LUND UNIVERSITY | FACULTY OF SCIENCE

Department of Physics
Division of Nuclear Physics
Dr. Luis Sarmiento

Course Evaluation FYSC12, HT19

At the beginning of the HT19 lecture series, the need for course representatives was pointed out by the lecturer, and early on two student course representatives were elected (JohannaAndersson and Jakob Huhn). Towards the end of the course, an evaluation sheet was agreed upon, very similar in scope to the one developed for VT19 except that now Canvas has been included in the evaluation. It was possible to prepare and submit course evaluation sheets both in person (8/11, 13:00, once all oral examinations were conducted) and via e-mail to the course representative. The fact that handing in course evaluations is in principle mandatory was mentioned during lectures and by e-mail to all students, with the evaluation form attached linked to the Canvas message as well.

All student replies are attached. The course representatives prepared a brief summary from the student perspective (see attachment, part 1). The statistical and graphical analysis was done by the course responsible teacher (LGS). The material is circulated amongst all teachers, i.e. lecturers and laboratory assistants, to take more specific notes on their parts of the course. It should be noted that the student representative summarizes 8 forms representing 15 students. However, I got only copy of 3 of those forms representing 9 students. In the following I will combine both assessments.

Comments

Only 15 out of 25 registered FYSC12 students (60%) participated in the course evaluation. The number of student evaluations should be much higher although it is more than one the typical participation for the previous spring term. To increase the participation the usage of a survey in the Canvas system is being evaluated as means of personal feedback submission. The anonymity in the Canvas system is not ensured at all levels and this situation must be carefully evaluated in due time. At least in accordance to the documentation available online which states:

"The anonymous option can be enabled or disabled before or after a survey has received submissions, allowing a user with sufficient permissions to see a student's identity and responses. To collect fully anonymous survey responses, you may want to use a third-party survey tool."[1]

[1] https://community.canvaslms.com/docs/DOC-13126-415268346

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Despite the relatively low participation, the overall picture is very much compatible with the evaluation conducted HT18 and HT19, with a grand average of a score of about 4 on an evaluation scale 1 to 5, i.e. we teachers are once again happy to see that all in all the course as such is apparently appreciated by the students.

Lectures & Hand Outs

Very much in line with previous replies, given that there is a planned major revision of the bachelor programmes at the science faculty, an update of course contents (and alignment with a similar introductory course at LTH) is due in the coming two years. This involves an update of the course plan, which will take care of the usual points mentioned in the evaluation. In terms of contents, a more relevant (in Lund) "ESS-neutron" complex is likely to also formally replace the "nuclear reactor" part. Therefore, and expectedly, the two topics with respect to fission reactors have relatively low scores. In the to-be-updated course plan, the weight of societal relevance of nuclear physics are to be increased. The changes have been already discussed in meeting regarding re-structuration of the basic teaching of physics in Lund. Hand-outs are meant to provide guidelines and summaries of topics. There are the course books for learning / recovering details. An alternative course book containing more modern societal impact is being introduced.

Problem Sheets / Sessions

In general, the students were satisfied with the amount of Problem Sheets and Problem Sessions. Only one student reported to be confused with the evaluation scheme and the phrasing will be revised to avoid this from happening.

Laboratories

The laboratories are in general appreciated by students. The alpha lab it is known to get lower scores compared with the other ones and it is in the priority list for modernization. With the new alignment of the courses in the physics program, the students will come more prepared in programming and the load on "getting to run" the analysis codes for the various laboratories will decrease such that the effort can be emphasised in the various learning outcomes.

The system Canvas was used for report submission. The system worked fine but some of the lab materials were not updated to the explicitly mention Canvas.

Canvas

I decided to be an early adopter of Canvas and the students were very satisfied with the overall structure of it and the communication possibilities. A mayor issue with Canvas is the file tree structure and its access. This was heard loud and clear and for VT20 we are accounting for this.

Course Evaluation

Seemingly, it was not obvious for some students what this point was aiming at. A digital version of the evaluation form is on the to-do list. As it was stated before, Canvas itself it is being evaluated for this.

Examination

While the style may or may not be very different, we do look at statistics, both in terms of the examiners and, for instance, gender related. Neither for FYSC12 VT19 nor in previous years we were able to identify any bias in one or the other direction.

Learning Outcomes

In view of the expected revision of the course plan and in line with the European Spallation Source being constructed in Lund, lectures concerning nuclear reactors (fission type) have been reduced on account of more neutron/ESS related topics. The future course plan (and title of the FYSC12 course) will reflect that shift as well. Concerning experiment planning, this may relate to the level of preparation *prior* to the laboratories. Current research is explicitly mentioned during research lectures, which another student group highly appreciates, as well as indicated in a number of the more standard lectures. A more explicit connection with different lines in nuclear physics and related content will be done.

Course Evaluation FYSC12

Jakob Huhn

November 2019

1 Introduction

This is a summary of the course evaluation of the FYSC12 course Nuclear physics and reactors of autumn 2019. There were 8 sheets by 15 students submitted.

2 Anlysis

The most commonly criticised point was the file system on canvas. The students requested are central point for all files in canvas instead of searching for them in the calendar. The lecture notes and hand outs were seen controversially. While most liked the hand outs it was also criticised that the lecture notes were not detailed enough. This made it hard to study with them especially if a day of lectures was missed. The incomplete lecture hands outs and the style of the PowerPoint helped for a good lecture and engaging students, they were not a good source for retrieving information. The Labs and especially their structure were criticised: The Lab report system on canvas was confusing due to different methods from the instructors, old and confusing lab manuals. The students complained very different grading methods from the instructors which lead to unfair grading in the Gamma Lab. The content of the lab was criticised as being too much work and especially to much emphasis on python programming instead of actual physics. One student said, that in the labs there was to much discussion which was unnecessary if the preparation was done properly. The course book was described by most as easy to read. Some criticised that it was too old and too few of them in the library. One student complained about it being to detailed. Two students would appreciate the course evaluation to be not mandatory and online. It should be highlighted that the students were really happy with the lecture and the lectures as the students were engaged and got good answers to their questions. Most of the students thought the exam was fair and good, one was confused by the format and wished for more examples.

A. Lectures	2.93
B. Hand-outs	2.67
C. Course book	3.87
D. Problem sheets	4.20
E. Problem sessions	3.93
F. Gamma Lab	3.53
G. Beta Lab	3.89
H. Neutron Lab	4.17
I. Alpha Lab	3.33
J. Examination	4.60
K. Canvas for information	3.80
L. Canvas for lab reports	2.73
M. Course evaluation	4.09

Table 1: Average table of Number 2. The course in general

Basic properties of atomic nuclei	3.86
Deuteron, two nucleon systems, nucleon-nucleon force	3.47
Nuclear decay modes: alpha decay, beta decay, electromagnetic transitions, fission, etc.	3.79
Nuclear structure models: spherical, deformed and collective model, excitations	2.87
Nuclear reactions	3.60
Applied nuclear physics, including accelerators, detectors, and nuclear astrophysics	4.33
Different types of fission reactors, their structure and use	3.20
Reactors as source of energy from environmental and societal perspectives	2.27

Table 2: Average table of number 4. Course content

Learning outcomes	Yes	No
describe and use basic modern physics, especially in the field of nuclear physics	15	0
plan, conduct and report experiments	11	4
assess experimental results	10	5
judge the applicability and limitations of physical models	15	0
obtain new knowledge and report it in speech and writing	11	0
exemplify and describe, in outline, current research and in nuclear physics	13	0
demonstrate understanding of the role of nuclear physics in society	14	1
understand the function and use of nuclear reactors	14	1

Table 3: Number of yes/no for number 5. Learning outcomes

FYSC12: Course evaluation HT19

Please form a group of maximum 4 students, discuss the questions on this sheet, and answer them together or individually. The evaluation is anonymous.

