HT17 Course evaluation SG2804 Biomechanics of Human Movement

Metadata

Number of registered students	53	1 dropped course + 3 PhD students
Number of students with passing grade	53	+ 3 PhD students
Responses to course evaluation	55	(98% answer frequency)
KTH Programs		
TMLEM Masters Medicinsk teknik	28	
Erasmus/Exchange	10	
TTEMM Masters teknisk mekanik	7	
CMEDT Civ.Ing Medicinsk teknik	4	
TIPUM Masters Engin. Design (Ind.Prod.utveck.)	3	
CMATD Civ. Ing materialdesign/Mater.Design.Eng	1	
PhD student KTH	3	

How valuable was the course content to you?

Worthless	0
Of small value	0
Valuable	23
Very valuable	32

Comments

"While a bit worried that only gait was the main topic, later on it showed how this could be roughly applied to other parts" (Very valuable), "I had biomechanics before but really understand it now and how to use it practically" (Very valuable), "I got what I was looking for from the course" (Valuable), "Covers a lot if you want to work with biomechanics" (Very valuable), "As I tore my ACL, I found this very interesting to understand how to deal with it a bit better" (Valuable), "Interesting to know. Will see what happens in the future" (Valuable), "(*trans*) One got to learn what is behind biomechanics and how it is applied", "Valuable in the way as in interesting but not very valuable for homeworks" (Valuable), "(*trans*) Good with tasks so one had to think a lot themselves" (Very valuable), "The beginning of the coures was good explained, but the end was rushed. It went by too quick!" (Valuable)

How interesting was the course content to you

Not at all	0
Not much	0
Somewhat	8
Very	46

Comments

"Interesting but difficult, since I don't have deeper background in this area" (Very), "Then there was all the extra stuff that was cool" (Very), "It provided in-depth information on the subject and was challenging enough" (Very), "It would've been interesting to study other muscle groups, especially upper body such as shoulder/back muscles" (Very), "I think it is a very interesting topic" (Very), "After learned something from lecture, we can analyze it in OpenSIM" (Very)

I have learned a lot...

Do not agree	0
Disagree somewhat	1
Agree somewhat	15
Agree completely	38

Comments

"First time in Biomechanics -> I'm interested now" (Agree completely), "I had taken another similar course so I had some knowledge in advance but I still learned a lot" (Agree completely), "I was basically the parimary target student of the course, so..." (Agree completely), "Feel like we haven't even gotten super deep too" (Agree completely), "There was too much content to be seen in only one period" (Agree somewhat), "(*trans*): I think that one learned a lot and got a good thorough understanding but I would have liked to understand more what happened when one changed/varied things in the labs" (Agree somewhat), "(*trans*) I learned more about how muscles work and affect different motions", "The end was harder to understand" (Agree somewhat), "about muscles and function but also OpenSIM which I value" (Agree completely)

There were enough lectures of a good scope for me to learn the material...

Do not agree	0
Disagree somewhat	3
Agree somewhat	25
Agree completely	27

Comments

"Too much things in the HW, we did not talk about in the lecture" (Agree somewhat), "Too many projects, could be enough with 4 projects and more lectures" (Disagree somewhat), "Could have been more lectures on physiology" (Agree somewhat), "Explanation of the force-length/force-velocity curves could have been even more explained in class" (Agree somewhat), "It would have been interesting to focus more on the study of parameters after/before assignments, same way we spent quite some time studying gait" (Agree somewhat), "I would really have liked lectures/tutorials where you work with the HWs and can ask questions to instructors" (Agree somewhat), "Since some of us didn't do the medical engineering bachelor or we are in our first master year and we didn't do the Intro to Biomech., I felt that there was a lack of guidance in the Matlab homeworks" (Agree somewhat), "The Matlab lessons need to be implemented as there are some persons (me included) that didn't have that much background with the program" (Agree somewhat)

Did the lecturer present the material in an interesting way?

Not at all	0
Somewhat	1
Rather interesting	7
Very interesting	47

Comments on lecturer/lectures:

"I loved the interactivity", "The first lecture with observations and later with the same was enlightening" (Very interesting), "I liked the videos & demos. Class participation also made it better, although the class was very reluctant" (Rather interesting), "Showing all different examples in real life is one of the best way to learn" (Very interesting), "I prefer the lecture of blackboard. I think it's more easy to pay attention" (Rather interesting), "(*trans*) I really liked how (Lanie) lectures, with both images, films and att (Lanie) shows a lot herself, on herself, etc" (Very interesting), "Really good lecturer!!" (Very interesting)

How do you generally rate the* guest *lecturers´ contributions to the course?

