

# Course evaluation for Dynamic Problems in Solid Mechanics (SE2134, 7.5 credits, VT2015)

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## Background

This was the fourth year I was responsible for the course. The overall structure of the course described in the previous evaluation was preserved. I will start with the problems identified during the third round (see the previous evaluation for further details).

## Problems and implemented solutions from the previous course round

### **Problem 1: Reduced quality of the seminar assignments.**

Since the attendance of the seminar was no longer mandatory, it reduced the average commitment of the students. Furthermore, since anyone in the group could potentially become a presenter, the level of the presentation was also adapted to the weakest student in the group.

**Solution proposed:** There is not an easy solution to this problem. We will try to upload examples of the strong presentation from the previous years to indicate the expected level of the presentations.

**Solution implemented:** During a lecture, we gave specific advice as to how to succeed in the presentation, how to build logic and what is expected from the seminar activities. As a result, the quality of the presentation was improved this year. In addition, the value of the seminar was increased as seen in the student's responses.

### **Problem 2: Project leaders were challenged by managing a large group of students.**

Due to increased number of students per each group, the project leaders were subjected to the additional stress. This was yet another factor contributing to the reduced quality of the seminar.

**Solution proposed:** We will devote half a lecture to the discussion around project management, delegating the tasks. I will use the material I accumulated while working in the projects with the industry.

**Solution implemented:** A part of the lecture was devoted to the discussion around group dynamics and meta-communication for resolving the conflicts. It was mainly based on the leadership course given at KTH. There have not been any indications that the group leaders

were challenged to an unreasonable degree. Again, it was one of the factors contributing to the improved quality of the seminar.

### **Problem 3: Students demand a problem collection.**

The only available problem collection with solutions is in Swedish and we decisively did not use it. It is also not extremely helpful for the set of the homework problems since it contains classical academic examples.

**Solution proposed:** As the number of requests constantly grows, we will append the existing problem collection to the Compendium and observe how it is used.

**Solution implemented:** The possibility of collecting the attachment with solutions was given to the students, but surprisingly it was used by only a few students.

### **Problem 4: Proficiency in ANSYS has drastically decreased.**

As ANSYS was replaced by COMSOL in the FEM course, some students are challenged by the practical question regarding the lab.

**Solution proposed:** Already now, we had to mix the lab groups to bring someone knowledgeable in each of them. Next time, we will make short discussion periods during the lab to let students discuss the issues together. This solution was suggested by one of the students.

**Solution implemented:** A number of students attended the FEM course I gave during autumn 2014 where ANSYS was introduced, and they coped well. The groups were mixed and it helped in resolving the problem.

## **Identified problems in the course, analysis and proposed solutions**

### **Problem 1.** Delayed feedback on the homework assignments.

Due to the work load associated with a licentiate thesis of a teaching assistant, the responses on the homework were delayed and the quality was reduced, in particular on the last one.

**Solution implemented:** Next year, we will develop a routine in which we will go through the assignment in two stages. In the first stage, we will identify the main problems and elaborate on them in the lectures and tutorials. This will provide even faster feedback and enrich the activities during tutorials, which is consistent with students' suggestions.

There are no other new problems identified this year. The questionnaire was changed in order to probe the view of the students on the teaching methods in comparison to other courses they experienced. The conclusions from this exercise are that the assessed quality of the courses are very individual and do not follow a clear pattern. Obviously, however, students react better to the courses with more distributed workload, which allows them to track the progress in their learning. This concept sits well with the present course structure.

## **Students' responses to course evaluation questionnaire**

Note: the original punctuation and wording are preserved.

## Course evaluation for Dynamic Problems in Solid Mechanics (SE2134, 7.5 credits, VT2015)

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Respondents: 20  
Answer Count: 17  
Answer Frequency: 85.00 %

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### Please, tell the reason why you decided to take this course.

Please, tell the reason why you decided to take this course.

