Applied Finite Element Methods, 5.0 c

Course code: 1TD056, Report code: 12006, 33%, DAG, NML
week: 45 - 03 Semester: Autumn 2019 (2019-11-04 - 2020-01-19)

Result

This evaluation is answered by 54% (41/76) of the respondents.

Below are statistics on single- and multiple-choice answers and freeform text. Additionally, the summaries for freeform text responses that students will see are also shown.

Welcome

Your views on the course is an important part of the course development. We hope you can give us feedback on things that should be developed and improved as well as things that works well and should be kept as it is. Concrete suggestions for improvement are very welcome.

Thanks for your help!
/Murtazo and Tuan

General Aspects

1: What is your general view about the course? Answers: 41

Answer options: Median: 5 Mean: 4.3 / 5

0. Do not know/not relevant/do not wish to answer	1 responses	2%	
1. Very bad	0 responses	0%	
2.	2 responses	5%	
3.	4 responses	10%	
4.	13 responses	32%	
5. Very good	21 responses	51%	

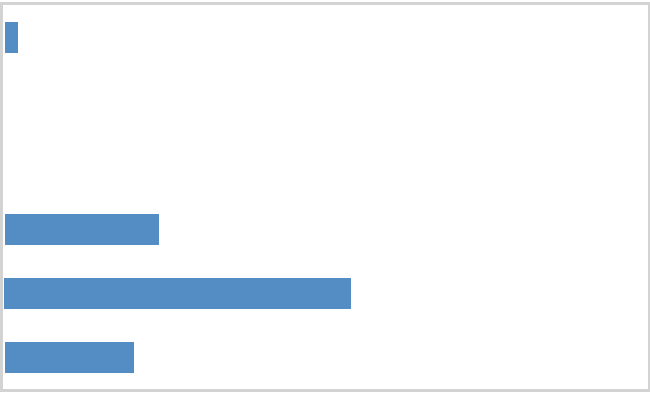
2: What was the degree of difficulty

Answers: 41

Answer options:

Median: 4 Mean: 4.0 / 5

0. Do not know/not relevant/do not wish to answer	1 responses	2%
1. Very easy	0 responses	0%
2.	0 responses	0%
3.	10 responses	24%
4.	22 responses	54%
5. Very hard	8 responses	20%



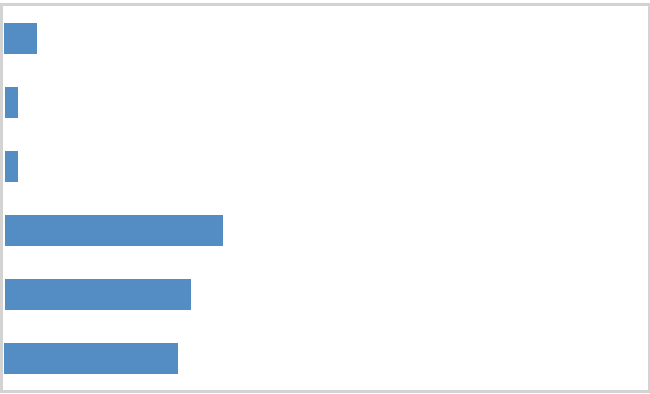
3: How did the total amount of work on the course relate to the credits?

Answers: 41

Answer options:

Median: 4 Mean: 3.8 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%
1. Very low	1 responses	2%
2.	1 responses	2%
3.	14 responses	34%
4.	12 responses	29%
5. Very high	11 responses	27%



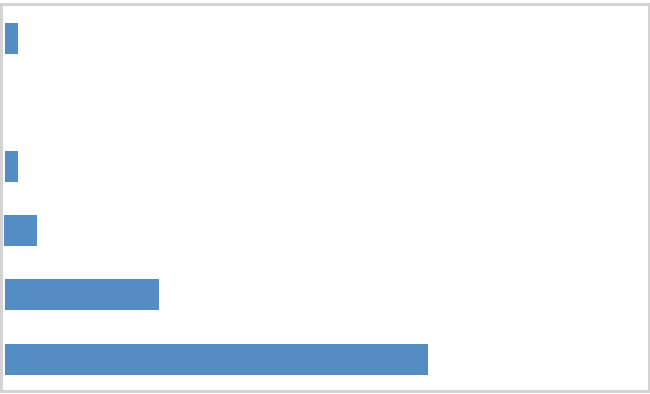
4: Is the course relevant to your education?

