Course Analysis – AG2141 (Period 3, 2018-2019)

Course analysis carried out by Andrew Karvonen (apkar@kth.se) on 2019-05-29

Course Data

Course title	Course number
Urban Infrastructure	AG2141

Course credits and points distributed on exam forms	When the course was conducted
7.5 credits	2018-2019, Period 3

Course coordinator and other teachers	Number of registered students
Andrew Karvonen (course responsible) Naomi Lipke (teaching assistant)	25

Course Design

Briefly describe the course design (learning activities, examinations) and any changes that have been implemented since the last course offering.

This was my second year as course responsible and Naomi as teaching assistant. Naomi and I changed the written exam to a home exam and provided explicit grading criteria for the course as a whole and for each assignment. We also provided optional personal writing reflections for students to submit on Canvas but did not provide feedback. Other aspects of the course were unchanged. The course examination consisted of the following:

1. NÄR1 - Lectures, 1.5 credits, grade scale: P, F
2. TEN1 - Examination, 3.0 credits, grade scale: A, B, C, D, E, FX, F
3. ÖVN1 - Exercises/Excursions, 3.0 credits, grade scale: A, B, C, D, E, FX, F

The course was split into two parts. The first half consisted of classroom activities (lectures and discussion groups) while the second half consisted of project-based learning (a site visit and group project work). Scheduled learning activities consisted of the following:

Activity	Hours
Lectures	8
Discussion groups	13
Examination	10
Field trip	6
Project work	12
Group presentations	6
TOTAL	55

Student study time was estimated as follows:

Activity	Hours
Reading preparation for lectures and discussion groups	40
Preparation for examination	20
Group project work (report and presentation)	90
TOTAL	150

THE STUDENT'S WORKLOAD
Does the students' workload correspond to the expected level (40 hours/1.5 credits)? If there is a significant deviation from the expected, what can be the reason?

The estimated workload for the course corresponds to the 200 hours for a 7.5 credit course. On average, the students reported that they spent between 7 and 13 hours per week over the 9 weeks. This equates to 63 to 117 hours in total which is significantly lower than the anticipated 200 hours. Student attendance in class was consistent so the deviation between expected and actual hours spent on the course can be attributed to lower than expected work outside the classroom.

THE STUDENTS' RESULTS
How well have the students succeeded on the course? If there are significant differences compared to previous course offerings, what can be the reason?

The distribution of final grades was as follows:

Grade	Students
A	18 (72%)
B	7 (28%)
C	0 (0%)
D	0 (0%)
E	0 (0%)
F	0 (0%)

The performance of the students was significantly higher than last year with a similar distribution of As and Bs but no grades of C or lower. This is likely due to the change from a written exam to a home exam which resulted in reduced test anxiety. Also, all of the students were sufficiently engaged with the course as opposed to the previous year when a few students (3 or 4) put in minimal effort and received lower grades. It is also possible that the students were more aware of the grading expectations for the course due to the inclusion of grading grids.

OVERALL IMPRESSION OF THE LEARNING ENVIRONMENT
What is your overall impression of the learning environment in the polar diagrams, for example in terms of the students' experience of meaningfulness, comprehensibility and manageability? If there are significant differences between different groups of students, what can be the reason?

The students had a consistently positive impression of the learning environment and there was minimal variation in opinions. One student felt uncomfortable participating in class and expressing his/her opinion but this seemed to be an individual rather than collective opinion. Information on gender, nationality, and other student attributes was not collected through the student evaluations.

ANALYSIS OF THE LEARNING ENVIRONMENT
Can you identify some stronger or weaker areas of the learning environment in the polar diagram - or in the response to each statement - respectively? Do they have an explanation?

