CONTINUOUS TIME FINANCE
G63.2792, Spring 2004
Wednesdays 7:10-9pm
WWH 1302
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Instructors: Peter Carr and Bruno Dupire. Office: 731 Lexington Avenue, 16th floor
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Final exam: TBA

Prerequisites: Derivative Securities and Stochastic Calculus, or equivalent.

Content: This is a “second course” in arbitrage-based pricing and hedging of derivative securities.
It differs from the “first course” in that all of the analysis will be conducted in continuous time
(although we may use discrete time models to enhance intuition.) We will revisit topics from both
the introductory derivative securities class and the stochastic calculus class. In both cases, we
will emphasize the connection to trading and hedging in continuous time (although not necessarily
continuously). We will also be introducing new topics such as robust arbitrage, volatility deriva-
tives, and optimal hedging. We will emphasize model-free approaches when applicable and we will
elucidate the risks of popular models otherwise.

Course requirements: There will be several homework sets, about one every 3 weeks, probably
4 in all. Collaboration on homework is encouraged (homeworks are not exams) but registered
students must write up and turn in their solutions individually. There will be one in-class final
exam.

Lecture notes: Lecture notes and homework sets will be handed out in class, and also posted on
Professor Carr’s web-site after class.

Books: We will not follow any single textbook. However, we strongly recommend:

• M. Baxter and A. Rennie, Financial Calculus: An Introduction to Derivative Pricing, Cam-
bridge University Press, 1996.

• D. Lamberton and B. Lapeyre, Introduction to Stochastic Calculus Applied to Finance, Chap-
man and Hall, 1996.


We also warmly recommend:


