Course Evaluation SF3857 Convex Optimization with Engineering Applications

Respondents: 46
Answer Count: 20
Answer Frequency: 43.48 %

ESTIMATED WORKLOAD

On average, how many hour/week did your work with the course (including scheduled hours)?
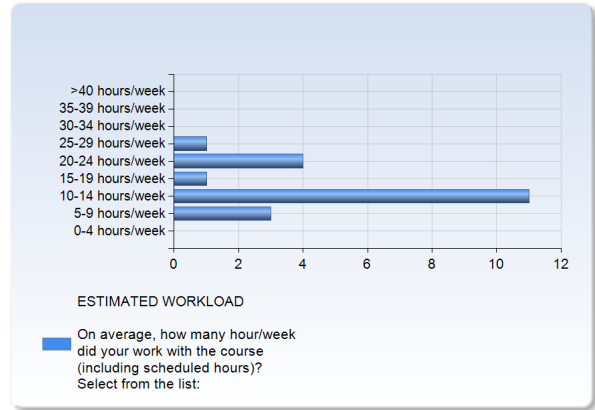
Select from the list:

ESTIMATED WORKLOAD

On average, how many hour/week did your work with the course (including scheduled hours)?

Select from the list:	Number of Responses	Cumulated Responses
0-4 hours/week	0 (0.0%)	0 (0.0%)
5-9 hours/week	3 (15.0%)	3 (15.0%)
10-14 hours/week	11 (55.0%)	14 (70.0%)
15-19 hours/week	1 (5.0%)	15 (75.0%)
20-24 hours/week	4 (20.0%)	19 (95.0%)
25-29 hours/week	1 (5.0%)	20 (100.0%)
30-34 hours/week	0 (0.0%)	20 (100.0%)
35-39 hours/week	0 (0.0%)	20 (100.0%)
>40 hours/week	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)

ESTIMATED WORKLOAD

On average, how many hour/week did your work with the course (including scheduled hours)?
Select from the list:

	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
ESTIMATED WORKLOAD								
On average, how many hour/week did your work with the course (including scheduled hours)?								
Select from the list:	3.5	1.1	33.2 %	2.0	3.0	3.0	4.5	6.0

Please comment on the course from this perspective:

The workload for this course is not too much. It usually takes me 4 hours to do the assignment every week.

Convex Optimization is a very important and useful subject in engineering, during PhD course, every students need to optimize something, sometimes need to put it in a maximum value and sometime need to put it in a minimum value.
the assignments in this course were very important and they took more time.

In total I spent 115 hours on the course, which I belive corresponds to 4-5 ECTS. Since it is a 6 credit course, I find I've spent a little too little time on the course. Still, when taking the course I did not perceive it as relaxed, and it did take some substatial time away from my research. All-in-all I think the burden was fair.

I think it was the effort is suitable for the amount of credits. Maybe a project for an additional 1.5 ects would be good

Good balance between workload and credits

Need more time to review notes and book to have a better understanding of the content.

Reasonable workload

Homeworks didn't take too much time and it was fine.
Also since there not a lot of information on slides it doesn't take too much time to read.

The last assignment was very time consuming where one had to develop an algorithm to solve optimization problem in MATLAB.

reasonable

The intended learning outcomes helped me to understand what I was expected to achieve

The intended learning outcomes helped me to understand what I was expected to achieve	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	0 (0.0%)	1 (5.0%)
1	3 (15.0%)	4 (20.0%)
2	7 (35.0%)	11 (55.0%)
3	9 (45.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
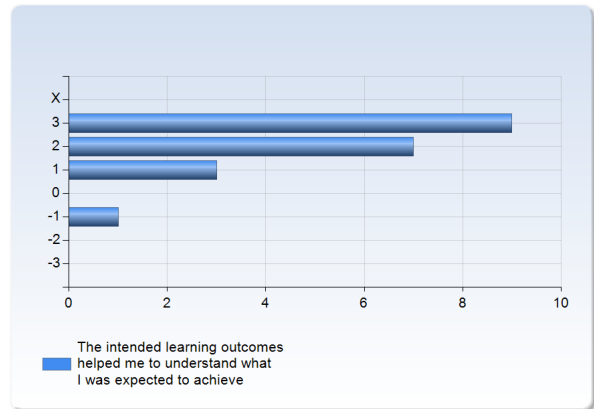
The intended learning outcomes helped me to understand what I was expected to achieve

