MATH 6202-090/8202-090 Spring 2012

W 6:30p.m.–9:15p.m., Friday 107

Text: Derivative Securities and Difference Methods, Part I: Partial Differential Equations in Finance, Y.-l. Zhu, X. Wu and I-L. Chern (ISBN 0-387-20842-9).[1]

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Office Hours: W 3:50p.m.–6:20p.m. and by appointment.

Homework will be assigned every lecture and the homework problems are referred to the homework problems given in the file "Homework Problems" on my web, **NOT the Problems in the text book**. During every lecture students should turn in all the homework problems assigned during the previous week for grading. Answers for homework problems will be posted on my web in the files "hw x-x". Homework counts 20% of your grade.

There will be two tests, one for Chapters 1 and 2 and the other for Chapters 3 and 4, which will be given during the final examination period. The test schedule is as follows:

	Estimated Dates & Time	Percentages	Chapters
Test I	2/22 or so, 6:30p.m.-9:15p.m.	40%	1-2
Test II	5/9, 8:00p.m.-10:30p.m.	40%	3-4

On the tests students can use the formulas given in the file "Formulas Can Be Used on Tests" on my web. No makeup tests will be given without a reasonable, documented excuse. Each test counts 40% of your grade. You should expect that an average of 90% or better will be needed for an A, 89% - 80% for a B. Otherwise a C (79% - 60%) or U (below 60%) will be given.

In order for you to know if you have enough knowledge on calculus and linear algebra, please take the self-checking test which is given on the my web site during the first week of the semester. This is a three-hour closed-book test. If your test is not good, in order for you to get 'A', 'B' or 'C', you might need to spend a lot of time – 10 ∼ 20 even 30 hours or more – per week. If you could not find so much time per week in this semester, it will be better to take this course when you greatly improve your knowlegde on calculus and linear algebra. As far as I know, University policy is that for your case if you fail once, you have getten at least an 'B' when you take the same course again.

As with most mathematics classes, the material covered in one class usually depends heavily on the material from previous classes. It is very important that you try to keep up with class assignments. If you have any questions, do not hesitate to ask me.

[1] There are some mistakes in the text book. In order to make corrections, please see the file "Correction" on my web. Some sections/subsections have been rewritten. For these new sections/subsections, see the files "New Section/Subsection x.x.x" on my web.

Preliminary Syllabus for

MATH 6202/8202 Derivative II: Partial Differential Equations in Finance

Text: Derivative Securities and Difference Methods

by Y.-l. Zhu, X. Wu & I.L. Chern

Lecture(s)	Section(s)	Contents
1	1.1–1.2, 2.1–2.2	Itô's Lemma, Black-Scholes Equation
2	2.3–2.4	Two Transformations, Black-Scholes Formulae
3	2.5–2.6	LC problems, Free-boundary Problems
4	2.7–2.9	General Equations for Derivatives
5	2.10–2.11	Jump Conditions, More Arbitragy Theory
6		Catch-up and Review
7		Test I
8	3.1–3.2	Barrier Options
9	3.3–3.4	Asian Options, Lookback Options
10	3.4–3.5	Multi-Asset Options
11	3.6, 4.1	Some Other Exotic Options, Bond Equations
12	4.2–4.4	Explicit Solutions of Bond Equations, Inverse Problem
13	4.5–4.6	Application of Bond Equations, Multi-Factor Interest Rate Models
14	4.6–4.7	Two-Factor Convertible Bonds
15		Catch-up and Review
16		Test II