COURSE ANALYSIS, graduate course

Postgraduate Program, School of Electrical Engineering and Computer Science, KTH

An asterix (*) denotes non-compulsory data.

Course data

Course name	**Network Calculus**
Course ID	EO 3330
Credits	10
Time period for course	**October 2021 – March 2022**
Teachers	James Gross, Hussein al Zubaidy, Jaya Champati
Classroom hours	~ 50
Nr of registered students	8
Examination rate, in %	70 %

Goals

Global course goals	Introduce students to modern queuing theory in the context of communication networks. Allow them to employ the learned skills and tools for a small research problem in the context of their day-to-day work.
How the course design helps fulfill these goals	Course was split into a lecture part (where the basic skills were acquired) and a project phase where the skills could be employed.

Pedagogical development - I

Changes made since previous time course was given	• The main change in comparison to the last round (in 2016) was to incorporate a block on Age-of-Information analysis. This required to make room in the course for 3 new lectures, and lead to a considerable redesign of the parts on traditional queuing systems, network calculus and effective bandwidth. • In addition, one unit was also devoted to martingale analysis, which added to the necessity to reduce the other material.

Course evaluation; comments from students

Based on the questionnaire used at the Division.
If the course has less than 10 students, the questionnaire can be
replaced by informal discussions.

Evaluation response rate*	Course questionaire, 3 students responded.
Overall student view*	Postive overall view of the course by the students. The feedback is a bit diverse on the specifics, but the overall rating of all student feedback is positive with respect to the overall course.
Positive comments	• Students learned a lot. • Project phase of the course was appreciated. • AoI part was appreciated. • Also the introductrory parts to Queining Theory and Net Calc were mentioned positively

	• Homeworks were considered helpful and positive • Structure of the course was mentioned positively
Negative comments	• Two students indicated that the lecture part of the course was too packed. • The hardest parts of the course were stochastic network calulucs (mentioned by two students). • More material on AoI optimization was also mentioned as potential improvement area.
Pre-knowledge, comments*	Although not all students had the sufficient preknowledge, none of the responded that this was a problem (explicit question in the evaluation questionaire).
Course design, comments*	Students liked the split into a lecture phase and a project phase, but recommend to include one or two more lectures to make the course slower.
Literature, comments	See above
Examination, comments	No comments.
Particularly interesting* comments	-

Course teacher's impressions from the evaluation

Comments	The evaluation by the students is fair. We ars still working on the right set of lecture items to include, and it was foreseeable that this years edition would get more densely packed.

Course teacher's summary

Overall view	The intention of the course is to provide an in-depth overview of methods in contemporary analysis techniqies for queuing systems. This is by nature a challenging topic, as many of these methods require an advanced mathematical skill set which not all students have when joining the course This year the course evolved by taking in three new topics, but according to the students feedback the course management did not do a good enough job to cut down the course content.
Positive comments	Course is enjoyed by teachers.
Negative comments	We had less number of finished course projects this year. That needs to ab adressed next time.
View on pre-knowledge*	No specific comment.The questionaire asks for the pre-knowledge but not explicit feedback on the previous knowldge was droppd.
View on course design*	General course structure is fine, but requires refinement according to the students comment.
View on course material	Reaches maturity.
View on examination	No specific comments.

Pedagogical development - II

Outcome of course changes made since last time course was given	Had a positive impact.

Changes to be made before next time course is given	Course material needs to be further reduced.

Other

Comments*	As the course was conducted between most lecture units had been replaced by online sessions.