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Mathematical Methods II - Applied Intertemporal Optimization
GSEFM 1st year PhD programme
Winterterm 2013/14

(January 2014)

1   A brief overview

The course "Mathematical Methods" covers topology and probability theory in part 1 and difference and differential equations and dynamic optimization in part 2. Lectures for part 2 take place on the following dates on Campus Westend:

- Initial lecture: Friday, December 13, from 14:15 to 15:45 and from 16:15 to 17:45.

- Monday, January 13 and 20: from 10:15 to 11:45 and 12:15 to 13:45 in room: HoF E.22 / Commerzbank

- Thursday, January 23, from 8:30 to 10:00 and from 12:15 to 13:45 in room HoF/E.21 / Paris

- Friday, January 24, from 14:30 to 17:45 in room HoF E.20/DZ-Bank.

- Monday, January 27, from 10:15 to 11:45 and 12:15 to 13:45 in room HoF E.22 / Commerzbank

- Thursday, January 30 from 8:30 to 10:00 and 12:15 to 13:45 in room HoF E.20 / DZ-Bank

All material for part 2 is based on the textbook Applied intertemporal optimization". It can be downloaded from http://www.macro.economics.uni-mainz.de/846.php. There will be lectures only and no tutorials. Some problem sets will be announced during the lectures. Solutions to problem sets will be made available.

The date and place of the final exam will be announced. It will take 60 minutes and covers part 2 only. The exam requires students to answer 2 out of 3 questions.

2 Contents

- Deterministic worlds

Dynamic optimization: ch. 3.3 and po 3.4
Differential equations: ch. 4.1, po 4.2, po 4.3, po 4.4
Dynamic optimization: 5.1, 5.3, 5.4, 5.5 and po 5.6. ch 6.1 and 6.2

- Stochastic worlds

Stochastic difference equations: ch. 7.4.1
Dynamic optimization: ch. 8.1, po ch. 9.1, 9.2 and po 9.5
Stochastic differential equations: ch.10.1, 10.2, 10.3, 10.4, 10.5
Dynamic optimization: ch.11.1, 11.2, 11.3 and 11.5

For all questions concerning the lecture, please contact Klaus Wälde.