	AE: Optimization	SG: Orthopedic surgery	TA: Sports biomechanics
Poor	1	0	0
Not great	7	4	7
Good	38	24	30
Very good	5	23	14

Comments "A bit too much talk about study results in the lecture about sports injuries (TA)" (Not great), "The guest lectures showed very interesting applications of the course content" (G, G, VG), "very interesting bot too little time" (G, VG, G)

What is your opinion of the course's exam/grading design (i.e. group projects instead of final exam)?

Poor	0
Not great	1
Good	29
Very good	25

Comments

"Project before Christmas maybe a bit late, many students had left" (Good), "Presentation maybe earlier so it's not in the final week" (Good), "A nice change of pace" (Very good), "Good, but the groups could have remained the same for HW3 & HW4" (Good), "Learned a lot and worked durign the whole course!" (Very good), "Would be good to choose your own groups because lack of interest in the course are not the same for all people" (Good), "This is how more courses should be, projects and evaluation not written exams. Really good job" (Very good), "I liked the spreading of the workload. I would like feedback sooner i order to better prepare the next assignment" (Good), "Choosing team members by ourselves would be great, for assignments also (not only final project)" (Very good), "Particularly for a course on Biomechanics & Human movement, I think this is the best way to go as we learn a lot when carrying out the tasks asked in the project" (Very good), "Better way of learning" (Very good), "It would be great to do the (final) project during the course period. Otherwise it's quite difficult to do the project during the holidays as we all go home" (Very good), "The problem is that some of the homework were really stressful" (Very good), "Let us choose the group" (Good), "(*trans*) One learns in a totally different way and I think one has spent just as much time in the projects as one would have done to study for a final exam. I think it was a very good structure" (Very good), "I like this better than having an exam. It gives an opportunity to be graded based on the results of a study/project" (Very good), "The HWs took a lot of time since instructions were sometimes hard to understand, and new files were uploaded later, and files did not work" (Good), "Very hard to cooperate with some students. I did a lot of work" (Good), "(*trans*) It depends a lot on the group's competence and cooperation. Group projects are good but it can be difficult with time with exchange students and other exams. Some people sometimes work more than others" (Good), "Very good but has to be more evenly divided" (Very good), "I think I learned way more with the projects rather than doing an exam" (Good), "very good to have projects instead of final exam. Would have been good to be able to

What is your general opinion of homework projects?

Poor	0
Not great	6
Good	39
Very good	10

Comments:

What is your opinion of the final project?

Poor	0
Not great	4
Good	35
Very good	16

Comment on specific projects or general

"Spend more time on finding errors in OpenSIM than actuallly learning" (NG, G), "Challenging but rewarding" (VG, VG), "OpenSIM understanding wasn't so good and took a lot of time at home" (G, VG), "The timing in between and changing of deadlines, handing out the assignment made the planning a bit messy" (G, G), "I don't know how to change, but I'd rather the HW be focused on teh material than on getting OpenSIM to work" (G, VG), "Sometimes a little more information in the descriptions would have saved a lot of time and increase the quality of the reports" (G, G), "The aims of all the homeworks. The project was quite good but they were not described very clearly. This can be improved" (G, G), "Some homeworks were too difficult" (G, VG), "(*trans*): Time-consuming, a lot of swearing in Matlab" (G, G), "Perhaps one less project -> they consume a lot of time and it was hard to manage other courses" (G, G), "Maybe one too many HW, very tight on time" (G, G), "(*trans*) The first 2 had too much focus on programming, felt like one would have preferred to spend more time on report writing The final project was good but a better description of expectations is desired" (G, G), "(trans) Matlab (HW2) was a little too advanced for the time we had to work on it" (G, G), "It said that the final project should wrap up everything but it didn't feel that way" (VG, NG), "With a bit of guidance on the Matlab part, the workload would be easier to handle" (G, G), "I have learnt a lot from these projects, but the workload throughout the course has been quite intensive. A little bit more guidance on the HW would be great. Maybe it would be a good idea to have extra 'lectures' just dedicated to the doubts that may arise in each HW" (G, G), "Took very long time, workload was high" (G, G), "Instructions could have been clearer for the projects" (G, G)

What was good with the course?