When you are finished, please hand this form to one of your course representatives, in paper or via e-mail. These are (VT19)

Huhn, Jakob Hendrik (jakob.huhn@campus.lmu.de) [FYSC12]

Andersson, Johanna Emma (johanna.andersson90@hotmail.com) [ÄFYD04]

Comments are much appreciated. Thanks for your participation!

1. Number of students in the group: 4

2. The course in general. *Please rate the different aspects of the course by circling the number that most represent your groups views. 5 is very good, 3 is adequate, and 1 is very bad.*

A.	Lectures	1	2	3	(4)	5
B.	Hand-outs	1	2	(3)	4	5
C.	Course book	1	2	3	(4)	5
D.	Problem sheets	1	2	3	(4)	5
E.	Problem sessions	1	2	3	4	(5)
F.	Gamma lab	1	2	(3)	4	5
G.	Beta lab	1	2	3	(4)	5
H.	Neutron lab	1	2	3	4	(5)
I.	Alpha lab	1	2	(3)	4	5
J.	Examination	1	2	3	4	(5)
K.	Canvas for information	1	2	3	(4)	5
L.	Canvas for lab reports	1	(2)	3	4	5
M.	Course evaluation	1	2	3	4	(5)
N.	_____	1	2	3	4	5

3. Do you have any suggestions for improvement? This is most relevant in case you have been choosing low marks on any of the above. In many cases, we can only act on, i.e. improve on, specific notes.

Indicate what you want to improve with a letter (see 2.) and please comment below.

Of course, also positive comments on what you appreciated are most welcome!

[K] all files should be accesible in one spot on canvas. Not only in the calendar.

[B] it was more complicated to learn with the uncomplete hand outs from the lecture. But it was very good for learning during the lectures.
So maybe upload your notes together with the slides.

[F] The exercises were too much work for one lab compared with the others. Especialy as a lot of time needed to be spent on figuring out the python code and not on physical understanding.

[C] The course book was very easy toredd and good to learn with. But an updated version would be good as Krane is alreddy very old.

4. Course content: *Please rate how well you think the course has covered these different topics by circling the number that best represents your group's view. 5 is very well covered, 3 is adequately covered, and 1 is not covered at all.*

Basic properties of atomic nuclei	1	2	3	4	5
Deuteron, two-nucleon systems, nucleon-nucleon force	1	2	3	4	5
Nuclear decay modes: alpha decay, beta decay, electromagnetic transitions, fission, etc.	1	2	3	4	5
Nuclear structure models: spherical, deformed and collective model, excitations	1	2	3	4	5
Nuclear reactions: cross section and reaction mechanisms, reactions due to strong and electromagnetic interactions, fusion	1	2	3	4	5
Applied nuclear physics, including accelerators, detectors, and nuclear astrophysics	1	2	3	4	5
Different types of fission reactors, their structure and use	1	2	3	4	5
Reactors as source of energy from environmental and societal perspectives	1	2	3	4	5

Y / N

5. **Learning outcomes:** *Please answer yes or no if all members of the group feel that they are able to...*

... describe and use basic modern physics, especially in the field of nuclear physics?

Y

... plan, conduct and report experiments?

Y

... assess experimental results?

Y

... judge the applicability and limitations of physical models?

Y

... obtain new knowledge and report it in speech and writing?

Y

... exemplify and describe, in outline, current research and in nuclear physics?

Y

... demonstrate understanding of the role of nuclear physics in society?

Yes but no in regard to reactors

... understand the function and use of nuclear reactors?

Y

FYSC12: Course evaluation HT19

Please form a group of maximum 4 students, discuss the questions on this sheet, and answer them together or individually. The evaluation is anonymous.