Vibrations can be a huge problem in technical applications and a knowledge in how to calculate, identify and counter them seems like an integral part to engineering.

Dynamics is an important aspect of the problems I hope to help solve in the future. The course is highly recommended among students taking the Solid Mechanics track.

This course was in my list of mandatory courses that I had to pursue during my exchange year at KTH

Since I'm an erasmus student I had to pick up courses that could fit quite well the exams I was supposed to sit during this period in my home institution. This course was the most suitable for the case, and from the program had also looked quite interesting as well.

It was not really a choice, as I would have taken a similar course in my home university. But maybe I would have chosen this course otherwise aswell.

I am interested in dynamic, it can be really useful later in my studies or work.

We had to, but I also know it is something really important for a mechanical engineer

General interest in the content of the course

In Switzerland we have a similar course in EPFL for the third year of bachelor and I should take the same at KTH.

It's also a course that includes dynamics and knowing that I will do my master in robotics system control it is an important topic to know about.

I think it is important for my future career as an engineer. Also, it looked like a interesting and interactive course

Interesting subject and dynamics important to know as an engineer.

I have always been interested in dynamical problems and its affect on structures. I want to work with dynamical engineering in my future profession.

It was highly recommended by everyone from the 2nd year of the solid mechanics master track.

Vibrations are a significant problem in Mechanics.It is useful to know how to deal with it.

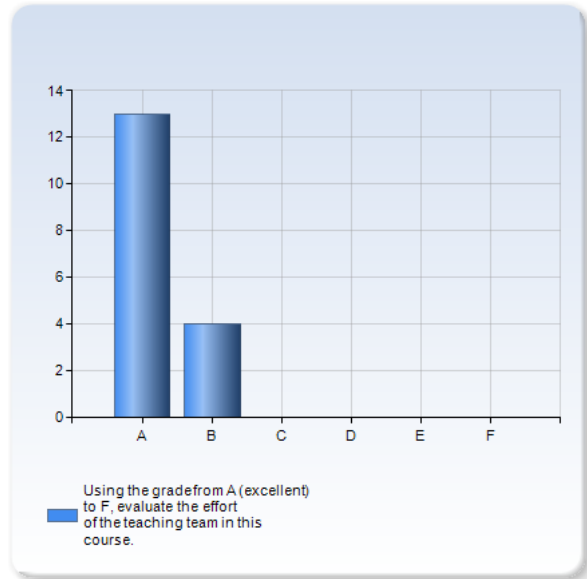
I'm doing thesis project on the flutter analysis in turbomachines. I wanted to know more about how to perform dynamic analyses with FEM softwares.

The description of the course showed that it's a useful course as a solid mechanics student, as it is deals with the dynamics problems, making it a good complementary to the previous courses.

Also the second year students recommended the course.

**Using the grade from A (excellent) to F, evaluate the effort of the teaching team in this course.**

Using the grade from A (excellent) to F, evaluate the effort of the teaching team in this course.	Number of Responses
A	13 (76.5%)
B	4 (23.5%)
C	0 (0.0%)
D	0 (0.0%)
E	0 (0.0%)
F	0 (0.0%)
Total	17 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Using the grade from A (excellent) to F, evaluate the effort of the teaching team in this course.	1.2	0.4	35.4 %	1.0	1.0	1.0	1.0	2.0

**Comment**

The teaching team was very helpful and forthcoming during the entire course.

Excellent.

I have already took Artem's other FEM course during both of them he has always been extremely open to help discuss anything. Prashanth was always very constructive and helpful for the assignments. I think both of the form a great team to help the students taking the course. I would like to thank them for there support! I think this is the most important thing that makes this course special, i think they should keep it up!

Artem you seem to pass a long time to prepare the slides. Prashanth, you seem to do the same to correct the homeworks, and are always here to help the students for any question.

Very good teaching team, teacher always doing is best to make it has clear as possible, assistant always very available for questions.

Always ready to help and answer the questions.

