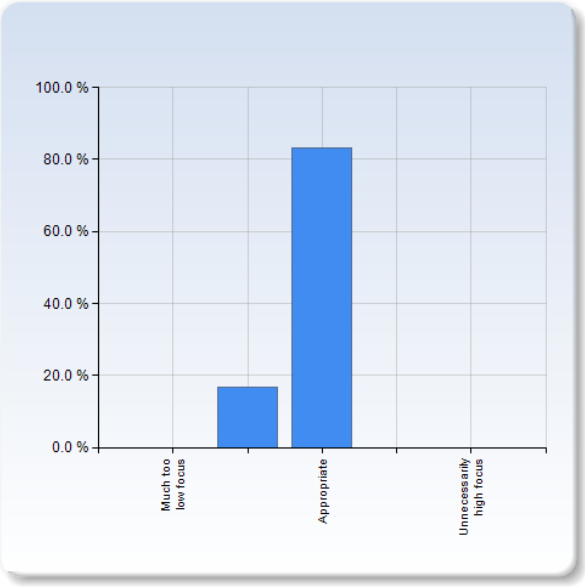
can give an account of all quarks, leptons and gauge bosons that are part of the Standard Model as well as the ordering in mass of the particles	Number of Responses
Much too low focus	0 (0.0%)
	1 (8.3%)
Appropriate	11 (91.7%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	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	2.9	0.3

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

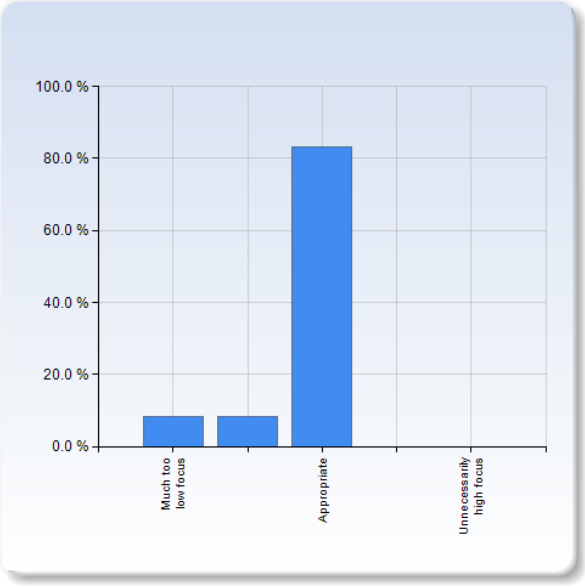
understands how local gauge symmetry via covariant derivatives leads to interaction terms in the Lagrangian density.	Number of Responses
Much too low focus	0 (0.0%)
	2 (16.7%)
Appropriate	10 (83.3%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
understands how local gauge symmetry via covariant derivatives leads to interaction terms in the Lagrangian density.	2.8	0.4

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

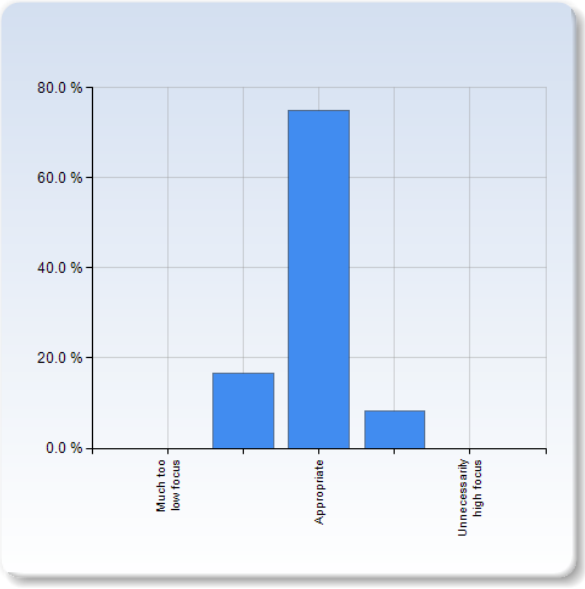
can explain the different terms in the Lagrangian densityand which type of processes these lead to	Number of Responses
Much too low focus	1 (8.3%)
	1 (8.3%)
Appropriate	10 (83.3%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
can explain the different terms in the Lagrangian densityand which type of processes these lead to	2.8	0.6