Answers: 41

Answer options:

Median: 5 Mean: 4.6 / 5

0. Do not know/not relevant/do not wish to answer	1 responses	2%
1. Not at all	0 responses	0%
2.	1 responses	2%
3.	2 responses	5%
4.	10 responses	24%
5. To a very high extent	27 responses	66%

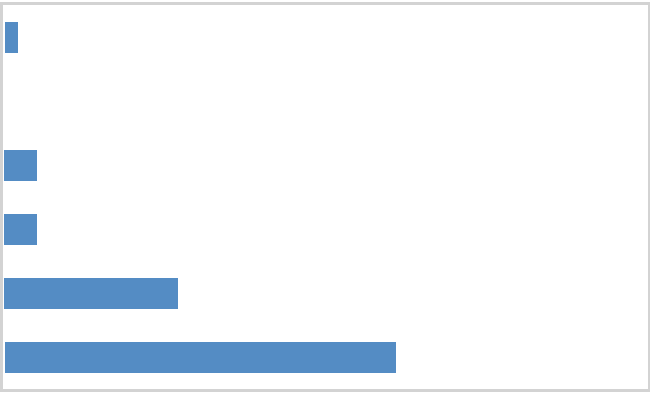


5: Has the course been interesting and meaningful?

Answers: 41

Answer options: Median: 5 Mean: 4.5 / 5

0. Do not know/not relevant/do not wish to answer	1 responses	2%
1. Not at all	0 responses	0%
2.	2 responses	5%
3.	2 responses	5%
4.	11 responses	27%
5. To a very high extent	25 responses	61%

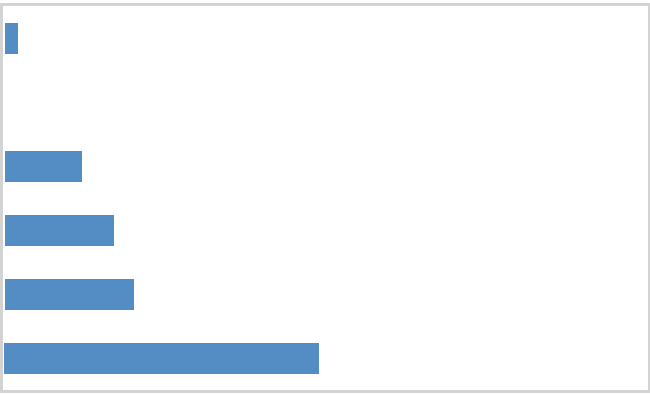


6: Was your prior knowledge good enough for the course?

Answers: 41

Answer options: Median: 4.5 Mean: 4.1 / 5

0. Do not know/not relevant/do not wish to answer	1 responses	2%
1. No, not at all	0 responses	0%
2.	5 responses	12%
3.	7 responses	17%
4.	8 responses	20%
5. Yes, absolutely	20 responses	49%



7: General comments on the course, e.g. something that was particularly good or something that should be improved?

Answers: 22

A really intresting course that is a bit hard, but you think two or three times about the problem it will sort itself out.
Svår men mycket bra kurs.
The teachers feel involved in making this course interesting and well-structured. It's what I wish many other courses could be.
I think it would have been better to start the course one week earlier (now it started one week later than all other courses?) because it is a lot of content to study.
Bra upplägg. Bra föreläsningar. Intressant projekt.

