



“Advanced Topics in Financial Mathematics — Fixed Income Models”, WS 2010/11.

Lecture: Monday 10–12 and Tuesday 12–14 in He220.

Exercises: Tuesday 16–18 in He120 (conducted by Andreas Rupp, He228).

Office Hour: Wednesday 10–12 in He225 and by appointment.

Web Site: The web site for this class is “<http://web.mst.edu/~bohner/fim-10/fim.html>”.

Text: “Interest Rate Models” by Damiano Brigo and Fabio Mercurio, Springer Finance, second edition, third printing, 2007.

Description: Definition of interest rates, no-arbitrage pricing and numeraire change, one-factor short-rate models (Vasicek, Dothan, CIR, Hull–White, Black–Karasinski, CIR++), two-factor short-rate models (G2++, CIR2++), HJM framework, market models (LFM, LSM), volatility smile (local-volatility, stochastic-volatility, uncertain-parameter models), market payoffs (in-arrears swaps and caps, autocaps, caps with deferred caplets, ratchets, CMS, captions and floorlets, zero coupon swaptions, eurodollar futures), inflation-indexed swaps and caplets/floorlets, credit derivatives, CDS.

Homework Assignments: Homework assignments will be given to you. When they are due, you either have to turn them in or show the solution on the board during the exercises. You need to obtain at least 50% of all available points in order to be admitted to take the final exam.

Final Exam: The final exam is comprehensive and will be on Monday, February 14, 10–12. If p is the percentage in the final exam, then the grade will be determined according to the following table:

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|------------------|------------------|------------------|------------------|------------------|-------------|
| 1 | 1.3 | 1.7 | 2 | 2.3 | |
| $p \geq 95$ | $90 \leq p < 95$ | $85 \leq p < 90$ | $80 \leq p < 85$ | $75 \leq p < 80$ | |
| 2.7 | 3 | 3.3 | 3.7 | 4 | 5 |
| $70 \leq p < 75$ | $65 \leq p < 70$ | $60 \leq p < 65$ | $55 \leq p < 60$ | $50 \leq p < 55$ | $p \leq 50$ |