

# Seminar “Computational Finance”

Kick-off Meeting

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October 25th, 2010



# Seminar Topics & Persons

## 1. Basics

- 1.1 stochastic basics
- 1.2 options, futures, and other derivatives

## 2. Monte-Carlo & Binomial Tree Methods

- 2.1 Monte-Carlo method
- 2.2 binomial and trinomial method

## 3. Black-Scholes Equation

- 3.1 Black-Scholes equation (deduction)
- 3.2 discretization in time and space
- 3.3 sparse grids

## 4. Application & Technologies

- 4.1 Theta-Calculus & Numerix

**(1st session)**

(Mihaela)

(David)

**(2nd session)**

(Denis)

(Tihomir)

**(3rd session)**

(Donglin)

(Robert)

(Johannes)

**(2nd session)**

(Ferit)

# Workload & Grading

## Tasks for a successful participation:

- write a paper
- write reviews about two papers of other students (will be distributed by advisors)
- write and give a talk
- participate in all talks (mandatory attendance!)

Weighting of the final grade:

$\approx 2$  (paper) : 1 (two reviews) : 2 (talk)

# Workload & Grading (cont'd)

## Requirements:

- **paper:**  
pdf, 7–10 pages, font size 12, line spacing 1, A4
- **reviews:**  
pdf, 3–4 pages, font size 12, line spacing 1, A4,  
use the sample that is available on the webpage
- **talk**  
25-30 min (~10-15 slides, test it before!)  
**+ 10min activation**  
(e.g. questions, interactive demonstration, short quiz, . . .  
i.e. something, where your colleagues have to be active – just be creative!)
- **meetings with the advisor**  
2 meetings (1 during preparation, 1 to check the slides)

# Time Schedule

- until Nov 15th: deadline for first meeting with your advisor
- Dec 1st: paper deadline
- Dec 15th: deadline for paper review
- Jan 6th: deadline for final paper
- talk sessions (in seminar room 02.07.023):
  1. Jan 13th (Thursday, 16:00-18:00, 2 talks)
  2. Jan 14th (Friday, 13:00-16:00, 3 talks)
  3. Jan 21st (Friday, 13:00-16:00, 3 talks)

# Important Notes

- deadlines are severely strict
- attend the meetings with your advisor to check content, paper, and slides
- send your paper and the reviews to your advisor in time:
  - Janos Benk: [benk@in.tum.de](mailto:benk@in.tum.de)
  - Stefanie Schraufstetter: [schraufs@in.tum.de](mailto:schraufs@in.tum.de)

# Plagiarism

- avoid any act of plagiarism for your paper/talk, in particular:
  - all material that you used has to be cited (including websites)
  - even if you cite, it is not proper to copy text directly (also not, if you change the order of sentences, etc.)
- plagiarism will directly lead to a grade of 5.0
- we will check your handed in papers and reviews for plagiarism
- to avoid any problems, just keep to a simple guideline:

**Write everything in your own words and cite material you create your text from.**

# How to Write a Good Paper

## Important points for the quality of a paper:

- language and spelling
- structure (correct/intuitive order, useful abstract and conclusions, references, etc.)
- consistency of the presentation (notation, figures, graphs, etc.)
- quality of the explanations
- use of references

More important points can be found in the review sample!

## Main goals of the paper:

- practice formalization of mathematical contents
- practice your scientific paper writing skill
- good practice for writing the Master thesis later



# How to Write a Good Paper

## Structure of a paper:

1. header with title and author
2. short abstract (that whets the appetite for reading the paper)
3. introduction (including an overview over the paper)
4. main part (several sections, structure depends on the topic)
5. conclusion/summary/outlook
6. references

For more details, please check the guides of the next slide.

# How to Write a Good Paper

## Guides for the structure of the paper: (just a selection)

- D. E. Knuth, T. Larrabee, P. M. Roberts: Mathematical Writing, <http://tex.loria.fr/typographie/mathwriting.pdf>
- M. Ashby: How to Write a Paper, <http://www-mech.eng.cam.ac.uk/mmd/ashby-paper-V6.pdf>
- W. Strunk and E. B. White, The Elements of Style, Longman Publishers, 1979
- A. Bundy: How to Write an Informatics Paper, <http://homepages.inf.ed.ac.uk/bundy/how-tos/writingGuide.html>
- N. Dragoni: How to Write a Research Paper, [www2.imm.dtu.dk/courses/02234/slides/writing-a-paper-Nicola.pdf](http://www2.imm.dtu.dk/courses/02234/slides/writing-a-paper-Nicola.pdf)
- and many more...

# How to Write a Review

## To make it short:

- check the points for writing a good paper (cf. references on previous slide)
- check the content for correctness
- be objective, do not bash or praise a paper due to the author
- use the review sample you find on the webpage

## Remark to the reviews:

### **The papers are not graded based on the reviews!**

I.e. if a good paper is bashed by a review, the review is graded worse but not the paper and vice versa. Hence, be objective!

# How to Give a Good Talk

## Important points for good slides:

- give a short outline
- do not put too much content on a slide
- structure every slide, make it well-arranged
- use short, clear bullet points (not sentences!)
- choose the font size large enough (not smaller than this font!)
- use visualizations instead of text
- consider the previous knowledge of your colleagues (this is usually not too much since the topic is new!)
- check the spelling

# How to Give a Good Talk

## Important points for a good talk:

- speak loud and articulate clearly
- keep eye-contact to the audience
- apply Occam's razor, do not go too much into detail
- do not exceed time
- practice the talk before (think what you want to tell, check time, etc.)
- prepare nice slides for the talk

## Main goals of the talk:

- make your colleagues familiar with the topic
- practice your presentation skills

# How to Give a Good Talk

## Guides for a good talk and nice slides: (just a selection)

- R.A.Day, How to present a paper in theoretical computer science: a speaker's guide for students,  
<http://portal.acm.org/citation.cfm?id=346048.346055>
- J. A. Gallian: How to Give a Good Talk,  
<http://www.jcu.edu/math/constum/gallian.pdf>
- P. N. Edwards: How to Give an Academic Talk,  
<http://www.si.umich.edu/~pne/PDF/howtotalk.pdf>
- B. J. Reich: Academic Presentations,  
<http://www4.stat.ncsu.edu/~reich/st810A/oral.pdf>
- F. R. Kischischang: Giving a Talk – Guidelines for the Preparation and Presentation of Technical Seminars,  
<http://www.comm.utoronto.ca/~frank/guide/guide0.html>
- and many more ...

# Some More Specials of the Seminar

## Chairman:

For every talk, one of the reviewers will be the chairman and ...

- introduce the talk,
- pay attention that the lecturer will stay in time,
- moderate the discussion after the talk,
- ask an question to the lecturer, if nobody else has a question.

## We plan awarding ...

- the best talk
- the best activation

All participants of the seminar are members of the jury!

## Feedback:

... is important. You will give feedback to each other in form of a questionnaire after the talk to improve your presentation skills.

# Final Announcement

## A last remark:

Of course, it is also possible to do your Master thesis in the field of computational finance. Here is just one example:

## SCCS Colloquium

Nov 4th, 2010 (Thursday), 15:00

in seminar room 02.07.023

final Master thesis talk of Chao Qi

**Topic:** Pricing Variable Annuities with Partial Differential Equations

Everybody who is interested is invited to this talk!