I really liked the lectures and the building up in complexity from the 1d to 2d case.

Personally, I find the class very difficult because of the content. The structure of the course in total is very good though, especially the homework exercises. It feels like good preparation for the exam. I also liked the guest lecture since it was/is hard for me to imagine how I will need this knowledge of the class in the future/ that it is very useful.

as the strength of the lab sessions was huge, it would have been great if we had more teaching assistants.

Re-registered on course

Projektet har varit väldigt lärorikt men lite väl hög arbetsbelastning. Kanske hade varit bra att ta bort typ en av uppgifterna under del B då den tog mycket tid. Borde även vara tydligt i instruktioner till projektet på vilken form man ska lämna in sitt svar (explicit stå i pdf-format)

Murtazo lectures notes are very good helps a lot. He describe very well in start what we are going o do

Hur kan det här va 5 hp? Inte rimlig arbetsbelastning.

I really liked the project and labs! The tasks were relevant and helpful to understand the concepts. I didn't like the fact that the workload wasn't letting me to prepare for seminars and ask questions.

Need clear instructions/help with getting Fenics to run on Windows.

it was a lot of work for 5 cr ,every other course I had was pussed to the limit

The project was a good way of applying the methods tought during the lectures and helped me remember the course contents better than usual.

I found the project to be very difficult and that I did not get the support I needed. Instead of being a fun and interesting way of learning how to apply FEM, it became all about copy-pasting the right lines from the lab-PDFs into the project. It was also extremely frustrating having to do the third and main part of the project during christmas and new year, especially considering all staff and the teachers went on holiday and therefore not being available. First of all, Murtazo didn't manage to help us with installing FENICS during the lab. Then I spent a day trying to install different programs to get it to work, before giving up and taking the bus back to Uni when I had hoped to spend the week between christmas and new year at home with my family. Only to find the computer rooms in ITC house 2 (where we were told to go if we didn't get the program to run on our own computers) locked, with no one there to unlock it. Then I spent another day trying to get the program to work on my laptop, before finally hearing from another student that there were unlocked computer rooms in ITC house 1. There I managed to do most of the project, whilst three other students there couldn't log onto the computers without instantly getting thrown out. Almost finished, my computer ran out of storage and I wasn't allowed to delete files. Figured I was done for the day, and then when I came back the day after, I couldn't log on either. And there was no one, not a single person, available at ITC, on phone or on e-mail that could help me. Not until the deadline on the third. Made me question my choice of university.

I liked the project, however it was difficult to summarize all the different tasks into one report with a conclusion for all tasks.

The focus on proofs feels like it's mainly there to "fill out" the questions and is too large. Some information, like the fact that the project parts should be submitted via a single pdf, or the deadlines for

the project parts in the beginning of the course, is only mentioned briefly, once during a lecture, but when asked about it, "it has been said many times during lectures/labs". Regardless if this was true or not, if this is expected it should be written somewhere.
I really like that an extra lab has been added to the course for working with part C. It helped to really get into how FEniCS works.
The project was very good for the understanding of the course BUT also very time consuming. It was a lot of work for a 5 credit course. For the last part of the project it felt like I lacked some necessary knowledge in Python programming.
The timing was off. We where told to start with the project as soon as possible but the lectures going through the material didn't happen until very late. Since the project is very time consuming it was frustrating not to be able to start on time. There should be more and better solutions to the old exams on Studentportalen. Especially since there were a lot of things we didn't have time to go through in the seminars.

Teaching

Main Teacher: Murtazo Nazarov

8: The teacher has been supportive in your learning process, e.g. good feedback, good explanations, clear and well structured teaching?

Answers: 40

Answer options: Median: 5 Mean: 4.4 / 5

0. Do not know/not relevant/do not wish to answer	3 responses	7%	
1. Not agree at all	1 responses	2%	
2.	1 responses	2%	
3.	2 responses	5%	
4.	11 responses	27%	
5. Fully agree	22 responses	54%	

Teacher: Tuan Anh Dao

9: The teacher has been supportive in your learning process, e.g. good feedback, good explanations, clear and well structured teaching?