The majority of student feedback about the course was positive. The following negative feedback was identified:

– The students indicated that they did not receive feedback throughout the course (this was similar to comments from the previous year). It is not clear if the students were simply answering the stated question or if they would appreciate additional feedback. Two students commented on the lack of feedback on the optional personal writing assignments. The students received written feedback on the written exam in Week 9, oral and written feedback on the group presentations in Week 10 and written feedback on the group reports in Week 14.

ANSWERS TO OPEN QUESTIONS
What emerges in the students' answers to the open questions? Is there any good advice to future course participants that you want to pass on?

Several students identified a disconnect between the lectures/group discussions and the group work. Several students mentioned that the home exam and group project instructions were unclear. Several students felt that the home exam schedule could be improved (it was released at 9:00 on a Thursday to submitted by noon on a Friday, 27 hours in total). As a whole, they encouraged future students to prepare for lectures by doing the required readings in advance.

PRIORITY COURSE DEVELOPMENT
What aspects of the course should primarily be developed? How could these aspects be developed in the short or long term?

Based on the student evaluations and our impressions of the course, we intend to make the following changes for next year:
– Course Schedule: We intended to provide more time for the project-based learning and less for classroom work. Due to scheduling constraints that were out of our control, this was not possible. We will consider how we can combine the two course parts and include a mix of project work and lectures/discussion during the same week. This might also provide an opportunity to create more transparent connections between the classroom and project work.
– Optional Personal Writing Reflections: This was the first year that we offered these and only a few students completed them. We will consider how we can make this a more effective learning exercise next year.
– Written Exam: From a teaching perspective, the exam was much more successful than the written (in-class) exam in the previous year. The students were compelled to be reflective and to develop coherent arguments rather than reiterate ideas from the lectures. However, several students felt that the written exam schedule and length of each essay (500 words) could be improved. We will review the schedule and exam format for next year. We could potentially split up the home exam into discrete essays with due dates on subsequent weeks. This would also provide more consistent feedback to the students on their overall performance.
– Group Project: We engaged the Urban ICT Arena personnel more fully this year. In addition to the introduction and walking tour of Kista, they attended the student presentations and provided constructive feedback. They forwarded one of the student projects along to Ericsson for possible implementation in the coming year. For next year, we will contact them several months in advance and discuss how we can align the student projects more fully with their agenda.
– Guest Lecturers: We invited three guest lecturers (two from KTH, one from Linköping University) and will invite other individuals next year.

Course Evaluation Summary

Course	AG2141 Urban Infrastructure
Academic Year	2017-2018 Period 3
Course Responsible	Andrew Karvonen
Teaching Assistant	Naomi Lipke
Date of Evaluation	15 March 2018
Registered students	25
Surveys completed	24
Completion Rate %	96

On average how many hours/week did you work with the course (including scheduled hours)?
Mean 10.0, SD 2.9, Response Rate 80%

Statements

Disagree	Mostly agree	Neither agree nor disagree	Mostly agree	Agree
1	2	3	4	5

		Mean	SD	Response Rate (%)
1	The intended learning outcomes helped me to understand what I was expected to achieve.	4.1	0.9	92
2	I worked with interesting issues.	4.8	0.4	96
3	I regularly spent time to reflect on what I learned.	4.2	0.6	96
4	I explored parts of the subject on my own.	4.1	0.7	96
5	My background knowledge was sufficient to follow the course.	4.5	0.8	96
6	I felt togetherness with others on the course.	4.3	1.0	92
7	I received regular feedback that helped me to see my progress.	3.7	1.2	96
8	The course was challenging in a stimulating way.	4.2	1.1	92
9	I had opportunities to choose what to do.	4.3	0.8	96
10	I understood what the teachers were talking about.	4.7	0.6	88
11	Understanding of key concepts had high priority.	4.3	0.8	92
12	I was able to practice and receive feedback without being graded.	3.9	1.1	96
13	The course activities helped me to achieve the intended learning outcomes efficiently.	4.0	0.8	96
14	I was able to learn by collaborating and discussing with others.	4.3	0.9	92
15	The atmosphere on the course was open and inclusive.	4.8	0.8	96
16	I was able to learn in a way that suited me.	4.4	0.9	96
17	I understood how the course was organized and what I was expected to do.	4.4	0.7	96
18	I was able to learn from concrete examples that I could relate to.	4.7	0.6	96
19	I was able to get support if I needed it.	4.5	0.8	96
20	The assessment on the course was fair and honest	4.6	0.8	96
21	I was able to learn by trying out my own ideas.	4.1	0.7	96
22	I understood what I was expected to learn in order to obtain a certain grade.	4.0	1.2	96