Artem is one of the best teachers I have ever seen. I could feel that he is really concncened about the sutudents learning, not only in delivering the content

Great job guys!

The layout on the course was great, but a recommendation would be to have some kind of rehearsing questions about the theory that would evolve for an example the home assignments.

The lectures were good and the assistance from Prashanth with the home assignments were excellent.

The teachers in this course always helped me solve the homework assignments. The lectures were prepared well with interesting questions.

Using the grade from A (excellent) to F, evaluate the effort of the teaching team in this course.

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## Please, list the previous courses which you think are needed to succeed in this course?

Please, list the previous courses which you think are needed to succeed in this course?

SE1010 □ Hållfasthetslära, grundkurs med projekt

SG1130 □ Mekanik I

SF1633 □ Differentialekvationer I

SE2132 □ Tillämpad elasticitet med FEM

Basic mechanics, maths etc. While I felt out of my depth in some parts of the course that concerned topics I have not studied (signal analysis for example) the difficulties were not insurmountable.

I guess my previous physics courses, fem course and fluid dynamic courses helped me throughout the course.

Basic solid mechanic courses

I don't know the equivalent in KTH, but a must have is one of Structural Mechanics, with the beams theories. Probably a course of General Physics, and the course of FEM can help (for the understanding of the matrices K and M for example).

I am exchange student and civil engineering, I don't have as deep mechanical background but it was enough.

-Basic physics,-Basic structures,-Algebra,-(Eventually FEM course of first period)

Dynamic system

hard to say as an exchange student.

Sound and Vibrations, Basic course in Solid Mechanics and numerical methods.

Mechanics 1 and preferably 2

Solid mechanics basic course (extra beneficial if elasticity with FEM and material mechanics are also completed)

Not required but highly recommended: Sound and vibrations, Signals and mechanical systems.

Material Mechanics, Mechanics - Dynamics

I'm an exchange student, so the courses are not specific names.

Elementary physics, Structure mechanics (until Classical beam theory), Basic FEM course. MATLAB would be a plus.

I would say essentially basic solid mechanics.

Applied elasticity gave it a better perspective specially in the vibration of plates part.

## Were the objectives of the course (as stated per course description) aligned with the course activities? Please, elaborate on your answer.

Were the objectives of the course (as stated per course description) aligned with the course activities? Please, elaborate on your answer.

Yes. All the moments described were included and required the student

In general yes. I am very happy with the course and feel I have learned what I expected to learn. Since the question asks to elaborate, here are some small remarks:

"- perform spectrum and random vibration analyses of an arbitrary 3D structure with finite element method;"

While I have learned how to perform such analyses in practice, I would feel uncomfortable applying these methods without further study. I feel the theoretical framework was discussed only briefly, and the potential pitfalls not at all. However I missed the lecture concerning this topic, which might explain why I feel it was less thoroughly explained. Perhaps in the future it would be good to supply some reading material on the topic, as it is not discussed in the course material (Timoshenko/Intro-Book) and ideally also a homework exercise.

"- modify structural design to avoid undesirable vibrations."

I do not feel this objective has been addressed sufficiently. Topics such as anti-resonance and isolation have been discussed, but not reinforced well enough. Ideally, I would like to see this topic expanded and perhaps combined with rotor dynamics to form a second course.

Yes, I think that the labs and the seminar were very nice activities to understand the course objectives.

The lectures and the seminars were totally aligned with the course description. I have no remark about that

Yes

I have no idea what was on the description.

Kind of

-Yes, the objective were clear.

Yes, we could see everything that was described in the beginning of the course.

WE could apply some of these knowledge in the homeworks.

Yes. The classes, the home assignments and exercises were all in alignment with the course description. However, the seminars were a little different from what I expected from the description. However, this wasn't a problem

Yes, it would be nice though to give the students a glimpse how companies as Volvo or others handle the problems dynamics can cause.

Yes it was. But it was lack of information regarding the seminar, regarding preparation, deadline and severities.