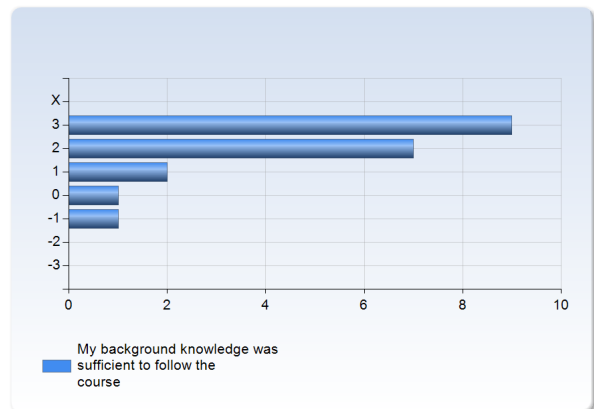|	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The intended learning outcomes helped me to understand what I was expected to achieve	6.2	1.0	16.9 %	3.0	6.0	6.0	7.0	7.0

I worked with interesting issues

I worked with interesting issues	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	1 (5.0%)	2 (10.0%)
1	0 (0.0%)	2 (10.0%)
2	7 (35.0%)	9 (45.0%)
3	11 (55.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
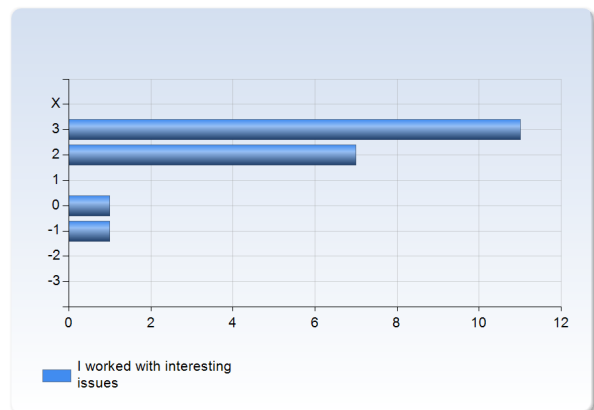
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I worked with interesting issues	6.3	1.1	17.2 %	3.0	6.0	7.0	7.0	7.0

My background knowledge was sufficient to follow the course

My background knowledge was sufficient to follow the course	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	1 (5.0%)	2 (10.0%)
1	2 (10.0%)	4 (20.0%)
2	7 (35.0%)	11 (55.0%)
3	9 (45.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)

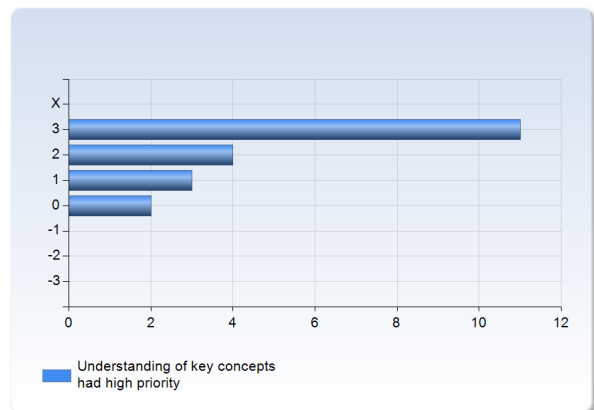|	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
My background knowledge was sufficient to follow the course	6.1	1.1	18.3 %	3.0	6.0	6.0	7.0	7.0

