B40.3176.10 Credit Derivatives
Fall 2008
Weds 6:00 - 9:00 P.M.
KMEC 3-80

Website: http://sternclasses.nyu.edu/

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Weds. 5:00 - 6:30
and by appointment

# SYLLABUS

**Course description:** This half-semester mini-course will introduce Finance MBA students to the theoretical and practical aspects of derivative securities based on credit risk. Credit Default Swaps (CDS), Collateralized Debt Obligations (CDOs) and are a relatively recent innovation, but the risk they are designed to manage is fundamental and pervasive. It is no surprise that the market for credit derivatives has developed enormously fast. How important they have become in our financial system is apparent. We are even currently experiencing our first financial crisis in which these new securities are playing a major role.

The subject matter requires relatively greater use of quantitative methods and theoretical reasoning than many other courses The industry-standard valuation models for credit derivatives use concepts from probability theory that will not be entirely familiar, and most MBA students will find parts of it quite challenging. The concepts you need in order to understand credit derivatives models will be presented in class, with an emphasis on mastering the basics, and on understanding the more advanced technical details at an intuitive level.

***B01.2311 Foundations of Finance* is a prerequisite for this course.**
*B40.3335 Futures and Options* **is recommended.**

**Textbook:**
(**CSMD**) Chacko, Sjoman, Motohashi, and Dessain. Credit Derivatives: A Primer on Credit Risk, Modeling, and Instruments. Wharton School Publishing, 2006.

This book presents the basics of credit derivatives in a fairly simple way. Be sure to read all of the chapters including the Appendices.

**Other Reading:**
In addition to the textbook, there will be readings from other sources, including the Hull textbook on Futures and Options, articles from academic journals and the popular press, and practitioner-oriented materials from the securities industry.

Hull. Options, Futures, and Other Derivatives, 7th Edition, 2008.
The Hull textbook is a classic for derivatives. Many students in this course will already own Hull, but perhaps not the 7th edition which has just been published. Here are the equivalent chapter numbers.

Hull 7th: 22 and 23.
Hull 6th: 20 and 21
Hull 5th: 26 and 27

**Recommended**

(**Douglas**) Douglas, editor. Credit Derivative Strategies. Bloomberg Press, 2007.
This book reviews a variety of trading and risk management strategies involving credit derivatives.

A. Bomfim. Understanding Credit Derivatives and Related Instruments. Elsevier Academic Press, 2005.
This book is more comprehensive and at a somewhat more advanced level than the **CSMD** book. Parts of it are available free on Google Books.

**Articles**

R. C. Merton (1974). "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates." Journal of Finance, 29: 449-70.
http://www.jstor.org/page/termsConfirm.jsp?redirectUri=/stable/pdfplus/2978814.pdf

E. Altman (2000). "Predicting Financial Distress of Companies: Revisiting the Z-Score and ZETA Models." Working paper, available on Altman's webpage:
URL: http://pages.stern.nyu.edu/~ealtman/Zscores.pdf

E. Altman (2006). "Default Recovery Rates and LGD in Credit Risk Modeling and Practice: An Updated Review of the Literature and Empirical Evidence." Working paper, available on Altman's webpage:
URL: http://pages.stern.nyu.edu/~ealtman/UpdatedReviewofLiterature.pdf

**To be distributed in class:**

Crouhy, Jarrow, and Turnbull. "The Subprime Credit Crisis of 07." Journal of Derivatives, Fall 2008.

**REFERENCES AND LINKS TO OTHER READINGS WILL BE POSTED AS THE COURSE PROGRESSES**

**Computer:**
A working knowledge of Excel or some other software package that you can use to do quantitative assignments is a requirement for the course. However, following Stern School standard policy, **no computers, Blackberries, smartphones, etc., in class**. They are too distractive, for the user and for others.

**Grading:**

- There will be two graded homework assignments during the course. (20% each).

- There will be a written final exam given on the final exam date (60%).

The typical grade distribution is: A, A- 25-35% ; B+, B, B- 55-65% ; C+ and below 5-10% This generally conforms to the Finance Department norm.

# COURSE OUTLINE

**CD** denotes chapters in the Credit Derivatives book.

| Session / Date | Topics | Reading / Homework |
|---|---|---|
| 1: Weds, Sep 17 | Default Risk Overview<br>Measuring Credit risk<br>Modeling Credit Risk | CD 1-4<br>Hull 7th, ch. 22<br>Douglas ch.8 |
| 2: Weds, Sep 24 | Credit Default Swaps<br>CDS pricing model<br>CDS indexes | CD 5<br>Hull 7th, ch. 23 1st half<br>Douglas ch.9, 11 |
| 3. Weds, Oct 1 | Collateralized Debt Obligations<br>CDO pricing models<br>Other basket credit derivatives<br>CDS index CDOs | CD 6<br>Hull 7th, ch. 23 2nd half<br>Douglas ch. 10, 5 |
| **WEDS OCT. 8** | **NO CLASS** | |
| 4. Weds, Oct 15 | Empirical Research on Credit Derivatives | |
| 5. Weds, Oct 22 | Trading Credit Derivatives | Douglas ch.1-4 |
| 6. Weds, Oct 29 | The Subprime Mortgage Debacle<br><br>FINAL EXAM | Crouhy, Jarrow and Turnbull |