Yes, all criteria were fulfilled although the time requirement for the home assignments was huge. As such pretty much any and all other course /courses going on at the same time suffered from it. While the total amount of content might not justify it the time investment required to complete this course is more in line of a 9 credit or even 12 credit course based on the home assignments alone.

Yes, it totally corresponded to the description.

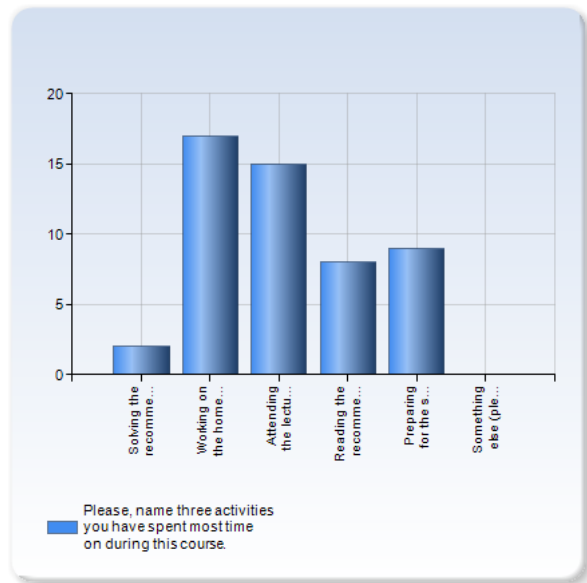
Yes, the overall activities were consistent with the objectives. But personally I expected that I would have more emphasis on lab-works (ANSYS).

I believe they were aligned with the course activities.

It is not stated in the objectives but a lab session about the transient analysis would have been welcome too.

**Please, name three activities you have spent most time on during this course.**

Please, name three activities you have spent most time on during this course.	Number of Responses
Solving the recommended problems.	2 (11.8%)
Working on the homework assignments.	17 (100.0%)
Attending the lectures and recitations.	15 (88.2%)
Reading the recommended material.	8 (47.1%)
Preparing for the seminar.	9 (52.9%)
Something else (please, specify)	0 (0.0%)
Total	51 (300.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Please, name three activities you have spent most time on during this course.	3.1	1.2	37.8 %	1.0	2.0	3.0	4.0	5.0

**Comment**

The homework assignments took an enormous amount of time (so much basically had to neglect the other course I attended in order to complete them). They did however give a good look into some of the problems one might encounter.

The work on the home assignments if from far the most time consuming.

The books were very helpful but also kind of expensive. I think with a good knowledge from previous classes the lectures are sufficient to solve all problems.

Please, name three activities you have spent most time on during this course.

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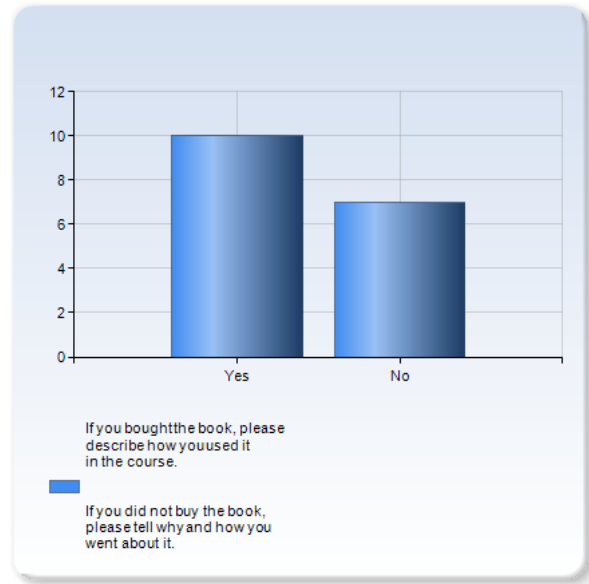
20 (51)

## Did you purchase the Timoshenko book?

If you bought the book, please describe how you used it in the course.

