

Course Programme MSG800/MVE170 Basic Stochastic Processes, 7.5 credits, 2nd quarter Fall 2021

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/16128>

Responsible university unit: Mathematical Sciences, Chalmers Tvärgata 3.

Literature. Hwei Hsu: *Probability, Random Variables, and Random Processes*, 3rd Ed. 2014 or 4th Ed. 2019. Schaum's Outlines, McGraw-Hill and Geoffrey Grimmett and David Stirzaker: *Probability and Random Processes*, 3rd Ed. 2001 or 4th Ed. 2020. Oxford University Press are available from Cremona Chalmers'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.

The book by Hsu is a "learning book" while the book by Grimmett and Stirzaker is also useful 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. In addition to class room sessions lectures are available at course homepage as pdf-files as well as prerecorded live shows with Patrik. The programme of the lectures is indicated below:

Day	Room	Time	Programme
Wednesday 3 November	KA	3.15-5 PM	Sections 5.1-5.4 in Hsu
Thursday 4 November	KA	8-9.45 AM	Sections 5.1-5.4 in Hsu
Thursday 4 November	KA	10-11.45 AM	Section 5.5 in Hsu
Wednesday 10 November	KA	8-9.45 AM	Spare time
Wednesday 10 November	KA	3.15-5 PM	Section 5.5 in Hsu
Thursday 11 November	KA	8-9.45 AM	Sections 5.6-5.7 in Hsu
Thursday 11 November	KA	10-11.45 AM	Section 5.8 in Hsu
Wednesday 17 November	KA	8-9.45 AM	Spare time
Wednesday 17 November	KA	3.15-5 PM	Section 5.8 in Hsu
Thursday 18 November	KA	8-9.45 AM	Sections 6.1-6.3B in Hsu
Thursday 18 November	KA	10-11.45 AM	Chapter 9 in Hsu
Wednesday 24 November	KA	8-9.45 AM	Spare time
Wednesday 24 November	KA	3.15-5 PM	Chapter 9 in Hsu
Thursday 25 November	KA	8-9.45 AM	Sections 6.3C-6.5 in Hsu
Thursday 25 November	HC1	10-11.45 AM	Sections 6.3C-6.5 in Hsu
Wednesday 1 December	KA	8-9.45 AM	Spare time
Wednesday 1 December	Digital	3.15-5 PM	Sections 6.1-6.5 in GS
Thursday 2 December	Digital	8-9.45 AM	Sections 6.1-6.5 in GS
Thursday 2 December	Digital	10-11.45 AM	Sections 6.1-6.5 in GS
Wednesday 8 December	KA	8-9.45 AM	Spare time
Wednesday 8 December	KA	3.15-5 PM	Sections 6.8.6.9 and 6.11 in GS
Thursday 9 December	KA	8-9.45 AM	Sections 6.8.6.9 and 6.11 in GS
Thursday 9 December	KA	10-11.45 AM	Sections 6.8.6.9 and 6.11 in GS
Wednesday 15 December	KA	8-9.45 AM	Spare time
Wednesday 15 December	KA	3.15-5 PM	Exercises Chapter 6 in GS
Thursday 16 December	KA	8-9.45 AM	Exercises Chapter 6 in GS
Thursday 16 December	KA	10-11.45 AM	Exercises Chapter 6 in GS

If a spare time Wednesday 8-9.45 AM is used students will be notified Thursday eveningish the

week before by means of Canvas message.

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 pages.

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.

The exercise sessions Thursdays 1.15-5 PM and Fridays 3.15-5 PM are run in parallel (i.e., exactly the same programme is carried out both days), so students need only go to one of these sessions each week. The programme of the exercises is indicated below:

Day	Room	Time	Programme
Thursday 11 November	KA	1.15-3 PM	Exercise session 1
Friday 12 November	Euler	3.15-5 PM	Exercise session 1
Thursday 18 November	KA	1.15-3 PM	Exercise session 2
Friday 19 November	Euler	3.15-5 PM	Exercise session 2
Thursday 25 November	KA	1.15-3 PM	Exercise session 3
Friday 26 November	Euler	3.15-5 PM	Exercise session 3
Thursday 2 December	KA	1.15-3 PM	Exercise session 4
Friday 3 December	Euler	3.15-5 PM	Exercise session 4
Thursday 9 December	Euler	1.15-3 PM	Exercise session 5
Friday 10 December	Euler	3.15-5 PM	Exercise session 5
Thursday 16 December	Euler	1.15-3 PM	Exercise session 6
Friday 17 December	Euler	3.15-5 PM	Exercise session 6

Examination. Written exam 4 hours PM Monday 10 January 2022 with reexams April 2022 and August 2022.

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.

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.

Digital/self-study moments: Crash course, solved exercises in Hsu book and computational exercises. All other moments in course are also prepared for digital/self-study as movies etc. from last years fully digital course are available from course web-page.

Good Luck Students and Welcome!