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

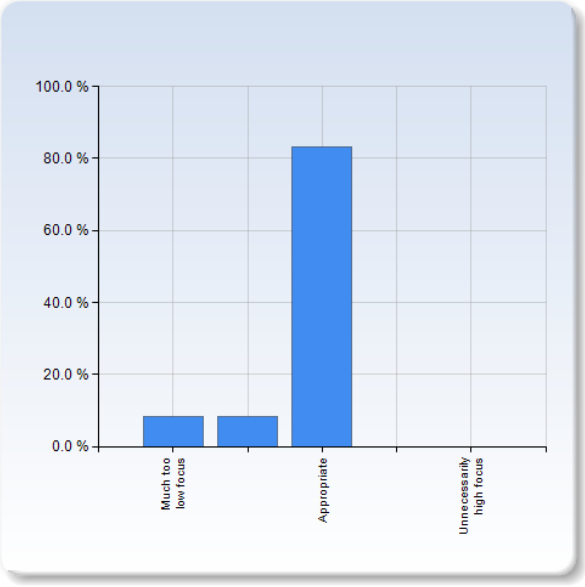
can explain the Higgs mechanism and how particle masses are introduced via it	Number of Responses
Much too low focus	0 (0.0%)
	2 (16.7%)
Appropriate	9 (75.0%)
	1 (8.3%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
can explain the Higgs mechanism and how particle masses are introduced via it	2.9	0.5

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.

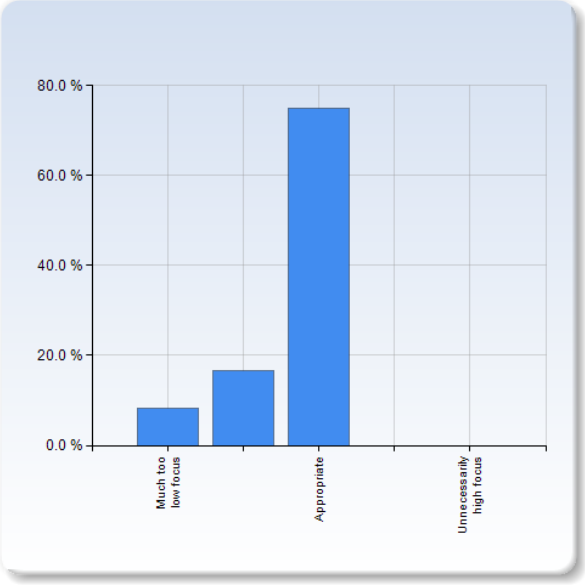
understands how to interpret interaction terms in the Lagrangian density in terms of Feynman diagrams and can use those to estimate cross-sections for various production, decay and scattering processes.	Number of Responses
Much too low focus	1 (8.3%)
	1 (8.3%)
Appropriate	10 (83.3%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (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.	2.8	0.6

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

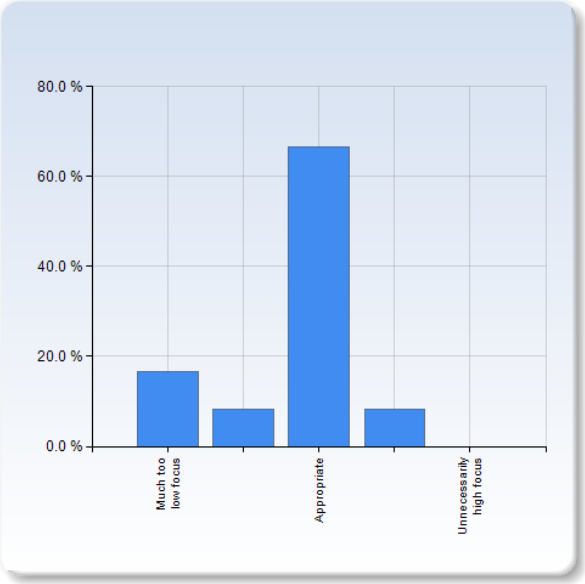
understands the concept of asymptotic freedom and that it leads to confinement for quarks and gluons.	Number of Responses
Much too low focus	1 (8.3%)
	2 (16.7%)
Appropriate	9 (75.0%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
understands the concept of asymptotic freedom and that it leads to confinement for quarks and gluons.	2.7	0.7