If you did not buy the book, please tell why and how you went about it.

	Number of Responses
Yes	10 (58.8%)
No	7 (41.2%)
Total	17 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
If you bought the book, please describe how you used it in the course.								
If you did not buy the book, please tell why and how you went about it.	1.4	0.5	35.9 %	1.0	1.0	1.0	2.0	2.0



Comment

Read the chapters before the lectures, used it to get ideas for homework solutions etc.

I used it to prepare for the lectures and as a reference when working on the homework assignments. During the course I have both hated it and loved it, but I am still using it which I guess speaks to its qualities. I find the Timoshenko book to be superior to the alternative reading material ("Structural dynamics and vibration in practice: an engineering handbook").

I used it to do the homework's some questions in the book were similar so it helped me to understand the concept of the question.

I used to clarify a couple of topics I was supposed to know quite well when solving the home assignments

I didn't buy it as the price seems too high for me, and I didn't really know if we would have used it. Maybe it was not the best choice, as some problems from the homeworks are almost done in this book (which I think is not really fair, it appears to me a bit as "pay and you will have less time to spend on the HA and get a good grade, don't pay and it will be the opposite"). I borrowed it once or twice to another students.

It was expensive but I could borrow from the library (4th edition) or I found it online too (2th edition). It would be better if the library has more copies from the book.

It was one more expensive book to buy. I thought the Dynamics of Solid book was enough

I used the "Dynamics of solids" booklet and eventually read a few chapters of the Timoshenko book found on internet.

I could not buy the book but i worked with a friend that had it !

Mostly during the home assignments. Sometimes to check doubts and one time to look for content for the seminar

I read before the lectures once in a while but didn't have the time to always do so. It was also helpful to read if a topic wasn't fully understood or for some homework tasks because the book had similar examples.

Read it

The Timoshenko book was a great book to use in this course. But some of the chapters which was recommended to use contained more equations than explanations.

The book was very expensive so I arranged to borrow it from a student in the 2nd year of the master track.

I used an online version but it was not the 5th edition.

I always used the Timoshenko book as the reliable reference. The calculations in the book are written in detail, which is not the case with many textbooks.

I have read the allotted chapters before the lectures, it has been very helpful as during the lecture I can focus on different details than the ones I focused on during reading the chapters.

If you bought the book, please describe how you used it in the course.

If you did not buy the book, please tell why and how you went about it.

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## What are the activities you benefited the most in this course? Please, reason your answer.

What are the activities you benefited the most in this course? Please, reason your answer.

The FEM labs were good for getting a link between the concepts and the numerical calculation methods. The homework really covered a large part of the course, which helped with the understanding.

In absolute terms:

The homework assignments, as that is what I spent most of the time doing.

In terms of learning per unit of time:

In the beginning of the course the lectures were great at paving the way for deeper understanding.

In practical terms:

The lectures regarding modal analysis and the labs as those lectures were very good at explaining the limitations of modal analysis and the labs gave some hands on experience with the software which I expect to spend most of my time once I graduate.

The seminar was a very good exercise to present and prepare slides as well as teach people how a physical phenomena that you do not know at all.

Homework assignments. They taught me more than a normal lecture on the respective topics

Probably the homeworks, as I spent a lot of time on them. Also the labs, as they tend to be close to a "real" situation.

I learned a lot how to use matlab.

I picked up a small Ansys knowledge but I wouldn't say that now I can solve an exercise alone.

I have now an overview of the different kind of dynamic analysis and I hope it is enough if I need something now I know how and where to search it.

-Homework assignments were the most instructive activities as they needed a good methodology and understanding to solve correctly the problems

The seminar and the homeworks.

The Seminar. I could see the concepts applied to real life situations. Before, the concepts were kind of abstract.

The homework because solving them you dove deeper into the topic.

It was working with the home assignments. Because of the discussion.

The home assignment and the seminar, because of the amount of time required to complete them to a satisfactory manner simply forced you to learn a lot.