The course was challenging in a stimulating way

The course was challenging in a stimulating way	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	1 (5.0%)	2 (10.0%)
1	4 (20.0%)	6 (30.0%)
2	7 (35.0%)	13 (65.0%)
3	7 (35.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
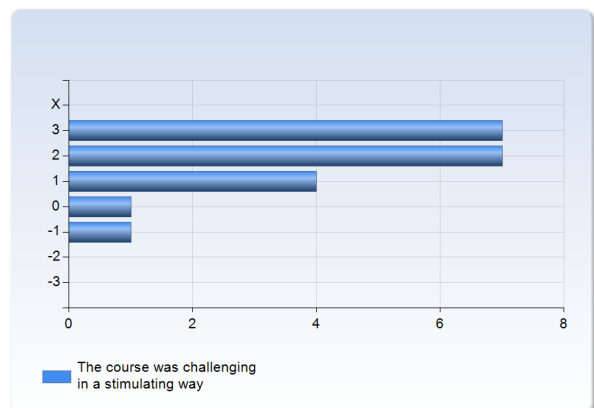
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The course was challenging in a stimulating way	5.9	1.1	19.0 %	3.0	5.0	6.0	7.0	7.0

Understanding of key concepts had high priority

Understanding of key concepts had high priority	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	0 (0.0%)	0 (0.0%)
0	2 (10.0%)	2 (10.0%)
1	3 (15.0%)	5 (25.0%)
2	4 (20.0%)	9 (45.0%)
3	11 (55.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)

Understanding of key concepts had high priority

	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Understanding of key concepts had high priority	6.2	1.1	17.0 %	4.0	5.5	7.0	7.0	7.0

I was able to practice and receive feedback without being graded

I was able to practice and receive feedback without being graded	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	2 (10.0%)	2 (10.0%)
0	3 (15.0%)	5 (25.0%)
1	9 (45.0%)	14 (70.0%)
2	3 (15.0%)	17 (85.0%)
3	2 (10.0%)	19 (95.0%)
X	1 (5.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
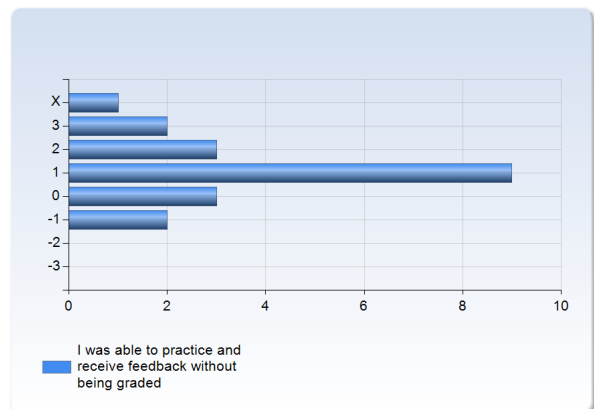
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I was able to practice and receive feedback without being graded	5.2	1.3	24.6 %	3.0	4.5	5.0	6.0	8.0

I was able to practice and receive feedback without being graded -

not sure about this.

The course activities helped me to achieve the intended learning outcomes efficiently

| The course activities helped me to achieve the intended learning outcomes efficiently	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	2 (10.0%)	2 (10.0%)
0	0 (0.0%)	2 (10.0%)
1	1 (5.0%)	3 (15.0%)
2	10 (50.0%)	13 (65.0%)
3	7 (35.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)

	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The course activities helped me to achieve the intended learning outcomes efficiently	6.0	1.2	19.5 %	3.0	6.0	6.0	7.0	7.0

