

Course Programme TMS165/MSA350 Stochastic Calculus

7.5 credits, 1st quarter Fall 2020

Teacher and examiner. Patrik Albin, palbin@chalmers.se

Course web-page. <http://www.math.chalmers.se/Stat/Grundutb/CTH/tms165/2021/>

Responsible university unit. Mathematical Sciences, Chalmers Tvärgata 3.

Literature. *Fima C. Klebaner: Introduction to Stochastic Calculus with Applications, Third Edition 2012*, available from Cremona Chalmer's bookshop. A few theoretical additions to Klebaner's book (see "Contents of course"). Lecture notes on applications and on numerical methods.

Content of course. Selections from and a few additions to Chapters 1-6 and 10 in Klebaner's book details of which are available at the course web-page. Lecture notes on applications and on numerical methods available at the course web-page. The course is given in english.

Lectures and exercise sessions. Lectures (21) and exercise sessions (8) are digital/remote due to covid-19 pandemic. They are available at the course homepage as pdf-files as well as prerecorded live shows with Patrik. Their total number 29=21+8 is how many double hour classroom sittings the covered material corresponds to. The tempo of the course is indicated below. While pdf's are available from beginning of course lecture movies scheduled for a week will be available at the course homepage Tuesday 3.15 PM that week except when there are two lecture movies for a week in which case the second movie will be available Wednesday 3.15 PM. The exercise movie for a week will be available Wednesday 3.15 PM that week.

Lectures and exercises	Week	Programme
Lectures 1-2	1	Chapter 1 in Klebaner
Lectures 3-4	1	Chapter 2 in Klebaner
Lectures 5-6	2	Chapter 3 in Klebaner
Exercise 1	2	Chapters 1-2 in Klebaner
Lectures 7-10	3	Chapter 4 in Klebaner
Exercise 2	3	Chapter 3 in Klebaner
Lectures 11-13	4	Chapter 5 in Klebaner
Exercise 3	4	Chapter 4 in Klebaner
Lectures 14-15	5	Chapter 6 in Klebaner
Exercise 4	5	Chapter 5 in Klebaner
Lectures 16-17	6	Chapter 10 in Klebaner
Lecture 18	6	Applications
Exercise 5	6	Chapter 6 in Klebaner
Lectures 19-21	7	Numerical methods
Exercise 6	7	Chapter 10 in Klebaner
Exercise 7	8	Numerical methods

Exercises. Students should first study the solved exercises carefully. Then students should continue to work with the home exercises without looking at their solutions – first after students have done what they can do without the solutions the solutions should be used. It is the home exercises that are solved during the exercise sessions. Old exam tasks available at the course home pages are also excellent exercises. (However, do not expect them no reappear at new exams.)

Examination. Written exam 4 hours is scheduled am Tuesday 27 October 2020 with reexams early January 2021 and August 2021. (Exact reexam dates will be published as soon as available.)

Since 3'rd quarter Spring 2020 all exams have been digital/remote due to covid-19. Students will be notified asap when it has been decided if a particular exam is on campus or remote.

The written exam has 6 tasks worth 5 points each. Of the total 30 points you need 12 points for grade 3/G, 18 points for grade 4, 21 points for grade VG and 24 points for grade 5.

If exam is at campus permitted aids are 2 sheets (=4 pages) of hand-written notes – computer print-outs and/or xerox-copies are not allowed. If exam is digital/remote all aids are permitted.