

Course Programme MSG800/MVE170 Basic Stochastic Processes, 7.5 credits, 2nd quarter Fall 2020

Responsible teacher. Patrik Albin, email palbin@chalmers.se

Teaching assistant/exercise teacher. Petar Jovanovski, email petarj@chalmers.se

Course web-page. <https://chalmers.instructure.com/courses/10825>

Responsible university unit. Mathematical Sciences, Chalmers Tvärgata 3.

Literature. *Hwei Hsu: Probability, Random Variables, and Random Processes, 2nd Ed. 2010 or 3rd Ed. 2014. Schaum's Outlines, McGraw-Hill and Geoffrey Grimmett and David Stirzaker: Probability and Random Processes, 3rd Ed. 2001. Oxford University Press* are available from Cremona Chalmer's bookshop. List of Errata for Hsu's book available from the course web-page. Crasch course hand-out (stencil) on probability theory and math available from the course web-page. Information about exercise material available from the course web-page.

While the book by Hsu is intended as a "learning book" the book by Grimmett and Stirzaker is more suitable as a reference book. It is therefore not only useful for learning Markov chains (as we use it to), but also for supplementary reading and reference purposes.

Contents of course. Chapter 5, Sections 6.1-6.5 and Chapter 9 in Hsu's book. Sections 6.1-6.5, 6.8-6.9 and 6.11 in the book by Grimmett and Stirzaker.

Lectures. Lectures 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 28 double hours is how many double hour classroom lectures the covered material corresponds to. The tempo of the course is indicated below. All material for an upcoming week will be available at the course homepage at latest Wednesday that week.

Lectures	Week	Programme
Lectures 1-2	1	Crash course
Lectures 3-4	1	Sections 5.1-5.4 in Hsu
Lectures 5-7	2	Section 5.5 in Hsu
Lecture 8	2	Sections 5.6-5.7 in Hsu
Lectures 9-11	3	Section 5.8 in Hsu
Lecture 12	3	Sections 6.1-6.3B in Hsu
Lectures 13-14	4	Chapter 9 in Hsu
Lectures 15-16	4	Sections 6.3C-6.5 in Hsu
Lectures 17-20	5	Sections 6.1-6.5 in GS
Lectures 21-24	6	Sections 6.8.6.9 and 6.11 in GS
Lectures 25-28	7	Exercises Chapter 6 in GS

Exercises. The exercise material for the course is available from the course web-page.

The problems for own work in Hsu's book are discussed during the exercise sessions. The problems in the book by Grimmett and Stirzaker are discussed by Patrik during lecture time week 7. The computer problems for own work have solutions on the course web page and can be discussed with Patrik during his consultation meetings.

There is a scheduled weekly digital/remote exercise session during course weeks 2-7 where the problems for own work in Exercise Sessions 1-6 are solved.

Students are supposed to study solved problems first. Thereafter, ideally, students shall try to work with the problems for own work themselves before going to the exercise sessions and seeing the solutions.

Zoom consultation meetings on lectures. Wednesday 3.15 PM weeks 2-7 and Friday 3.15 PM week 8.

Zoom consultation meetings on exercises. Thursday 10 AM weeks 2-8.

Examination. Written home exam 4 hours pm Monday 11 January 2021 with reexams April 2021 and August 2021. On the January exam all aids are permitted.

Permitted aids on campus exams are either two A4-sheets (4 pages) of hand-written notes (xerox-copies and computer print-outs are not allowed) or Beta – but not both these aids. All aids are permitted on home exams.

Written exams have 6 tasks with a total 30 possible points - you need 12 points for grade G (GU) and grade 3 (CTH), 18 points for grade 4 (CTH), 21 points for grade VG (GU) and 24 points for grade 5 (CTH), respectively.