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

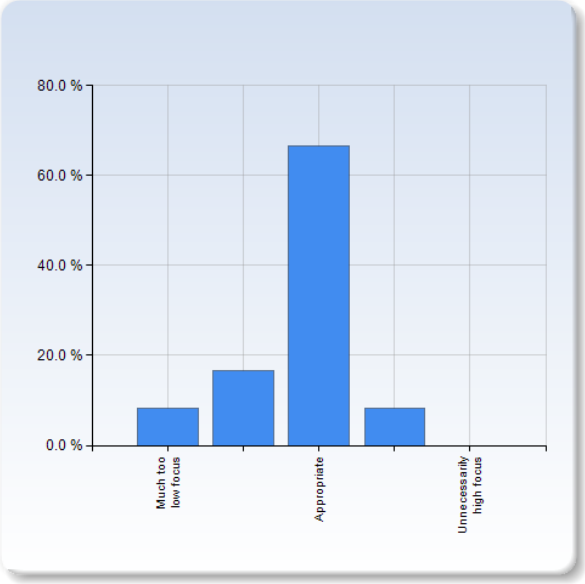
understands the concept of parton densities and their use in calculating cross-sections in hadron collisions.	Number of Responses
Much too low focus	2 (16.7%)
	1 (8.3%)
Appropriate	8 (66.7%)
	1 (8.3%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
understands the concept of parton densities and their use in calculating cross-sections in hadron collisions.	2.7	0.9

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

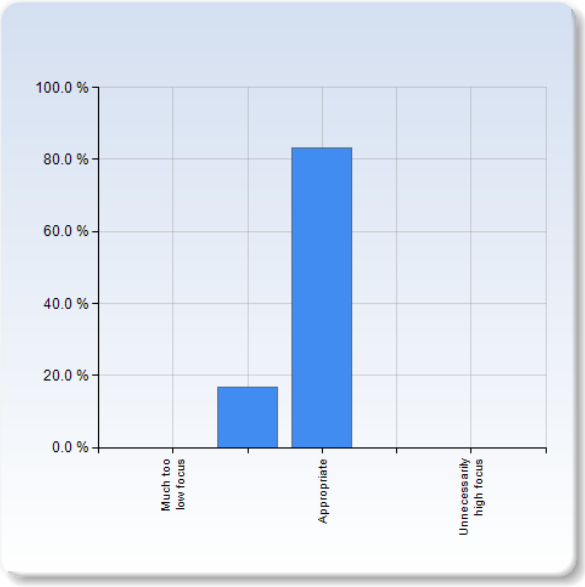
can calculate lifetimes and decay widths for the electroweak vector bosons and the Higgs particle, as well as estimate productions cross-sections for them.	Number of Responses
Much too low focus	1 (8.3%)
	2 (16.7%)
Appropriate	8 (66.7%)
	1 (8.3%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	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.	2.8	0.8

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

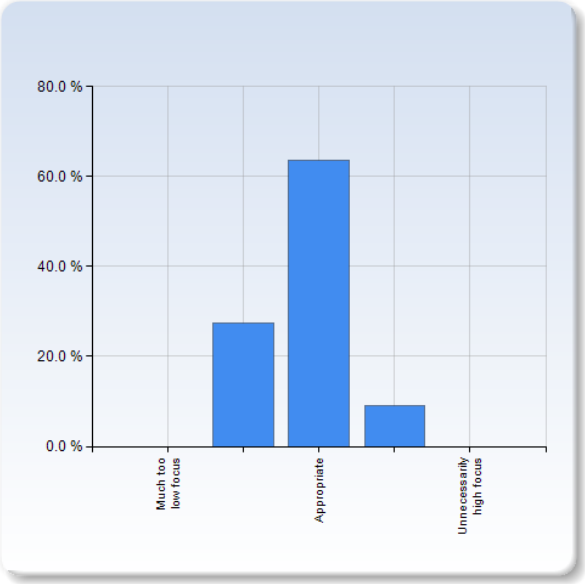
can explain why the coupling constants can vary depending on the energies involved in a process.	Number of Responses
Much too low focus	0 (0.0%)
	2 (16.7%)
Appropriate	10 (83.3%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
can explain why the coupling constants can vary depending on the energies involved in a process.	2.8	0.4