Answers: 41

Answer options: Median: 5 Mean: 4.4 / 5

0. Do not know/not relevant/do not wish to answer	6 responses	15%	
1. Not agree at all	0 responses	0%	
2.	1 responses	2%	
3.	3 responses	7%	
4.	11 responses	27%	
5. Fully agree	20 responses	49%	

10: General comments on the teaching, e.g. something that was particularly good or something that should be improved? (Constructive suggestions are welcome).

Answers: 16

Perfect!
They were both very good and helpful. :)
Good lectures and good lessions. But during the lectures when you get discouraged to do the homeworks because you say that I could not figure out how to do it, so you get is as a homework. I get a funny feeling during some of the lectures that Murtazo has something better to do, something like that hi is not compleatly present. I cant judge him though because when he asks a question the room is compleatly silent and he pretty much behs us for an answer.
The lecturer was passionate about the subject and communicated the theoretical framework in a very clear fashion. It was very enjoyable.
I understand now afterwards that you only wrote the homeworks on the board because you wanted to give an advantage to the students visiting the class. But! That is only an advantage to the students taking notes. I thought the notes online looked very good and therefore didn't take notes when I visited the lectures. Maybe you should make it more clear in the beginning.
Väldigt bra och snabb respons och hjälp över mail. Det märks att de bryr sig om sina studenter.
I have only contacted Tuan so far via e-mail and he answered very fast to my emails. That is very, very positive.
I think you should merge the project to next level like you showed in guest lecture doing in C wit parallel environment. Like doing merging Parallel and distributive course with FEM it would be fun. Solving mashing system in parallel environment would be fun to learn it.
Lathet från huvudläraren, inget driv att förklara problem och hänvisar till böcker o föreläsningar på mejl

och i facit i gamla tentor
I liked the structure of the lectures but maybe the trial and test space could have been explained at the beginning in a simpler way, comparing what happens in case of different types of BC. It was very confusing until one of the last seminars when such comparison was made.
Tuan was extremely helpful,Murtazo very understanding and helpful
Both Murtazo and Tuan were easy to get a hold of via email whenever a question arose outside of the classroom. Constructive suggestion for Tuan's seminars would be to remember the 10-15 minute break and to make sure at least the previous (preferably two previous) blackboards are visible before moving on to a new board, erasing in chronological order so that slow writers can continue taking notes (both of these points were getting better towards the end).
Murtazo needs to make his feedback and answers on mail more constructive. "Incomplete." isn't feedback, I want to know in what way when I believe I have followed the instructions as they are.
Nice and structured lectures with good lecture notes on studentportalen. Good problem solving sessions. Both Murtazo and Tuan was very engaged and helpful.
The seminars was not always very well prepared and should see more to what the students know. Don't skip things because you think it is easy. The lectures kept a nice tempo and explained things well.

Learning activities

Different kinds of learning activities has been used througout the course. Evaluate how valuable these activities has been for your learning.

11: To what extent has the lectures contributed to your learning? Answers: 41

Answer options: Median: 5 Mean: 4.3 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%	
1. Not at all	1 responses	2%	
2.	3 responses	7%	
3.	3 responses	7%	
4.	10 responses	24%	
5. To a very high extent	22 responses	54%	

12: To what extent has the computer labs contributed to your learning? Answers: 41

Answer options: Median: 4 Mean: 3.9 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%	
1. Not at all	2 responses	5%	
2.	3 responses	7%	
3.	6 responses	15%	
4.	15 responses	37%	
5. To a very high extent	13 responses	32%	

13: To what extent has the problem solving classes contributed to your learning? Answers: 41