Open Questions

Question 1: What was the best aspect of the course? (Response Rate 96% = 24/25)

- I really enjoyed our group project – we found a topic that was interesting for all of us and where we can bring in our expertise from different backgrounds while there were new aspects for all of us as well.
- The teachers were fun and open to the students. That created a perfect environment for class participation and inclusion. They were also very professional and active in the course topics.
- Lectures were incredible – a very dynamic lecturer giving an interactive class! Not boring at all, keeping interest and speaking with passion.
- I have never heard about urban infrastructure in school before. Everything was very new for me. Thus for me the best aspect was to have short entertaining introduction in this topic.
- That it gave new perspectives of how to view urban infrastructure and development related to this.
- Good atmosphere in class.
- The honesty and accessibility of Naomi and Andy: very easy to talk to, great interaction, making it fun to participate.
- It is super interesting and included aspects that are often not touched upon that much in previous courses.
- History of infrastructure and sociotechnical impacts
- Influence of technology on society and vice versa (and the wasy to look at technology)
- Was not theoretical but based on facts and relateable.
- The group project
- Lectures
- The lectures when we discussed key topics of the readings.
- The literature was very interesting with a high academic level. The different themes were well organized with a specific purpose. Furthermore the guest lecturers were very exciting to listen to!
- I enjoyed the layout of the lectures and how interactive they were.
- I liked the discussion and interaction.
- The lectures were fun, the teachers are nice, great discussions.
- I like courses are not so technical and focus on contexts, that's a good variation and which mostly more important to sustainability than just efficiency.
- We were given the freedom to develop our own concepts for the group project.
- Good literature that was connected to lectures. Usually, in my experience, you get a lot of articles to read but with more time. Then it is discussed at a seminar and you barely remember which article is which. This class had a much better method!
- Exciting study visit.
- I also enjoyed all the lectures I went to!
- The participation and the class discussion that happened throughout the course really helped to solidify the ideas and giving a real-life examples that we could relate to. The openness to new ideas by both Andy and Naomi was very valuable and made it fun to learn.
- I think that the readings were very interesting especially the ones with a historical perspective. I learned a lot when I did the readings and tried to make connections in the home exam.
- Inclusive environment → felt comfortable when sharing ideas
- Background→ touching a bit of history placed things in a certain context that was very educational.
- Examples → practical projecets in which to see how the course's concepts were applied.
- Teachers were always available and constructive when a query came up. → helpful feedback.

- It tackled very interesting concepts and broadened the perspective on infrastructure and on socio technical approaches.
- The themes discussed through readings and class were very enriching.

