

Math 454 - Spring 2021 - Homework 04

Published: Friday, March 5, 2021

Status - Reading Assignments:

Here is the status of the reading assignments you were asked to complete by this date plus the material taught in class without assigned reading.

SCF2 (Shreve Textbook):

ch.1-2, ch.3 through ch.3.4.3

MF454 lecture notes:

ch.2 – 5

Other: Nothing assigned yet

New reading assignments:

Reading assignment 0 - due ASAP:

- This has been published less than 90 minutes before the lecture, but watch out for the following: I have started a new chapter 6: Financial Models - Part 1 which is thus before ch.7: Brownian Motion, that I am currently lecturing from. I will start today (Fri March 5) with that new chapter before returning to ch.7. I suggest you peruse ch.6 to get an idea what items about finance you should revisit.

Reading assignment 1 - due Monday, March 1:

- a. Be on the lookout for a new version of the MF454 doc some time this weekend and read whatever you will find in ch.6.
- b. Very carefully read SCF2 ch.3.5 (Markov Property). It is only 1 1/2 pages! Do a detailed analysis of Theorem 3.5.1 and try to understand how the independence lemma was used to show the Markovian nature of Brownian motion. Note how the independence of the increments $W_t - W_s$ of the past, encapsulated in \mathcal{F}_s , was used, whereas the specifics about the normal density do not matter at all.

Reading assignment 2 - due: Wednesday, March 3:

- a. Further additions to MF 454 will have priority.
- b. Carefully read SCF2 ch.3.6 but only through Theorem 3.6.1 (Exponential martingale). Skim through the remainder. The first passage time distribution of Brownian motion is used in connection with so called up-and-out barrier options. It is not clear at this point in time whether those will be discussed in this course, thus I will not spend much time on this chapter.

Reading assignment 3 - due Friday, March 5:

- a. Further additions to MF 454 will have priority.
- b. Finish SCF2 ch.3 but do not dig in too much. The subject matter is highly technical and I will only spend very little time on it.

Written assignments: TBD – TBD – TBD – TBD

General note on written assignments: I will not collect those assignments for grading but doing them might be helpful for your quizzes and exams.