When you are finished, please hand this form to one of your course representatives, in paper or via e-mail. These are (VT19)

Huhn, Jakob Hendrik (jakob.huhn@campus.lmu.de) [FYSC12]

Andersson, Johanna Emma (johanna·andersson90@hotmail.com) [ÄFYD04]

Comments are much appreciated. Thanks for your participation!

1. Number of students in the group: 4

2. The course in general. *Please rate the different aspects of the course by circling the number that most represent your groups views. 5 is very good, 3 is adequate, and 1 is very bad.*

A.	Lectures	1	2	3	4	(5)
B.	Hand-outs	1	(2)	3	4	5
C.	Course book	1	2	3	(4)	5
D.	Problem sheets	1	2	3	(4)	5
E.	Problem sessions	1	2	3	(4)	5
F.	Gamma lab	1	2	3	(4)	5
G.	Beta lab	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~
H.	Neutron lab	1	2	3	(4)	5
I.	Alpha lab	1	2	(3)	4	5
J.	Examination	1	2	3	4	(5)
K.	Canvas for information	1	2	3	4	(5)
L.	Canvas for lab reports	1	(2)	3	4	5
M.	Course evaluation	1	2	3	4	5
N.	Canvas for files	(1)	2	3	4	5

3. Do you have any suggestions for improvement? This is most relevant in case you have been choosing low marks on any of the above. In many cases, we can only act on, i.e. improve on, specific notes.

Indicate what you want to improve with a letter (see 2.) and please comment below.

Of course, also positive comments on what you appreciated are most welcome!

B. Handouts: 1 student would like more discursive lecture notes.
2 students liked powerpoints but would like to take notes with the full version.

I. Alpha: 2 students thought that the lab felt sloppy.

L. Canvas for lab report: Confusing. The group/hand in structure was not appriciated!

N. Canvas for files: The files can still be in the calender.
But there has to be a centralized place for files, in the same tab.

4. Course content: *Please rate how well you think the course has covered these different topics by circling the number that best represents your group's view. 5 is very well covered, 3 is adequately covered, and 1 is not covered at all.*

Basic properties of atomic nuclei	1	2	(3)	4	5
Deuteron, two-nucleon systems, nucleon-nucleon force	1	2	3	(4)	5
Nuclear decay modes: alpha decay, beta decay, electromagnetic transitions, fission, etc.	1	2	3	(4)	5
Nuclear structure models: spherical, deformed and collective model, excitations	1	(2)	3	4	5
Nuclear reactions: cross section and reaction mechanisms, reactions due to strong and electromagnetic interactions, fusion	1	2	3	(4)	5
Applied nuclear physics, including accelerators, detectors, and nuclear astrophysics	1	2	3	4	(5)
Different types of fission reactors, their structure and use	1	2	3	(4)	5
Reactors as source of energy from environmental and societal perspectives	1	(2)	3	4	5

5. Learning outcomes: *Please answer yes or no if all members of the group feel that they are able to...*

... describe and use basic modern physics, especially in the field of nuclear physics?

Yes

... plan, conduct and report experiments?

Yes

... assess experimental results?

No

... judge the applicability and limitations of physical models?

Yes

... obtain new knowledge and report it in speech and writing?

... exemplify and describe, in outline, current research and in nuclear physics?

Yes

... demonstrate understanding of the role of nuclear physics in society?

Yes

... understand the function and use of nuclear reactors?

Yes

Give Pieo a permanent position.

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Please form a group of maximum 4 students, discuss the questions on this sheet, and answer them together or individually. The evaluation is anonymous.

When you are finished, please hand this form to one of your course representatives, in paper or via e-mail. These are (VT19)

Huhn, Jakob Hendrik (jakob.huhn@campus.lmu.de) [FYSC12]

Andersson, Johanna Emma (johanna_andersson90@hotmail.com) [ÄFYD04]

Comments are much appreciated. Thanks for your participation!