Question 2: What would you suggest to improve? (Response Rate 92% = 23/25)
- No comment on our short homeworks in the beginning. (response to question 7)
- Didn't like my group project but course discussions were great (response to question 14)
- Structure the reading material more – it was sometimes stressful to do the reading during the week – it would have helped if I could schedule it more the way it suited me. The reading materials all were on Canvas early enough but I couldn't see which ones were for which lecture.
- Make the links between the lectures and the project clearer at the moment the two parts are quite separated to me personally.
- It can be a little more challenging, like doing a small [unclear word] of the articles and then debate in class. Maybe assign different articles with different points of view from the same topic and then divide the class and create an actual informed debate, writing on the blackboard the pros and cons, and putting post-its and making it more dynamic. (In some of the lecture classes, change from the typical oral P-point presentations lecture.)
- I was not comfortable with the ICT need in the project. Urban ICT Arena is very special in its approach and another project theme such as green infrastructure or [unclear words] would be great. But at the same time it's nice to cooperate with that kind of testbed. Maybe it exists with green infrastructure testbed solutions?
- I am missing some reflection on our reading responses we wrote about the texts.
- During the workshops, I would insist more on the final "sum up" after every workshop. It would make it much more competitive.
- To not give the feeling of that you have to say something "smart" in class or to give the feeling of being judged if you are not a certain type of person. I didn't speak that much, but I was also not comfortable doing so. Not all people want to speak, some like to listen. The problem for me was that I didn't feel comfortable to speak in the class, because of the risk of sounding stupid and judged because of that. So a tip is to try to create a better environment in the class, it is not a competition.
- Content / Quality of some articles.
- You should get the feeling to acquire at least some technical knowledge by reading them.
- Put a document on canvas at the beginning of the course that contains which specific articles should be prepared for which specific lesson.
- Announce homeworks early enough.
- Provide a good optical versionof the articles – avoid book scans.
- I would cut back a bit on the historic part or make more links with present.
- I got the feeling that the first two weeks while interesting were a bit disconnected from current reality and it was hard to extract [unclear word] information that would be applicable today.
- I don't know…Enjoyed the course a lot actually.
- The project seemed a bit removed from the infrastructure aspect of the class. Maybe too focused on ICT.
- Possibly combine lectures and group project to be simultaneous.
- Extend the group project (longer and more pages)
- Feedback on our reading assessments.
- Some of the questions for the home exam were too complex to answer with 500 words. It would be more effective to write an individual extra assignment or only have 2 questions that you could discuss in depth.
- Possibly more scheduled hours in a week, but this is only a minor suggestion.

- Some of the lectures (e.g. Björk) I didn't really understand the relevance / could have been condensed.
- It was a little sad, that Harald Rohracher came over for us and there was nothing new about the topic because of the mandatory readings. I felt sorry for that.
- I expected a little more specific knowledge on several topics. For example I was curious about green & blue infrastructure since it wasn't addressed in my studies yet and it's quite interested – but we didn't really learn about that. That was sad and a little disappointing.
- More time for the home exam, maybe two days instead of one.
- The group project was/is a bit unclear. I still am not sure what to do for a specific grade. My group did not include a new technology e.g. drones and it feels like that might have been a mistake. When told to include this, it felt a bit too late to change our proposal.
- Extra literature for Joe Mulligan's lecture came too late. I would have liked to read them to come up with questions.
- More wide range of examples of development types from outside of Anglo-sphere would have made a good and fun discussion by giving us on how different cultures/society operates and perceive infrastructure differently.
- The group project is a bit unclear.
- Make slightly clearer what concepts are required for the home exam.
- How the referencing + writing part of the home exam is graded.
- The tour of the U Building was unnecessary and a bit boring – the water infrastructure in Kenya could have been done much better.
- I would prefer to have an individual assignment and written exam rather than a home exam as the time given was too little and it was very difficult to do in just 27 hours.
- More readings: I felt that the workload for reading was very minimal and so the course would have been more rewarding had there been more readings.
- A better explanation of what is expected from us on the exam. I felt that the assessment was very vague and so I lacked a clear understanding of what is actually expected of me.