"The lectures were quite interesting","Interactivity, teacher's enthusiasm", "The lectures were very interesting and I think it's good to let the class participate. I liked that (Lanie) demonstrated alot herself to further explain", "Good examples", "Lectures, guest lectures", "We had a chance to put all the theory into practice", "Interesting lectures, fun getting to know people ih the groups, interesting area of research", "Working in teams. Projects instead of exams", "Learned a lot of interesting things!", "Very good lectures. Interesting content. Really fun with the testing done on course participants (especially on M!)", "The anatomical and biomechanical analysis of everyday motions", "How enthusiastic Lanie is. You learn a lot more by having a teacher that is interested in the field", "The material was applicable + not all theory", "The hands-on working with OpenSIM", "Good feedback, great lectures", "Topic, teacher, new softwares, no final exam, chance to learn by ourselves with home assignments", "Always interesting topics, well explained", "The possibility to discuss about simulations and results", "The lectures were quite interesting. I also liked the way the course was organized", "I like the way materials were presented and the homework was very helpful that I've learned a lot through them", "Homework assignments was very educative", "You learn a lot and the teacher is great", "The content and the projects i general. VERY GOOD LECTURER :-)", "(*trans*) Interesting content", "Content and practical applications", "We learn a lot of things alone with the homework and project, this is really applicated", "Set up, projects, material", "I liked a lot the lecture by Stefan Gantelius", "Interesting new way of seeing mechanics (biomechanics), learned a lot", "The lectures as well as the content are very interesting", "The use of OpenSIM", "(*trans*) Your teaching and interesting content, fun/interesting with a lot of videos", "Modelling in OpenSIM, changing muscle parameters and studying their behaviour", "The amount of work Lanie puts into it, I was really motivated just by going to the lectures; the guest lectures were also quite interesting", "Interesting subject and good scope", "Lectures, interesting, activities (OpenSIM)", "The homework and lab practice help a lot to solidate the knowledge we gained from the class", "learned a lot, interesting", "All the courses were organized well and interesting", "A fun subject that you finally get to do some practical work for!", "(*trans*) Teacher -> good and pedagogic", "Can work with software (OpenSIM) to practice what we have learned", "The way you (Lanie) make the lecture, Karoliska visit, light-hearted fun lecture, interesting", "(*trans*) Homeworks, and how one learned from/during them", "Lectures", "Lectures, lecturer, first 3 HWs", "It was good to know how movements occur and being a student from a non-biology background it helped me to understand more", "the clinical examples and the Motion lab were really instructive", "Lectures were enjoyable, and this course has let me learnt how to use new useful softwares (OpenSIM) and reinforce others (Matlab)", "Asking the students in class to involve them and make them think urther about the material", "The lectures

What about the course do you think should be changed?

"Maybe one project less", "Deeper into OpenSIM basics. I could not even create a model", "Some of the smaller turn-in assignments seemed excessive among the homework", "OpenSIM course", "Better insight in OpenSIM", "More lectures, which goes through the hoeworks. I believed the homeworks were difficult and time-consuming", "The guest lectures could be more interesting", "Maybe choose groups by ourselves, many lazy students... OpenSIM to work on Mac", "Too focused on tedias (albeit simple) calculations & coding exercises in HW 1&2. HW 3&4 were however fine as they were more focussed on the actual course content", "Maybe less focus on numerical parameters in OpenSIM and more real-life physical results", "More focus on learning the material rather than Matlab and OpenSIM", "There should be a job visit and I feel like teh course should end before Christmas, i.e. having the final project instead of HW4", "I understand teh value of OpenSIM but I really want to scream when using it", "Should have more lectures in theories", "The 4th HW was presented a little late so there was no time for the final project until after break", "All the material should be provided at the beginning, like homework instructions and slides", "Probably decreasing number of homeworks from 4 to 3 (only 1 with Matlab) to deeply understand HW goals and analyze them better", "There are too many homeworks during the period. Maybe having half number of them but a bit more 'complex' could be better to organize work", "The actual procedure of the gait data acquiring & processing could be explained better", "I think the final project should be more clear", "OpenSIM should work better because having a MacBook was hard for this course", "A bit easier HW2 & find a solution for the OpenSIM crashing", "One less HW would be preferred. HW1 and HW2 could be merged", "(trans) more lectures in OpenSIM", "more explanation/help on HW", "Just the organisation in time for project and homework, and correction detailed of the HW (like physiological)", "I like it but peer evaluations may be relevant for this course (for each project) to make a better criticism for grading each individual. I don't think giving all group members same grade shows the right picture of understanding and effort put in", "Maybe reducing the HWs, maybe introduce quiz about important learning goals", "The lectures could explain the assignments a bit better, and be ore relevant", "Maybe the solution about homework should be given before", "(trans) Go in more depth about muscle parameters for homework", "Perhaps more TAs for the OpenSIM labs?", "Group division", "If the size of the characters in the slides can be a little larger", "really hard to work together in some groups. OpenSIM on more computers", "Maybe an exam will be more helpful for people to remember", "Sometimes the explanation of the homeworks were a bit vague", "(trans) Structure of the content and HW (the first 2 take a long time, depending on the group's Matlab abilities", "description of homework, sometimes we get a little confusion", "Define the homework task better, so students have less misunderstandings. Explain OpenSIM steps more precise, so students can focus on biomechanics content, not OpenSIM steps. I had the feeling there was too much focus on OpenSIM", "(trans) It took long time to get feedback", "The software OpenSIM took a lot of time and maybe another lab", "Last 2 HW, hard and too quick", "Needs more labs like the one at Motion sensing (Motorik lab)", "Only with a bit of explanation before the first 2

If you could give some advice to next year's students, what would it be?