Doing homework assignment and consultations with the teachers.

Homework assignments were tough but worth doing. The difficult problems helped to understand the principles.

The homework assignments.

They were varied and covered most of the course.

Also the help I got when I asked the teachers was invaluable.

## Please, suggest how the course can be improved (homework, lectures, tutorials, labs, seminar, etc).

Please, suggest how the course can be improved (homework, lectures, tutorials, labs, seminar, etc).

Nothing to really improve upon.

Homeworks:

The feedback for the first home assignment was great and I learned alot. The feedback for the last homework assignment was basically "check that your calculations are correct. If they are not, correct them". Hence the feedback in the final homework might as well have been skipped and original deadline pushed to the deadline for resubmission. Critically, I feel that completely removing the first submission in homework 3 (since the feedback was not useful) would have encouraged more students to attempt the guru exercise.

Lectures:

Some of the best lectures I've attended at KTH. No remarks. I very much enjoyed the questions.

Tutorials:

The tutorials were good but I feel they were out of place. They haven't helped me in the course so far. Perhaps that will change during the final exam. With that said, Prashanth is a great TA. Its just the format of the tutorials is perhaps better suited for courses with a more typical layout (e.g. 10 major subtopics in the course, 6 of which are on the final exam).

Labs:

Good. No remarks.

Seminar:

I think this part of the course can be changed to the better. One way would be to make it voluntary, which I think would increase interest from the students. However my most major suggestion is that the seminar is slightly expanded to include a "trial run". This trial run consist of allowing teams to present their seminar to one of the teachers ahead of the big presentation. The feedback from the teacher should be only regarding the presentation: Layout, presentation speed, length and not about the technical content. I think this would have 3 major benefits:

1. Raise the bar presentation wise, making them more interesting to listen to for other students.
2. Help develop presenting skills (which Artem suggested was one of the most sought after qualities in graduates from the solid mechanics track)

3. Helping to turn the seminar from a "must" (obligatory part of the course with little potential gain for most students) to something students can be proud of and thus be willing to commit to. In my seminar group everyone could have used some extra presentation practice as they were all quite/very unsure of their role.

I believe this change would turn the seminar from the weakest to one of the strongest parts of the course.

I think instead of having two ansys labs there could be a lab where vibration measurements are made of a reciprocating equipment and people can analyse it or graph it or somehow implement it in to one of the homework's, because I think that we had a lot of frequency analysis to understand and I hands on experience would help even more to understand.

Maybe more time could be spent on the last topics, since they are harder than the beginning ones. For the rest I have no remarks

Maybe having a summary of the equations or concept in the slides, that are covered in the book, but not in the compendium.

I enjoyed the labs as that was a realistic exercise and using Ansys is more important than solving eigenvalue problem with matlab. I would suggest more lab and less homework. If the homework would be more applied.

-Maybe the seminar should have in addition to the presentation a part needing a mathematical demonstration or application (with values) of the phenomenon in order to have something going beyond the basic understanding of it.

I think we can have only one Lab and have two seminar instead.

For teh tutorials we could have exercices more close to the homeworks.

I think the tutorial could prepare us better for the homework, or the homework should be broken in more probems with inreasing difficult. With just three problem the difficult between then were significant

It would be nice to have homework-similar task that are at an easier level to creep up to solve that kind of tasks.

The homework could contain rehearsing question (based on Timoshenko) before each assignments. The lectures were great because it always revolved around some problems in reality (like the Youtube videos). The tutorials could be more based on the concepts we learn and study during the lectures, like more detailed (if it is possible). The labs contained lack of assistants. The problem was that it took to long to get help and the effective learning concepts kind of decreased because each session was just on 4 h evolving two major problems. Therefore i would recommend at least 2 assistants during the labs.

The current setup works fine, only thing is that maybe the home assignments need some slight fine tuning because right now they require a lot of time leaving all other activities and/or courses behind.

More tutorials with explanation how to solve different problems would be helpful.