1. Number of students in the group: 1

2. The course in general. *Please rate the different aspects of the course by circling the number that most represent your groups views. 5 is very good, 3 is adequate, and 1 is very bad.*

A.	Lectures	1	2	(3)	4	5
B.	Hand-outs	1	2	(3)	4	5
C.	Course book	1	2	3	(4)	5
D.	Problem sheets	1	2	(3)	4	5
E.	Problem sessions	1	2	3	4	(5)
F.	Gamma lab	1	2	3	4	(5)
G.	Beta lab	1	2	3	4	(5)
H.	Neutron lab	1	2	3	4	5
I.	Alpha lab	1	2	3	(4)	5
J.	Examination	1	2	3	4	(5)
K.	Canvas for information	(1)	2	3	4	5
L.	Canvas for lab reports	1	2	(3)	4	5
M.	Course evaluation	1	2	(3)	4	5
N.	_____	1	2	3	4	5

3. Do you have any suggestions for improvement? This is most relevant in case you have been choosing low marks on any of the above. In many cases, we can only act on, i.e. improve on, specific notes.

Indicate what you want to improve with a letter (see 2.) and please comment below.

Of course, also positive comments on what you appreciated are most welcome!

It was nice to get hand-outs, but they were very hard to find on Canvas.

The points system of the problem sheets was unclear. All the way until the end I thought there would be 4 problem sheets and only the 3 best of those were graded, but it turned out there were only 3 problem sheets and only the 3 best exercises on each problem sheet was graded. For me it didn't make any difference but in the worst of cases someone could fail the course because they misunderstood the point system.

The problem sessions were great, they really helped me.

In the alpha lab it said in the lab manual that we had to hand in the report on urkund but then he sent an email asking why we didn't submit the report on canvas. In the end it didn't matter, he accepted the report we submitted on urkund but I still think the instructions in the lab manual should be the same as what you actually expect us to do.

The oral exam was great, I think that's a good examination form for this course.

It was very hard to find the files on canvas (lab manuals, hand-outs, etc). You should do like in the FYSC11 course where they have a files tab in canvas where we can find all files in one place.

For the course evaluations, you could do like in courses previous semesters (for example FYSB11-12) where you just send us an email and fill out the course evaluation online. That would be a lot easier than having to come all the way to Lund on a day I'm quite busy to do this (it would have been easier to stay home and do this online).

The lectures themselves were great, but 8.00 is way too early[2]. The afternoon would have been better, or in the worst of cases 10.00. I personally went to all lectures but sometimes I was too tired to concentrate. The person I worked with in one of the labs said he never goes to 8.00 lectures.

4. Course content: *Please rate how well you think the course has covered these different topics by circling the number that best represents your group's view. 5 is very well covered, 3 is adequately covered, and 1 is not covered at all.*

Basic properties of atomic nuclei	1	2	3	4	(5)
Deuteron, two-nucleon systems, nucleon-nucleon force	1	2	3	4	(5)
Nuclear decay modes: alpha decay, beta decay, electromagnetic transitions, fission, etc.	1	2	3	4	5
Nuclear structure models: spherical, deformed and collective model, excitations	1	2	3	(4)	5
Nuclear reactions: cross section and reaction mechanisms, reactions due to strong and electromagnetic interactions, fusion	1	2	(3)	4	5
Applied nuclear physics, including accelerators, detectors, and nuclear astrophysics	1	2	3	4	(5)
Different types of fission reactors, their structure and use	1	2	3	(4)	5
Reactors as source of energy from environmental and societal perspectives	(1)	2	3	4	5

5. **Learning outcomes:** *Please answer yes or no if all members of the group feel that they are able to...*

... describe and use basic modern physics, especially in the field of nuclear physics? Yes

... plan, conduct and report experiments? Yes

... assess experimental results? Yes

... judge the applicability and limitations of physical models? Yes

... obtain new knowledge and report it in speech and writing? Yes

... exemplify and describe, in outline, current research and in nuclear physics? Yes

... demonstrate understanding of the role of nuclear physics in society? Yes

... understand the function and use of nuclear reactors? Yes