Answer options: Median: 3 Mean: 3.3 / 5

0. Do not know/not relevant/do not wish to answer	9 responses	22%	
1. Not at all	3 responses	7%	
2.	3 responses	7%	
3.	13 responses	32%	
4.	7 responses	17%	
5. To a very high extent	6 responses	15%	

14: To what extent has the programming assignments (project) contributed to your learning? Answers: 41

Answer options: Median: 5 Mean: 4.4 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%	
1. Not at all	0 responses	0%	
2.	0 responses	0%	
3.	5 responses	12%	
4.	14 responses	34%	
5. To a very high extent	20 responses	49%	

15: Comments related to learning activities Answers: 10

Great project that forces you to learn the material during the course.
The lectures are really good, good examples in the lectures too. The lessions where pretty much like the lectures but with mostly examples, you could exchange these to something like a workout session like in scientific computing 3, this would in my opinion result in a better and more active way to lern the material. The labs was also good, they helped a lot with the corresponding part in the project. You could upload all the labs in the beginning of the course, in case someone would like to do the labs beforehand.
Bra med varierad inlärning
I have retaken the class and did not go to the lectures or problem solving classes, but I extensively use the online material on lectures to study and the solutions to exercises to work on the homework exercises on my own.
The programming part was good because i copied everything from fenics project book and fem book. It wasn't that tough the toughest part was to understand the how to solve it.
All activities were relevant and worth to spend time on!
the project was extremely interesting!!!!!
I attended about 3/4 of the lectures. I liked the the fact that the lecturer used the blackboard and not computer slides. The pace was a bit too high sometimes but not too bad, and I really appreciated that the lecture note was also posted on the student portal and the quality of these. Something that could improve about the course is the instructions for the project. They where a bit unclear sometimes, the assistent and lectures should coordinate which kind of feedback to give. For example how the solution for each part of the project should be uploaded on the studentportal. I uploaded my solution for part A and got feedback on how i should be upload the solution. I corrected this and uploaded part B in the same way and received new feedback and different guidelines. I would also appreciate more detailed instructions on how to install FEnICs project on ones own compute. I struggled and from what i've heard Im not the only one.
I liked the project, but more lab-hours or a more understandable project (especially part b) would make it less frustrating.
The labs where way to long to be done in the time slots they where given. Also the projects took a lot of time, and I didn't feel like I had enough time to do both the projects and the labs in detail. The lab instructions was a good help when doing the projects but I would rather have used the labs to get help with the projects than to do the labs. Maybe there should be more seminars. A lot of exercises were never solved.

Text books and course material

The text book *Larson, Mats G. and Bengzon, Fredrik: The Finite Element Method: Theory, Implementation and Applications* has been used in the course.

16: Has the text book been useful?

Answers: 41

Answer options: Median: 5 Mean: 4.4 / 5

0. Do not know/not relevant/do not wish to answer	7 responses	17%	
1. No, not at all	1 responses	2%	
2.	0 responses	0%	
3.	3 responses	7%	
4.	9 responses	22%	
5. Yes, to a high degree	21 responses	51%	

17: Has handouts such as lecture notes and solutions to exercises were useful?

Answers: 41

Answer options: Median: 5 Mean: 4.6 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%	
1. No, not at all	0 responses	0%	
2.	1 responses	2%	
3.	2 responses	5%	
4.	7 responses	17%	
5. Yes, to a high degree	29 responses	71%	

18: Comments related to text books and course material Answers: 9

I did not read the books that much but the parts I read contained the information I was looking for.
En förbättring skulle kunna vara att ladda upp datorskrivna anteckningar.
The text book is very well structured and I liked to read it because it is a reasonable amount of content that we should read.
Hi is very good in lecture notes
I missed some solutions to exams which could have been useful, apart from this everything needed was on studentportalen.
The course literature was easy to read as it simply covered the lecture material in greater detail without being too wordy. Answers to most questions could easily be found there and the fact that it was freely available as a PDF via the University library was good.
I only studied the lecture notes and old exams for the exam
99% of the old exams provided lack solutions. A reference to the book is NOT a solution.
Very good lecture notes on Studentportalen.

