Basic stochastic processes: applications to finance (MVE172)

Teacher/Examiner: Simone Calogero (calogero@chalmers.se)

Course Schedule

Day	Time	Topic
Thu 25/11	8-9.45, 10-11.45	Review and extensions of the binomial model
Wed 1/12	8-9.45, 15.15-17	Review of the Black-Scholes model. Monte Carlo method
Thu 2/12	8-9.45, 10-11.45	Introduction to stochastic calculus. CEV model
Wed 8/12	8-9.45, 15.15-17	Description of the projects
Thu 9/12	8-9.45, 10-11.45	Assistance with the project
Wed 15/12	8-9.45, 15.15-17	Assistance with the project
Thu 16/12	8-9.45, 10-11.45	Assistance with the project

Literature

- S. Calogero: Projects in financial mathematics (available on the course homepage)

Rules for the implementation and examination of the projects

1. Each assignment is worked out in groups of max 4 students.

2. All groups have to do **Exercises 0.1, 0.2, 0.3, 0.4**. In addition each group has to work on a project, which I will choose among those in Chapters 1–5.

3. The names of the students in each group have to be communicated to me by e-mail no later than **Friday December 4th**. Add all the members of the group as recipients. I will send an e-mail to each group on the following Monday to assign the project.

4. Each group has to write a report with all the tasks of the first assignment and the project completed. The **submission deadline for the report is January 8th, 2022, at 23.59**. The reports have to be submitted by e-mail to me. In the following Monday I will forward the projects to all groups, so that they can work on the next assignment.

5. Each group must also write 4 one-page documents describing and commenting the report of each other group. These 4 pages (one for each project) have to be sent to me by e-mail **no later than January 14th, 2022, at 23.59**. Send each page on a separate pdf.

6. In the last 3 lectures of the course I will help the groups to carry out the project tasks. No assistance will be provided outside these hours.

Remark (on the structure of the report): In the course homepage you can find a suggested template to write the report (in LaTex). The report consists of two parts. The first part contains the solutions of the written exercises of the project. In the second part you should include and explain the plots requested in the Matlab task. You do not need to explain the theoretical background behind the results you have obtained (you might want to write some relevant equations, if you find it useful). These two parts together should consist of no more than 10 pages and no less than 5. Include an appendix with your Matlab codes and explain how they work by adding comments to them.