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

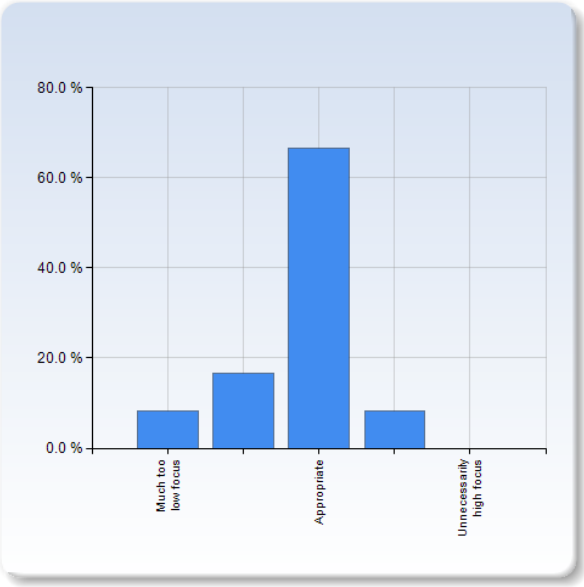
can describe the mixing between quark families and how the mixing between three quark families leads to the breaking of CP symmetry.	Number of Responses
Much too low focus	0 (0.0%)
	3 (27.3%)
Appropriate	7 (63.6%)
	1 (9.1%)
Unnecessarily high focus	0 (0.0%)
Total	11 (100.0%)



	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.	2.8	0.6

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

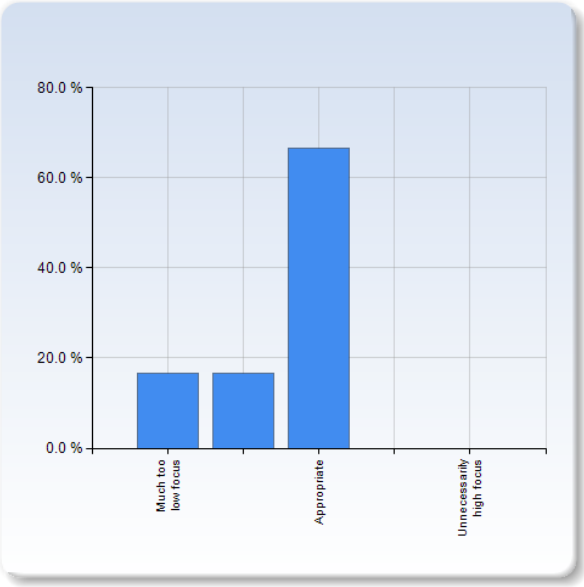
understands how the existence of neutrino masses may lead to neutrino oscillations.	Number of Responses
Much too low focus	1 (8.3%)
	2 (16.7%)
Appropriate	8 (66.7%)
	1 (8.3%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
understands how the existence of neutrino masses may lead to neutrino oscillations.	2.8	0.8