I was able to learn by collaborating and discussing with others

I was able to learn by collaborating and discussing with others	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	4 (20.0%)	5 (25.0%)
1	2 (10.0%)	7 (35.0%)
2	5 (25.0%)	12 (60.0%)
3	8 (40.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
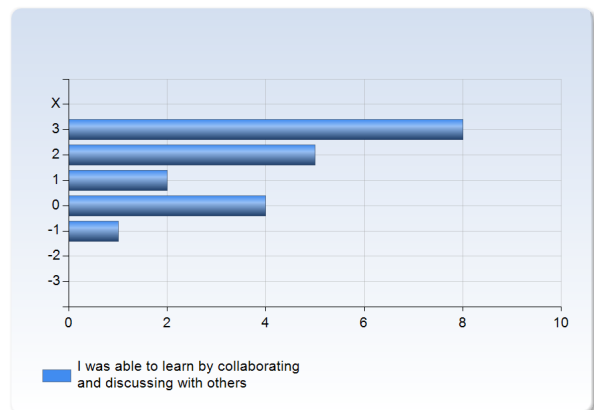
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I was able to learn by collaborating and discussing with others	5.8	1.3	23.2 %	3.0	4.5	6.0	7.0	7.0

The course activities enabled me to learn in different ways

The course activities enabled me to learn in different ways	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	3 (15.0%)	4 (20.0%)
1	6 (30.0%)	10 (50.0%)
2	7 (35.0%)	17 (85.0%)
3	3 (15.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
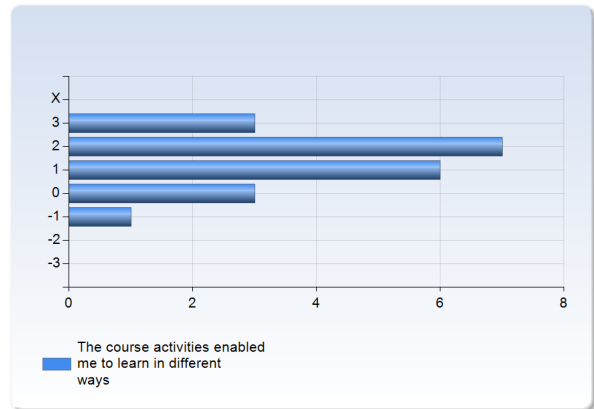
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The course activities enabled me to learn in different ways	5.4	1.1	20.3 %	3.0	5.0	5.5	6.0	7.0

I was able to learn from concrete examples that I could relate to

I was able to learn from concrete examples that I could relate to	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	1 (5.0%)	1 (5.0%)
0	1 (5.0%)	2 (10.0%)
1	6 (30.0%)	8 (40.0%)
2	4 (20.0%)	12 (60.0%)
3	8 (40.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
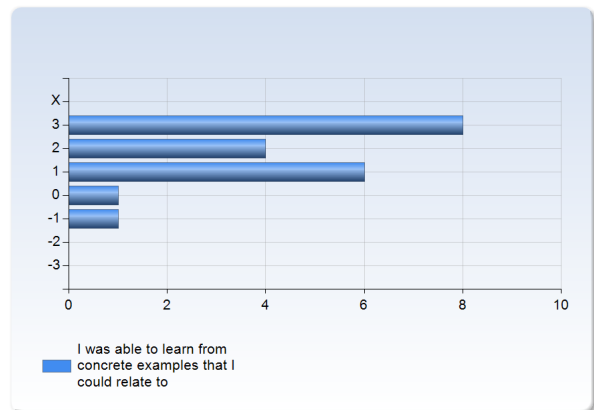
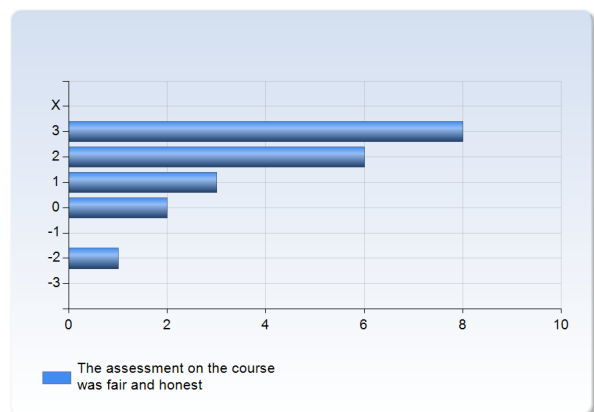|	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I was able to learn from concrete examples that I could relate to	5.9	1.2	20.2 %	3.0	5.0	6.0	7.0	7.0