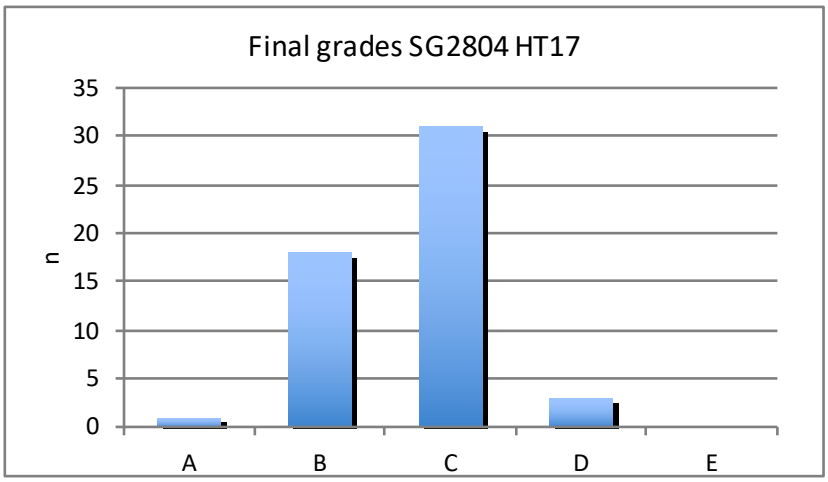
"Better start early with the homeworks", "Start early with the homework!", "To start right away with the homework as it takes a lot of time", "Brush up on your matlab", "Try to go to all the lectures", "Try to think a lot about everything you do, it's interesting!", "Make sure you have enough background knowledge for the homeworks", "Start working from Day 1","Work with assignments as soon as you get them!", "Know your trigonometry! Cross products & scalar products. Get the book (it's good :-) ", "Pair with another student to knows a lot of anatomy", "Go to the lectures and read the book every week", "Put effort in the course, it is so worth it", "Start work early", "Read the textbook well", "Attend all lectures -> they are great", "Spend time understanding the biomechanics before the homeworks!", "Attend this course", "Study a lot from the beginning", "Especially first 2 HWs are very difficult but try understanding a lot whilst doing them", "Attend the lectures", "Prepare yourself - you'll need to put a lot of time on the course. But it's fun :-)", "(*trans*) start with Matlab early", "Do not hesitate to work with other groups for HW if stuck", "Don't wait too long to simulate in OpenSIM as it tends to crash and it's better to get a PC and not a Mac", "Pick your final group members and prepare for the course because time goes fast", "Start the homework at the very beginning!", "Attend the lectures!", "(*trans*) learn from the book simultaneously", "Attend all lectures, prepare for assignments right away", "Spend a lot of time on OpenSIM", "Work hard and enjoy", "Be aware that HW takes a lot of time", "Thinking is more important in this course. The book does not have everything", "Start early with each homework, it takes time!", "(*trans*) Be active during the course", "(*trans*) Start early with the homework/projects", "The OpenSIM takes a lot of time so you need to prepare", "Ask lecturer if you have problems understanding HW", "It is a good course and do not procrastinate in project work", "Improve your Matlab skills", "Put interest and effort into every HW", "Don't look too far for information, most of it is in the book or the slides", "start early on

Other comments:

"Maybe some more work at Karolinska would be interesting to have, seeing how everything works in a lab is a very nice experience", "Give more examples of what changing different files in OpenSIM makes for difference. An explanation on why different parameters were adjusted in SO would have been good"

Course analysis

All 53 students passed (1 student dropped the course early). The grades were as below:



Conclusions after grades and course evaluations:

Students again felt the workload was too high. I plan to removed one (of four) projects for next year by merging HW1 and HW2 (this will make only 1 project with Matlab). I will also make only the first OpenSIM tutorial hand-in obligatory. This was one of the quietest groups I can remember, not sure why. I will also try to formulate the project descriptions more clearly. I will also require next year that for each project, the group is required to described each member's input to the analysis and report.