Question 3: What advice would you like to give to future participants? (Response Rate 92% = 23/25)
- Really do the readings during the semester even if it might be a stressful week but reading all of them just before the exam will be even more stressful.
- To read the articles and ask the teachers. To [unclear word] think out of the box and propose different approaches from the articles.
- Read the mandatory readings they give good perspectives and open the [unclear word] they may have in the [unclear word] to a higher level.
- To focus on presentation first. We were working hard on the report and later realized that we need to transform our though in the presentation in a different way.
- To not compare yourself to others.
- Engage as much as you can and participate actively. It's not common to have teachers with as much added value (a lot of teachers at KTH ask for students' ideas but then don't really react, criticize or challenge them…)
- Go to lectures. Reflect. Win. (and read the literature too)
- Summaries the reading with bullet points just after reading them.
- Read the articles.
- Think big with the project.
- Start early on the home-exam.
- Read the articles and try to connect them with your own experiences.
- Prepare for the home exam. Read everything and more beforehand.
- To attend the lectures and don't forget any readings, it will allow you to participate and get more out of the course.
- Keep on top of the reading.

- <u>Understand</u> the first readings.
- Spend time reading the first couple of article given out, they form the basis of the module. If you understand the concepts in these articles, it will greatly help with the rest of the module.
- Read the articles assigned to lecture before the lecture, it makes the lecture more interesting.
- Be open to new ideas and read up a lot of development projects world-wide and trying to relate it to the concepts and class discussion. It made it more fun and made you think outside the box.
- Try to get feedback at an early stage.
- Focus on the literature provided by the teachers (it is very interesting) and try to figure out how the readings relate to each other.
- How class discussions help a lot for the home exam and personal reflection → participate!
- Lot of reading → be up to date!
- Start studying early and take notes of everything
- Be collaborative and discuss
- Read all the papers multiple times with summaries.
- Go beyond the ideas of the readings, take those as a base starting point and not the end goal.

Question 4: Is there anything else you would like to add? (Response Rate 84% = 21/25)
- I really found the reading assignments helpful, it could even have been possible to do one or two more in order to practice for the exam – maybe give fewer texts to read in exchange. Feedback on one of them could have been helpful for the exam as well. *(note: the student seems to be referring to the personal writing reflections, but wrote reading instead.)*
- I was really glad that I could follow the course that well even though it was intended more for engineers than urban planners so thanks for that.
- Thank you for the course!
- Maybe changing the scope of the projects and give more specifications. Like: don't focus on the operationalization (or yes). Perform a business model (or not).
- Open the debate to an international approach → urban infrastructure in developing countries
- I really liked the course! Totally recommend it!
- Thanks, was a real pleasure to attend this class. I must say it was of the 3 courses I had this period, the only one I get to. Not because of mandatory participation, thanks to a great content with dynamic approaches! Congratulations!
- Thank you for the course!
- I really liked the content of the course, but I didn't like to hear that a certain grade was bad as we got to hear for the home exam.
- divide the home exam – e.g. 2 essays to write (in 10 hours)
- following week: 2 other essays to write (in 10 hours)
→ timespan provided was unlucky → as no one dares to write 2 articles on the second day (e.g. between 7 a.m. and 11:30 a.m.)
- The project part was interesting but I felt like the focus on the ICT Arena was a bit too "technological" and not "infrastructural" enough.
- I was a bit disappointed that the project was focused on ICT: as ICT are not a real part of the course(and I have not studied them before), I had the feeling that what we said was a bit "ICT are going to save the world" without any real knowledge about it.
- Thank you! ☺
- The presentation should have been closer to the deadline of the project to be able to collect more data. Although it is also nice to get feedback in good time and work on the project.

- Really enjoyed the course!! Like the semi-entrepreneurial aspect of the course.
- The study visit was really interesting. I enjoyed it a lot!
- I loved this course
- N.A.
- Byte till tunnelbana mot: Ropsten. [This must be a joke]
- N.A.
- Overall, I'm very happy with this course and I always looked forward to coming to class listening to new ideas. Thank you very much, Andy and Naomi!
- Great teachers!
- Fun course and fun teachers – would totally recommend the course!
- The comments on the exam are useful for improvement
- Best teacher in the master until now.
- I thought the ICT project didn't add much (if any) to my learning. Although Andy expressed / stressed otherwise, it felt very tech-driven.