Examination

19: Examinations (or old exams if you have not taken the exam yet) accorded well with the content of the course.

Answers: 38

Answer options: Median: 4 Mean: 4.2 / 5

0. Do not know/not relevant/do not wish to answer	15 responses	37%	
1. Not agree at all	0 responses	0%	
2.	0 responses	0%	
3.	5 responses	12%	
4.	9 responses	22%	
5. Fully agree	9 responses	22%	

20: What was the degree of difficulty of the examinations? Answers: 38

Answer options: Median: 4 Mean: 4.2 / 5

0. Do not know/not relevant/do not wish to answer	16 responses	39%	
1. Very easy	0 responses	0%	
2.	0 responses	0%	
3.	4 responses	10%	
4.	10 responses	24%	
5. Very hard	8 responses	20%	

21: Comments related to examinations Answers: 11

This exam was pretty much like all other previous exams.
Svårt men enligt förväntan, rimpliga frågor.
It would be great to have even more solutions to exams to study.
Don't know if problem 2 was correctly formulated
Facit som ligger uppe till gamla tentor är väldigt dåliga då de endast refererar en till att kolla på andra uppgifter. Skriv ordentliga facit till gamla tentor.
after project i had only 3 days to prepare for exam. I wasn't able to prepare well for it.
Have yet to write the exam, however the degree of difficulty for the question require to pass in previous exams I have seen have not appeared unreasonable.
I enjoyed preparing for the exams, as mentioned earlier, all old exams could have had answers. I don't think they are too hard or too easy, but on some of them there might have been too many proves to finish within the time of the exam maybe.
the project did not help with the exam,a lot of work for the project that took time away from studying for the exam!!
It was very much appreciated that this year's exam only required 80% of [G] questions to be correct, whilst going through old exams it felt like it would've been very easy to make a small mistake and failing the exam due it. The small formula collection at the start was also a nice addition. Green's formula could be added to it as its derivation isn't part of the course as far as I know and wouldn't be a typical exam question.
Did we ever define the energy norm properly? Not in the lecture notes anyway.

Project

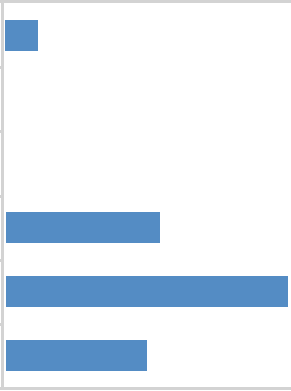
22: What was the degree of difficulty of the project?

Answers: 39

Answer options:

Median: 4 Mean: 4.0 / 5

0. Do not know/not relevant/do not wish to answer	2 responses	5%
1. Very easy	0 responses	0%
2.	0 responses	0%
3.	10 responses	24%
4.	18 responses	44%
5. Very hard	9 responses	22%



23: Comments about the project

Answers: 16

The project driven approach to the course is really good and really makes you keep up with the course. A better introduction to FENICS would be appreciated maybe another third lab where you actually was supposed to try out some more capabilities of FENICS. If you say that we should start with the project as soon as possible, you should also have it uploaded already. It is also a bit strange when you first say that there are hard headlines for the project and then accepts half done submissions widout theory and stuff like that.

Mycket svårt, man behöver lägga mycket tid på projektet. Gillar utmaningar så är nöjd med svårighetsgraden. Men projektet förtjänar 5 hp i sig själv.

Sadly, due to some other particularly demanding courses, I have not had the time to work on the project to any significant degree yet. I hope to be able to finish it in time over the holidays.

I think the project was very hard which I guess is fine but I think it was too big also. Right now me and my classmates are working on the things that needed to be fixed in part B as well as finalising part C which takes a lot of time. It would have been better to have smaller projects (maybe not so many tasks in each part) so that we could be done with it the last week with classes. Then we could spend this time studying for the exam.