Seminar was rather unclear about success criteria compared to other activities. Feedbacks from the teachers on a weekly basis would be helpful to make it more fruitful.

I think some problems in homework lacked enough information to solve them (geometry of beam, etc), which was a little confusing.

I would say the labs can be improved a little bit. By having a more detailed document on how to perform the tasks, since a large part of the time spent on the lab was sometimes spent on how to do certain commands in ANSYS.

## Would you recommend taking this course to your younger colleague? If so, what would be your recommendation on how to succeed in this course?

Would you recommend taking this course to your younger colleague? If so, what would be your recommendation on how to succeed in this course?

Yes I would. I would say that you really have to read the material before each lecture and start the homework assignments in time, since they are very hard and time consuming.

Yes I would. My recommendation would be to take an easy course on the side. I decided to take the dynamics course in parallel with the "Introduction to Biomechanics" course, and I am a little ashamed to admit that I have completely neglected it despite it being (compared to most courses) an interesting subject.

Yes for sure, I think they should read the recommended.

Totally, the professor is highly prepared and very effective in teaching

Yes, as the dynamic problems are a part of the real world, and having some ideas about how to solve them is important. Don't underestimate the time you will take for the homeworks.

I would recommend it.

Read a lot from the Internet. I didn't find a book so useful as it was really theoretical. Good luck for the homeworks :)

yes, I would recommend to spend time on the home assignment

-I would most definitely recommend this course. To succeed: -Attend classes and seminars, -Read material, - Work hard on home assignments and start early on thinking on the problems

Yes, because of the support! I mean the teacher and the assistant are here to help and someone that is very interested in this topic can learn a lot.

I recommend to read the book and use as much as they can the help of the teacher and the assistant in order to learn a maximum.

Yes. Attend many lectures as possible and organize student groups to work on the home assignments. Trying to do all by yourself will take a considerable larger amount of time and increase the chance of mistakes

Yes absolutely.

If my colleagues were interested in dynamics along with solid mechanics (like myself), then I would recommend this course. The recipe to succeed would be that the colleague mostly focus themselves on this course. Because the time and effort on the course is huge compared with other courses. I had another course along with this one which also consumed a lot of time but when I tried to establish both, they collided with each other causing me to miss deadlines in both of the courses. Therefore I am taking this course all over again to get more knowledge and understanding in dynamics with respect to solid mechanics and not just learn to pass the course. Because I want to work with dynamical problems connected to solid mechanics in my engineering profession.

Yes I would recommend it the content is great and highly useful. I'd also issue a word of caution that if anything more than an E is sought then make sure you do not have any other demanding courses going on at the same time or personal matters to attend to during the entire duration of this course because something has to be abandoned in order to succeed.

Yes.

I recommend taking this course. Reading the Timoshenko book many times and the discussion with other students would lead to success in this course.

Definitely. I would recommend reading the chapters before the lecture and starting on the homework assignments as early as possible since they will need to ask questions and do and redo in order to get them right.

## What was the best course you experienced in your studies? Why was it the best and how was it structured?

What was the best course you experienced in your studies? Why was it the best and how was it structured?

Either the basic Solid Mechanics course, since it introduced me to a subject I find very interesting or any of the courses in Material mechanics I've read. I sadly can't remember how they were structured but from what I remember they were fairly standard. The layout of this course was however very good, since I really do think I learn better when I read the material myself. The lectures were good since they helped fill eventual blanks and they complemented the book well.

The intuitive way of looking at how people evaluate events (courses, jobs, etc) is to assume experience can be condensed into a "happiness index" as a function of time,  $h(t)$ . The "goodness" of the event would then be the integral  $\int h(t) dt$  from the start to the end of the time interval in question. Research (most famously performed by economist Francis Edgeworth) suggests that people actually evaluate the "goodness" of events by averaging the extreme value and the final value. This explains why most people will cite a course where they got the highest mark as the best course they took.

