

New York University Tandon School of Engineering
Department of Finance and Risk Engineering
FIN 4903: Risk Finance
Financial Risk Pricing and Risk Management
Spring 2021
Mirela M Ivan

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Lecture periods: 2.5 hours

Laboratory periods: 0 hours

Recitation periods: 0 hours

Course prerequisites:

Students are expected to have knowledge in calculus, linear algebra, basic probability and statistics.

Weekly Topics

1. Introduction: Risk, Risk Management and Asset Pricing, Risk and Uncertainty
2. Statistics and Measuring Historical Volatility and ARCH-GARCH Modeling
3. Value at Risk
4. Copula; Utility Theory-Definition and derivation of Essential Terms
5. Utility and Financial Risk Management-Applications, pricing (certain equivalent, premium), portfolio management
6. Capital Asset Pricing Model (CAPM)
7. Options as Financial Insurance Products: The Binomial Model, and Discrete Time Models; Greeks
8. Review for Midterm Exam
9. Complete markets and the meaning of risk neutrality and Assets Pricing
10. The Black Scholes Model and the Greeks
11. The Greeks, Financial Risk Management lecture notes and case applications
- 12-13. Financial Risk management and Derivatives, see Chapter 7 (including credit risks and credit derivatives, debts and loans risks with options); Compliance and Regulation
14. Final Examination

Readings

A set of notes and a list of recommended books and articles will be distributed weekly through NYU classes. In addition, there are two mandatory textbooks for this course:

- **Charles Tapiero:** Risk Finance and Assets Pricing
- **John Hull:** Option, Futures and other Derivatives

Course requirements

Students will be expected to read materials ahead of course meetings to participate actively in class and be prepared to discuss assignments in class. They are also required to hand weekly Homework assignments in.

Grading:

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| 10% | Homework (weekly assignments) |
| 40% | Midterm Examination, March 22 nd , 2021 |
| 50% | Final Examination, May 13 th , 2021 |

Grading Scale

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|----|----------|
| A | = 93-100 |
| A- | = 90-92 |
| B+ | = 87-89 |
| B | = 83-86 |
| B- | = 80-82 |
| C+ | = 77-79 |
| C | = 73-76 |
| C- | = 70-72 |
| D+ | = 66-69 |
| D | = 60-65 |
| F | < 60 |

Note that all final grades will be rounded before they are submitted to the University (e.g., if you have a final average of 86.5% it will be rounded up to a B+, but a 86.4% will be rounded to a B). We will not curve the grades down, but we reserve the right to curve them up if the class average is significantly lower than past classes.

Academic Honesty

No form of academic dishonesty will be tolerated. All suspicions of academic dishonesty during exams or weekly assignments will be reported. If a case of academic dishonesty is confirmed, it will result in a penalty that is at least as severe as receiving a 0 on the assignment or exam. Academic dishonesty includes all forms of plagiarism. Plagiarism includes (but is not limited to): copying or paraphrasing from someone else's work (another student, an online source, or a journal article), turning in someone else's work as your own, or presenting someone else's ideas (a student, online source, or scholar) as your own.

Commitment to Diversity and Constructive Disagreement

The NYU Tandon School values an inclusive and equitable environment for all our students. I hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is my intent that all students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. If this standard is not being upheld, please feel free to speak with me.

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 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.