Part B felt quite a lot harder than the other two parts.

Intressant projekt. Bra att lärarna fanns tillgängliga eftersom vissa moment var svåra.

It was one of the most interesting thing i did in my life but it was very hard to understand. May be i am not that good in math that's the reason but it was fun.

Inte rimligt med ett sådant omfattande och tidskrävande projekt på en 5hp kurs med tentamen.

Certain parts of the project have provide some difficulties where it is hard to conclude whether the results computed are correct or not, often some small mistake in choice of constant producing wildly

different results. Also having never used Python before presented some difficulties with the last part of the project, however the provided Python code in the project was a great help here and made writing the additional part very manageable. Overall I think the project has been a great help in learning the material of the course.

Very relevant and giving pictures I could use to understand theory. The coding part was quite easy for me. Results analysis was more challenging but fun!

very interesting, it was the best part of the course

It took a few hours to work out how to install FEniCS on a PC, some people never managed.

I could not get my Fenics code to compile on the lab computers which had python 2.7 but it compiled when I used it in google collab with python 3. This took a long time to figure out. Perhaps another help session would be useful?

The Matlab part is hard, but doable. Then the horrible mess that is FEniCS comes in. This part is HORRIBLE to get to work on a regular, non-ubuntu laptop of your own. And if you want to do it on university computers, the rooms are locked for the last two weeks of December, and then is very buggy when you can actually access them. You might as well say that it needs to be done in the computer rooms. The lab-hours dedicated to this part are far too few. When you get it to work, waiting literal hours for one (of the more complex) runthrough isn't reasonable. A guide for anaconda would be helpful here too.

It is very big and not easy to understand all the time, but I do think that it helps with the learning process because you really have to work with the course material a lot. But it is very time-consuming.

The last part of the project felt a bit too complicated in the beginning since I have not worked in Python before, but with some help from teachers and classmates it ended up okay.

Coaching tips

24: What is the best piece of advice you would give a student taking this course another time?

Answers: 20

Instead of looking at other peoples code, Do It Yourself to learn, otherwise you miss the details. Depends on your coding/mathematics background, It takes considerable amount of time and it is challenging, be aware. Try to study at least your previous lecture notes before you go the next lecture.

Take use of the book. Useful explanations and MATLAB-scripts are found there.

Start with the project as soon as possible, get familiar with fenics before the last part of the project, learn alot and have fun!

Lägg mycket tid på projektet.

The course content follows the book very closely. The homework exercises in the book are also very

helpful.
Do the project in time.
Projektet tar tid. Gör labbarna.
Attend the lectures, they are very helpful and when stuck on the project, then look to the book for guidance.
Compared to other classes I would say it is definitely worth reading the book. Also in comparison to other classes it is important to understand the content of the class first and then work on the project (in contrast to other classes where one kind of learns the content of the class while working on a project/assignments, if this makes sense).
attend all the lectures and labs and finish all the projects on time!
Start to solve the exams with the project will help to prepare for both.
Start early, talk to other people about the problems, have fun!
Keep up with the lectures and read ahead. The project, labs and lectures will be more giving.
Exam questions are based on seminar and homework questions which are based on lectures which are based on the course literature. It all ties together very nicely without any surprises.
The project is frustrating and time-consuming. Don't expect to be able to solve it yourself. More than half the exam will be proofs, and the rest derivations. Study those.
Attend as much as possible and do as much of old exams etc as possible.
The project is very time-consuming so start with it early.
Många bra exempel, härledningar och förslag på kod finns i boken.
Ask for help if you need it, the teachers will help you (not least when installing everything needed for the last project on your computer...). Begin with the projects in time and try to discuss the results with your classmates.
The book was very useful, both for implementations in the project and for the theory. The exercises in the book are quite similar to the questions in the exam.

Summary of free-text responses/comments for the whole course evaluation