In the light of this, I do not feel comfortable answering this question - I do not believe the information to be actionable or useful. However, looking at the courses I've enjoyed the most (Physics, Numerical Methods, the degree project during my bachelor and FEM Modeling and Fracture Mechanics and Fatigue, Dynamic Problems in Solid Mechanics during my master's) they do share some common traits:

- Most courses were extremely free, allowing me to do what I like best - experiment without being constrained by someone else's (mostly the course personnel's) ideas bogging me down.
- Most courses favoured written or oral submissions of larger projects over a final exam with standard-type questions
- Most courses favoured computation by machine over computation by hand

Perhaps these very general observations can offer the insight you are looking for.

I can say that this course was one of the best as it doesn't have a "usual" learning or teaching concept. I find it very applied which makes it more interesting and understandable instead of writing pages of formulas on paper. Also the evaluation type is very good the student does not feel any pressure to pass the course (if you do your work and homework's properly obviously), which gives you the possibility to concentrate on the subject and not stress about the grade. Thank you very much to Artem and Prashant, I wish all success for your future teaching career. I am sure that we'll see you guys in even better places.

This is definitely the best course I've taken during my exchange program (1 semester)

Maybe a course of structural mechanics, back in my home university. The book was written by some teachers of the university, including the one giving the course. It had the theory in it, but also examples that were strongly linked to it.

What I didn't really like in this course (SE2134), is that I think I didn't learn so much during the lectures. I know it is the principle of this course, but for me a course where I have to read a book at home is not the best way to learn. In this case, I could just take some book and do the same, without being part of any course.

As I understand the question the course can be in Hungary. If not that ignore the answer.

My best course was Steel bridge designing. The lecture was enough deep knowledge and applied, usage of eurocode. The exercise was to design a whole bridge. It was interesting and contained static, stability and dynamic design too.

-In my year in KTH the best course was "SG2211 Vehicle Aerodynamics", the course was built as a discussion between the students and the teacher with a very clear "big picture" of where the lectures were leading to and a very good interconnection of all the phenomena on the overall aerodynamics. The teacher was also (just like in your class) asking questions on a regular basis during the class and it also had a more personal group work on a phenomena. The way the class was presented with a very clear guide line and the way to link up the classes together contributed a lot in building in progressive way a good overall understanding. I must also admit that the subject is also one of my favorite which obviously influenced my judgement on the course.

Dynamic Systems at EPFL. Because I like the topic and the possibilities that could come next. The structure was 2 hours of course and 1 hour of exercise during one semester (14 weeks).

Vibroacoustics. The exercises, lectures and examination were really aligned and there was a smooth progression in difficulty and in the learning process.

Hard to say. I cannot really compare business to engineering courses but this was definitely one of the best courses.

Linear Algebra, you were expected to read ahead before the lectures and during lectures the lecture notes (handwritten actually and not copied power points) were handed out so that you could easily follow the lecture and in the lecture notes small problems were included so that there was immediate practice of a segment right after it concluded. The included problems were small and only a few minutes were spent on providing the answers for them and if you found a section easy you could just read ahead in the notes and do more problems until you found something challenging. For me this was perfect since I have issues with pure power point lectures where you only listen passively, it's very much involuntary but I tend to have problem staying awake if I have to stay passive for prolonged periods of time.

Turbomachinery course at ITM School was structured well. It had weekly self-assessments on Bilda and every lecture was recorded.

I would say I am undecided on this question. I would say 3 courses:

\* This course, I liked the idea that most of the effort goes into the homeworks, which are the most important parts of courses, since during solving them you will get most of the understanding of the course; the only problem is that they took a lot of time taking study time from the other course(s).

\* Material mechanics, it was structured traditionally but the effort/time spent was distributed in a good manner.

\* Fracture mechanics, each week there is a new homework assignment, the assignment consists of only one problem that comprises what have been taught in the previous week.

My verdict is that I like the structure of the course but the load is a bit heavy