I was able to get support if I needed it

I was able to get support if I needed it	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	0 (0.0%)	0 (0.0%)
-1	0 (0.0%)	0 (0.0%)
0	3 (15.0%)	3 (15.0%)
1	4 (20.0%)	7 (35.0%)
2	7 (35.0%)	14 (70.0%)
3	5 (25.0%)	19 (95.0%)
X	1 (5.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)
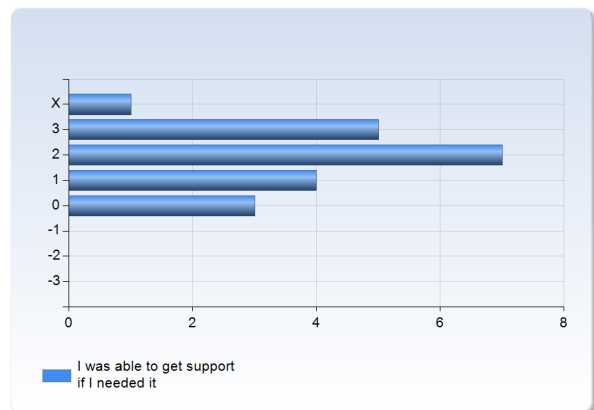
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
I was able to get support if I needed it	5.9	1.1	19.4 %	4.0	5.0	6.0	7.0	8.0

The assessment on the course was fair and honest

The assessment on the course was fair and honest	Number of Responses	Cumulated Responses
-3	0 (0.0%)	0 (0.0%)
-2	1 (5.0%)	1 (5.0%)
-1	0 (0.0%)	1 (5.0%)
0	2 (10.0%)	3 (15.0%)
1	3 (15.0%)	6 (30.0%)
2	6 (30.0%)	12 (60.0%)
3	8 (40.0%)	20 (100.0%)
X	0 (0.0%)	20 (100.0%)
Total	20 (100.0%)	20 (100.0%)

	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
The assessment on the course was fair and honest	5.9	1.3	23.1 %	2.0	5.0	6.0	7.0	7.0

GENERAL QUESTIONS

What was the best aspect of the course?
The course is both practically oriented and theoretically informed. From this course, I get to know how to analyze an optimization problem, whether or not it can be solved quickly, how to solve it in case of a big data size.
It has nearly all the necessary "tools"
Optimization is one of the core subjects in Operations Research. Linear programming is one of the topics that is easy to do in terms of numerical examples and can be practiced by anyone who can understand linear algebra and matrices. The best aspect of this course was numerical and engineering application example that I tried to solve them at final assignment.
The difficulty of the course could easily be adjusted by adjusting your own ambition. The learning puts much responsibility on the students.
all parts are equally critical
The exercises were challenging and interesting.
The course has a good mix of introducing the theory but also focuses on implementations etc.
the content of the course is very useful.
Homeworks
It was not an overflow of learning material so it was easy to focus and go deaper into topics that was particularly interesting.
Know how to formulate an optimization problem and the basic methods to solve it.
homeworks were new.
Collaboration and ideas-sharing to tackle the problems, and analysis of the final paper. Different approaches, different point-of-views, they were very helpful to internalize and assimilate concepts and understand the importance and idea behind the article.
The fact that we were allowed to cooperate with other students to solve our assignments and present research papers.
homework problems

What would you suggest to improve?

