

Course Programme MVE136 Random Signals Analysis, 7.5 credits, 1st quarter Fall 2011

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Course web-page: <http://www.math.chalmers.se/Stat/Grundutb/CTH/mve136/1112/>

Responsible university unit: Department of Mathematical Statistics, Mathematica Sciences, Chalmers Tvärgata 3. Expedition: Monday-Friday 9 am - 1 pm.

Literature. *S.L. Miller and D.G. Childers: Probability and Random Processes With Application to Signal Processing and Communications, 2004*, available from Cremona Chalmers' bookshop as well as electronically from Chalmers Library. Included material from the book by Miller and Childers: Sections 2.1-2.7, 3.1-3.5, 4.1-4.8, 5.1-5.9, 8.1-8.6, 9.1-9.3, 10.1-10.4 and 11.1-11.6.

Lecture notes "Complement on Digital Spectral Analysis and Optimal Filtering: Theory and Exercises" authored by Mats Viberg, available through the course web-page.

Two laborations available through the course web-page.

Examination. Written exam (6 credits) 20 October pm with reexams 9 January 2012 am and 20 August 2012 am. Two mandatory laborations (1.5 credits), see the course web-page.

Permitted aids on the written exam are either two A4-sheets (4 pages) of hand-written notes (xerox-copies and/or computer print-outs are not allowed) or Beta (but not both these aids). The written exam will have 6 tasks that are worth 5 points each. Of the maximal total 30 points you need 12 points for grade 3, 18 points for grade 4 and 24 points for grade 5, respectively.

Historic written exams for the older MVE135 course are available through the course web-page.

Lectures take place in room HC1 according to the following schedule

Lectures	Day	Time	Programme
Lecture 1	Thursday 1 September	10-11.45 am	Ch. 2 in Miller and Childers' book
Lecture 2	Friday 2 September	3.15-5 pm	Ch. 3 in Miller and Childers' book
Lecture 3	Thursday 8 September	10-11.45 am	Ch. 4 in Miller and Childers' book
Lecture 4	Friday 9 September	3.15-5 pm	Ch. 5 in Miller and Childers' book
Lecture 5	Thursday 15 September	10-11.45 am	Ch. 8 in Miller and Childers' book
Lecture 6	Friday 16 September	3.15-5 pm	Ch. 8 in Miller and Childers' book
Lecture 7	Thursday 22 September	10-11.45 am	Ch. 9 in Miller and Childers' book
Lecture 8	Friday 23 September	3.15-5 pm	Ch. 9-10 in Miller and Childers' book
Lecture 9	Thursday 29 September	10-11.45 am	Ch. 11 in Miller and Childers' book
Lecture 10	Friday 30 September	3.15-5 pm	Ch. 11 in Miller and Childers' book
Lecture 11	Monday 3 October	1.15-3 pm	Lecture notes
Lecture 12	Thursday 6 October	10-11.45 am	Lecture notes
Lecture 13	Monday 10 October	1.15-3 pm	Lecture notes
Lecture 14	Thursday 13 October	10-11.45 am	Lecture notes

Solved exercises. Complete detailed solutions are available through the course homepage for the problems listed below. Students are advised to study these solutions carefully before starting to work with the home exercises for own work.

Course segment	Exercises
Chapters 2 in Miller and Childers	Exercises 2.3, 2.6 , 2.10, 2.11, 2.16, 2.26, 2.29 and 2.30
Chapters 3 in Miller and Childers	Exercises 3.3, 3.4, 3.7, 3.10, 3.16 and 3.17
Chapters 4 in Miller and Childers	Exercises 4.13, 4.15, 4.20, 4.22 and 4.31
Chapters 5 in Miller and Childers	Exercises 5.22 and 5.28
Chapters 8 in Miller and Childers	Exercises 8.5, 8.7, 8.11, 8.14, 8.22, 8.23 and 8.27
Chapters 9 in Miller and Childers	Exercises 9.5, 9.9 and 9.11
Chapters 10 in Miller and Childers	Exercises 10.8, 10.12, 10.14 and 10.19
Chapters 11 in Miller and Childers	Exercises 11.11, 11.14 and 11.26
Lecture notes	Exercises 1, 4 and 6

Home exercises. The following exercises are recommended to students as how exercises for own work:

Course segment	Exercises
Chapters 2 in Miller and Childers	Exercises 2.8, 2.12, 2.19, 2.22, 2.25 and 2.32
Chapters 3 in Miller and Childers	Exercises 3.5, 3.9, 3.14 and 3.19
Chapters 4 in Miller and Childers	Exercises 4.3, 4.4, 4.17, 4.23, 4.28 and 4.36
Chapters 5 in Miller and Childers	Exercises 5.5, 5.29 and 5.32
Chapters 8 in Miller and Childers	Exercises 8.8, 8.9, 8.12, 8.19, 8.25 and 8.28
Chapters 9 in Miller and Childers	Exercises 9.2, 9.8, 9.17 and 9.26
Chapters 10 in Miller and Childers	Exercises 10.5, 10.7, 10.10, 10.17 and 10.20
Chapters 11 in Miller and Childers	Exercises 11.1, 11.5, 11.12, 11.14, 11.17 and 11.20
Lecture notes	Exercises 2, 3, 5, 7, 8 and 9

Exercise supervisions mainly intended to offer help with the home exercises (but also possibly other help) take place in room EB Thursdays 8-9.45 am starting Thursday 8 September.

Exercises	Day	Programme
Exercise 1	Thursday 8 September	Chapters 2 and 3 in Miller and Childers' book
Exercise 2	Thursday 15 September	Chapters 4 and 5 in Miller and Childers' book
Exercise 3	Thursday 22 September	Chapter 8 in Miller and Childers' book
Exercise 4	Thursday 29 September	Chapter 9 and 10 in Miller and Childers' book
Exercise 5	Thursday 6 October	Chapter 11 in Miller and Childers' book
Exercise 6	Thursday 13 October	Lecture notes

Consultations mainly intended to offer help with the two laborations (but also other help that students might need) take place Mondays 3.15-5 pm in room EE on 5 September, 26 September and 10 October. If the need arises, consultations could also be given on 12 September, 19 September and 3 October.