

Course analysis of SF1904 Markov Processes, 3 hp.

Martina Scolamiero

Period 4, VT23.

Overview of the course

Teacher and examiner: Martina Scolamiero.

Exercise session leaders: Björn Wehlin and Timo Vilkas.

Students: The registered students are 130. This course is addressed to both bachelor students from year 2 or 3 and master students. The students are registered to the following programs, in parenthesis is annotated if the course is elective or mandatory for the given program. Degree Program in Energy and Environment CENMI (elective), Degree Program in Industrial Engineering and Management with specialization in applied mathematics CINEK-TMAI (mandatory), Degree Program in Industrial Technology and Sustainability with specialization in applied mathematics CITEH-TMA (mandatory), Degree Program in Engineering Physics CTFYS (optional). Master of Science in Engineering and in Education with specialization in mathematics and physics CLGYM-MAFY (elective). Master in mathematics within the program in Mechanical Engineering CMAST-MTH (mandatory).

Course literature:

- Jan Enger, Jan Grandell: Markovprocesser och köteori

A list of recommended exercises as well as a detailed description of the sections of the book that have been covered can be found on the Canvas web page of the course. The Canvas page also contained video recording from the instantiation of the course in 2020.

This year the canvas page of the course was further developed and now featured a Module for each lecture in addition to a Module with resources and general information about the course and the examination. Each Module contained preparation for the lecture, main concepts that were addressed during the lecture as well as some additional exercises that could be sent to the course teacher for feedback on the writing style for solutions to exercises.

Course web page: <https://canvas.kth.se/courses/27516>

Teaching

Lectures: There were 6 lectures based on the course book. The teacher used the blackboard and slides to present. Slides were available on the course website for the students to follow.

Exercise sessions: There were 8 exercise sessions covering exercises from the course book. The exercise session leaders used the blackboard to present solutions to the problem, engaging students in the discussion.

Exam

The examination is a written exam consisting of 5 exercises and the allocated time for the exam is 5 hours. Each correctly solved exercise gives 10 points. A minimal score of 20 is needed to pass the exam. The preliminary number of points needed for each grade is as follows: A 43, B 38, C 32, D 26, E 20. Students with a 18 or 19 points are given the opportunity to complete the exam via an extra exercise to be arranged with the lecturer.

Exam results

An exam is offered on 30/05/2023 and a re examination is offered on 18/08/2022. Of the 130 registered students, 2 resigned and 114 registered for the exam. 100 students passed the course with the following distribution of grades.

A	B	C	D	E
41	18	19	12	10

Course survey and teachers perspective

We sent in a KTH Learning Experience Questionnaire v3.1.4 with 22 questions via KTH social, in on 26/06/2023. The number of respondents to the survey was 9. Most of the respondents have been working on the course 9 – 11 hours per week or 6 – 8 hours per week.

The scores for the average response to the LEQ statements were high, with scores between 6.1 and 6.9. Overall the feedback was positive: "Väldigt rolig och intressant kurs", where the following were noted as best aspects of the course "Martina var snabb med att svara på frågor och var dessutom utförlig i svaren. Det var skönt att ha en tenta som hade samma upplägg som tidigare tentor och som fokuserar på de stora områdena i kursen." and "Bra examinator som gjorde materialet lättförståeligt och roligt att lära sig." It was also appreciated that the course had an applied perspective: "Jag tyckte det var ett intressant område då man lätt fick en uppfattning om vad det kunskaperna kan användas till." and "Ett konkret område inom matematiken som jag känner att jag kan ha nytta av." The video recordings from previous years were also appreciated: "Även om man miste en föreläsning så fanns det inspelningar på canvas". Room for improvement was proposed in a better use of the combination of blackboard and slides "Lite mer struktur på föreläsningarna. Låt saker stå kvar längre tid på tavlan samt var lite mer noggrann när man torkar av tavlan så man tydligt ser vad som står." and a better coordination between the material covered during the exercise session and the lectures: "Vid ganska många tillfällen var övningsuppgifter obegripliga för att teoribakgrunden hamnade på föreläsningen som låg efter övningen... Det borde fixas till nästa år." As advice for future participants the students suggest to follow the lecture, exercise session, prepare on old exams, and study in a continuous way.

From the teacher perspective the course has worked well, with students actively participating both at the lectures and exercise sessions. The grades of the exams were very good and the students seemed satisfied with the course. It is to be noted that the lectures are fewer than the exercise sessions and sometimes the alternation of lectures and exercise sessions in the schedule is not optimal, as there can be several exercise sessions between two lectures. One student suggested in the LEQ to add python labs to the course, this activity or other hands on activities would enrich this course. More generally the course development should focus on activities that stimulate further students participation. For example in the LEQ the following comment was present " Jätte bra att man kunde maila in sina lösningar till vissa uppgifter efter föreläsningar, dock gjorde jag aldrig detta. Men det är ett bra koncept."