What would you suggest to improve?
Maybe it would be better to have a reference answer to the home assignment.
I think it's very useful to solve some numerical example during the course in class room.
1) Make one of the assignments into a team assignment. Possibly the first one. This encourages interdisciplinary collaboration. The final assignment (paper presentation) helps in this regard, but I think it would be valuable for the students to have on collaboration task in the beginning of the course too. 2) Introduce some more machine learning/model fitting tasks. The assignment with L1-/L2-regularized least squares was good, but I think many students would benefit from using it more. 3) Adjust the format of assignments so that any programming language of choice can be used. I prefer python, but some assignments required completion in matlab.
more simulation tasks
I think it would be better to have pratical examples for every topic. Sometimes the course lectures were to general and the nomenclature would change from lecture to lecture. Although I understand that the time was short if one takes into account the broad range of topics lectured. It seems to me that some details could be dropped by some example. It is a difficult balance between being accurate and conforming to the lecture time, I even listen to most of the Boyd lectures online which were easy to follow (he had much more time), and in this course some jumps were abrupt. But overall, I also dont know what should change, probably more lecture time would solve it, I don't know.
The tempo was too fast in some of Anders' lectures, maybe focusing more on fewer slides.
more examples and application in lectures
More homeworks on self-implementation of algorithms in MATLAB. More problems related to conic programming. Cover more content from the textbook.
Pay more attention on why and how the results to be presented the the lecture.
This course shouldn't be just for 1 period. It needs at least 2 periods. Cause in just 1 period the professors just try to finish the course and they don't go through the details. This course needs proofs and details, not just reviewing some theorems!! It's convex optimization and in other universities it is presented at least for 20 sessions not just 3 weeks!
The lectures and the homeworks were somewhat separated, so going to the lectures didn't help with the current homework. I would prefer a closer relation to the textbooks (indicating exactly where to find similar approaches/discussions of the topics at hand), in order to have a clearer view of the topic in the greater context, and the possibility to go deeper into the topic if one wishes.
more matlab or python homeworks
The course needs to be oriented more towards application based learning as the name suggests. In our case, it rather felt like we going too much into the details of the mathematics without getting the understanding of how it can be used and what is the purpose of learning a particular theory.
more derivations during the lecture

What advice would you like to give to future participants?

It is a very good opportunity to seize the main and most important concepts in convex optimization.

before you want to participate in this course, You should get a good knowledge of linear algebra and exposure to probability

Reach out to the other students!

some background knowledge is helpful for participating this course.
Besides, do preview before one course is efficient for following the course.

Go to the lectures, and read the book

Good book, read it

need some background in optimization to catch up with the intensive course. more hours need to review notes and book

A very good course. But it will not make you an expert on convex optimization. It will give key concepts based on which you can learn more beyond the course

Read before lectures

they need to study themselves and they shouldn't expect to learn a lot from the class!!

Start to work on the homeworks from day one, and confront with the others to compare approaches to the exercises.

The assignments can be really time consuming in general so discuss with your friends and start solving questions well in advance. Try to go prepared to the lectures by reading the slides and what was taught in the previous lectures. If you have time also see some lectures on YouTube by Stephen Boyd.

be prepared before lecture

Is there anything else you would like to add?

NAN

It would be good to have a similar course but also focus on large scale optimization, e.g., http://www.seas.ucla.edu/~vandenbe/ee236c.html, http://www.princeton.edu/~yc5/ele522_optimization/.

If some students don't have a background in Linear Programming, I would recommend that they first read "Linear Programming and Network Flows", by Bazaraa, Jarvis and Sherali, before you embark on the more advanced topics of Nonlinear Programming. The first chapters, in particular, give a mild introduction to convexity analysis concepts.

Thank you for a good course! :)

No.

As I said before, it could be interested to add some project for 1.5 ects,
or even a paper work that could take some months (optional) on the topic,
were the students could maybe collaborate in common interests