

New York University Tandon School of Engineering
Department of Finance & Risk Engineering
Financial Risk Management (FRE 6123)
Spring Semester 2020
Professor James Adams, Ph.D., CFA
LinkedIn: /james-f-adams-phd-nyu
Fridays 10:00 am – 12:30 pm, Rogers Hall Room 505

Contact:

ja146@nyu.edu

Office Hours: Before or after class or by e-mail appointment

Course Prerequisite: Graduate standing

Course Description: This M.S. in Financial Engineering course introduces and analyzes the techniques and problems of Financial Risk Management in the context of market, credit and operational risks.

Course Objectives: This course will target the following objectives:

- 1.) **Introduction to Market Risk Management:** Identify and explain the pricing and valuation of financial instruments (interest rates, foreign exchange, equities, commodities and credit) in cash and derivative markets
- 2.) **Credit Risk Management:** Distinguish credit risks from others and quantify exposures, identify sources and mitigants of credit risk, understand portfolio risk and return measures and incorporate capital and liquidity risks
- 3.) **Operational Risk Management:** Identify, assess and manage operational risk in financial institutions
- 4.) **Case Studies in Financial Risk Management:** Review specific cases and examples of financial risk management practices at banks, non-bank financial institutions and corporations.

Course Structure: The course structure consists of a weekly lecture with course topics, readings and assignments (periodic homework), group presentations and a midterm and final exam as outlined below.

Readings: Weekly slides presented in class will be distributed to students in advance on NYU Classes. Core texts for the course are the four books in the Financial Risk and Regulation Series from the Global Association of Risk Professionals (GARP), entitled Market Risk Management, Credit Risk Management, Operational Risk Management and Asset and Liability Risk Management. The instructor will arrange for students to be able to purchase these four GARP books for \$25 in the FRE Department. Additional recommended readings as well as added links to useful articles or resources will be regularly posted on NYU Classes.

Course Requirements: Weekly slides and readings should be reviewed by students prior to class. Students who miss class must speak to classmates for any in-class notes. While there is no explicit penalty for missing class, it will of course affect participation. Students should attend class with a laptop loaded with Excel and a financial calculator which may be used on exams. Homework is posted on NYU Classes and should be submitted to the teaching assistant. Students earn points for the course as follows:

Homework	15%
Midterm	30%
Group Project	25%
Final Exam	30%

Assigned homework is due before the following class and will be penalized one point per day if submitted late. Total points from all assignments are ranked and graded on a curve with a 3.5 average.

Group Project: The project group will consist of a written and in-class presentation on a subject relevant to Financial Risk Management course topics. Details of the project will be shared separately in class and on NYU Classes. Students must form groups and have their subject approved by the Professor no later than the midterm exam date. The deadline for electronic submission of written presentations is before the start of class on April 17th. Students unable to form a group on their own may be assigned to a group. It is expected that every group member contributes equally to the project, and no work for this project may be all or part of an assignment prepared for another course. Peer evaluations will be used in order to provide constructive feedback, but not included in the student's grade. Grades will be allocated individually.

Consistent and constructive class participation may result in a student's grade being rounded up by a maximum of a half-letter grade once the curve is completed.

Part I: Market Risk Management

- January 31** **Introduction to Financial Risk Management**
Market Risk Management (GARP), Ch. 1
- February 7** **Market Risk – Interest Rate Markets, Instruments and Risks**
Market Risk Management (GARP), Ch. 3
- February 14** **Market Risk – Foreign Exchange, Equities, Commodities and Credit**
Market Risk Management (GARP), Ch. 2 & 4
- February 21** **Market Risk – Derivative Instruments** (CLASS WILL BE RESCHEDULED)
Market Risk Management (GARP), Ch. 1 - 4

Part II: Credit Risk Management

- February 28** **Credit Risk Management**
Credit Risk Management (GARP), Ch. 1 - 2
- March 6** **Credit Portfolio Risk Management**
Credit Risk Management (GARP), Ch. 3
- March 13** **Midterm Exam**
- March 20** **No Class – Spring Break**

Part III: Operational Risk Management

- March 27** **Operational Risk Management**
Operational Risk Management (GARP) Chs. 1-5

Part IV: Asset, Liability and Enterprise Risk Management

- April 3** **Asset, Liability and Enterprise Risk Management**
Asset and Liability Management (GARP), Ch. 1-2
- April 10** **Regulatory View of Credit Risk**
Credit Risk Management (GARP) Ch. 4

April 17 Bank and Balance Sheet Risk Management
Asset and Liability Management (GARP) Chs. 1-4

Part V: Financial Risk Management Case Studies

April 24 Risk Management Case Studies & Group Presentations
See Adams / Smith readings below

May 1 Risk Management Case Studies & Group Presentations
See Adams / Smith readings below

May 8 Final Exam Review and Possible Guest Speaker

May 15 Final Exam

Suggested Additional Readings: Suggested readings are footnoted throughout weekly course slides, in addition to those which will be posted on NYU Classes as follows:

Part I:

"Introduction to Fixed-Income Valuation," James Adams and Donald J. Smith, Level 1 CFA Program Curriculum, Study Session 15: Fixed Income, Reading 54, 2013

"Understanding Fixed-Income Risk and Return," James Adams and Donald J. Smith, Level 1 CFA Program Curriculum, Study Session 16: Fixed Income – Analysis of Risk, Reading 55, 2013

Part II:

"Credit Analysis Models," James Adams and Donald J. Smith, Level 2 CFA Program Curriculum, Study Session 13: Fixed Income (2), Reading 35, 2019

Part II, IV:

"Liability-Driven and Index-Based Strategies," James Adams and Donald J. Smith, Level 3 CFA Program Curriculum, Study Session 10: Fixed Income and Equity Portfolio Management, Reading 22, 2018.

Part V:

"Synthetic Floating-Rate Debt: An Example of an Asset-Driven Liability Structure", James Adams and Donald J. Smith, The Journal of Applied Corporate Finance, Fall 2013, Vol. 25, No. 4: 50-60

"Pre-Issuance Hedging of Fixed-Rate Debt," James Adams and Donald J. Smith, The Journal of Applied Corporate Finance, Fall 2011, Vol. 23, No. 4: 102-112

"Mind the Gap: Using Derivatives Overlays to Hedge Pension Duration," James Adams and Donald J. Smith, Financial Analysts Journal, July/August 2009, Vol. 65, No. 4: 60-67

Family, Health or Other Issues Arising During the Semester

If you encounter any unforeseen family, health or other issues during the semester which create circumstances that prevent you from meeting course requirements, please raise them directly with Deanna Rayment in the Office of Student Affairs at 646-997-3046 or deanna.rayment@nyu.edu before requesting any accommodation from the instructor.

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at [212-998-4980](tel:212-998-4980) or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

(School of Engineering Student Code of Conduct)

- A. **Introduction:** The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.
- B. **Definition:** Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:
1. **Cheating:** intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
 2. **Fabrication:** including but not limited to, falsifying experimental data and/or citations.
 3. **Plagiarism:** intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
 4. **Unauthorized collaboration:** working together on work that was meant to be done individually.
 5. **Duplicating work:** presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
 6. **Forgery:** altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.