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

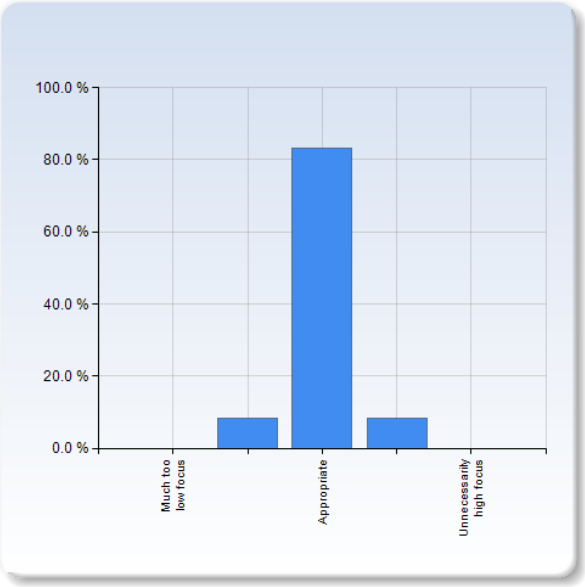
is able to describe all parameters in the standard model and give examples of how these can be measured.	Number of Responses
Much too low focus	2 (16.7%)
	2 (16.7%)
Appropriate	8 (66.7%)
	0 (0.0%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)



	Mean	Standard Deviation
is able to describe all parameters in the standard model and give examples of how these can be measured.	2.5	0.8

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	0 (0.0%)
	1 (8.3%)
Appropriate	10 (83.3%)
	1 (8.3%)
Unnecessarily high focus	0 (0.0%)
Total	12 (100.0%)

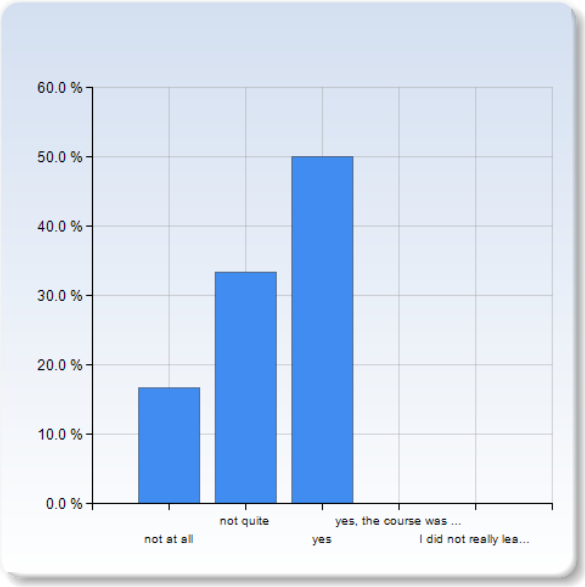


	Mean	Standard Deviation
understand the basic assumptions underlying Grand Unification and supersymmetry.	3.0	0.4

Comment
The lectures on neutrino oscillations and quark mixing felt too shallow compared to how many questions in the exams covered those subjects. Perhaps it was because of the mentioned change of schedule that put those lectures out of order?
Well this looks kind of dumb, since to fix it for me more lectures would be necessary. I don't know, it was a difficult course, for me the most difficult one so far by quite a lot (as a bachelor student). And since the concepts are hard, I needed a lot of time to figure some of them out, so I wouldn't have minded taking it a bit more slowly and thoroughly, but that might be just me, since I usually learn more from lectures than reading as well.
I understand it is a lot to cover in one course, but some of the above could have been more clear.

Did you have enough prior knowledge for this course?

Did you have enough prior knowledge for this course?	Number of Responses
not at all	2 (16.7%)
not quite	4 (33.3%)
yes	6 (50.0%)
yes, the course was a bit easy	0 (0.0%)
I did not really learn anything new	0 (0.0%)
Total	12 (100.0%)



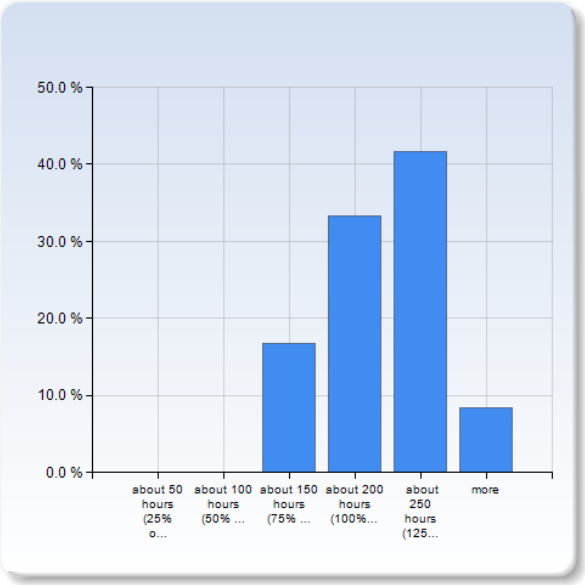
	Mean	Standard Deviation
Did you have enough prior knowledge for this course?	2.3	0.8

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)?

I had already have an introductory course to Particle Physics during my Bachelor's and I think I would have had a hard time during the course without it.
It didn't feel like it, since I havn't done quantum field theory or group theory, and that's too much for me to properly grasp in relatively small recaps. (I know this layout of the course is probably necessary to give people the opportunity to do their bachelors work in particle physics, so I don't blame you too much, but it was hard.)
To get a good grasp of what is actually going on, which should be the goal of any course, it feels like QFT should be a prerequisite.
I think this course need more prior knowledge than what I had in relativistic kinematics, and the first part from analytical mechanics and Noethers theorem.
Bachelor physics 3rd year, introduction to elementary particle physics. Not enough of this kind of math.

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 (16.7%)
about 200 hours (100% of intended time)	4 (33.3%)
about 250 hours (125% of intended time)	5 (41.7%)
more	1 (8.3%)
Total	12 (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)	4.4	0.9

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)

(I think more around 110%) Well, in the end it worked out, but as I've stated previously, it was a hard course, so I needed to study a lot. Didn't help that I was ill at the start of the course, so I had to catch up as well.

Discrimination and harassment

According to the Lund University *Policy for gender equality, equal treatment and diversity*, there is ”zero tolerance of discrimination”

Have you become aware of any cases of discrimination or harassment during the course? If so please indicate in what way?

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No.
No

Equal treatment

According to theLund University *Policy for gender equality, equal treatment and diversity*, everyone has the right to be "treated with respect and consideration and being given the opportunity to develop on the basis of his or her personal circumstances".

Do you think that everyone has been given equal opportunities during the course? If not, please specify in what way? Suggestions for improvements are also welcome.

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Yes.
YES

What did you particularly like with the course?

What did you particularly like with the course?
I like the content very much, it is very useful for understanding the physics of particle physics research.
Mostly the content. Honestly though, I didn't like a lot of that either before I did the written exam, since I don't like not understanding and I didn't really feel like I understood the material until right before the written exam.
I have never had any particle physics before, so it was a very interesting course, though challenging. The course book was very good.

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.
The Griffith's textbook is really good back-up for the course.
The thing I found the most frustrating about the oral exam, is that I never realized how poorly prepared I was until I was in front of the teacher and struggling to put my knowledge into words. Considering how important the oral exam is to the final grade, I think it's strange that discussing physics is not a greater part of the course content. Presenting solutions to numerical problems is really no where near the same thing as describing purely theoretical concepts. I'm sure the exceptional students get enough practice in their private study groups, but if you want this type of skill in more of the students, consider adding some form of discourse to the course content.
I think maybe this one can be a full semester course with 15 credits, I would really prefer if we can go a bit slower and more detailed with many topics. For current settings, we have a lot of notes to go through and remember after each lecture. I personally might accept better if we have more time to read and understand materials.
In its current form, I don't really know. I would probably have preferred to have done QFT before this course, but since that probably doesn't work while still keeping the ability for students to do their bachelor work in particle physics, I'm not sure. As for additional material, I'm not sure if you mean for you as teachers or for other students, but for other students: I watched the particle physics lectures from Stanford (available on Stanford's youtube page), and he talked a lot longer about the different theoretical topics. (Which he had time for since they didn't do any calculations for their course, so he had time to do things slower. It was basically the first half of our course, but an entire course.) I though those were good, since they just gave me a lot more time to think about and try to understand the concepts better. (He talks very slowly though, so I recommend watching in 1.5x or 2x speed.)
The structure of it, also try to be a little bit more pedagogical during the lectures, considering what you require as prerequisite courses.
As mentioned, the structure of the lectures could be more clear. Griffiths particle physics book was a bit helpful.