FRE-GY 7851,
Real Estate Risk

Instructor Information

- Dr. Arka P. Bandyopadhyay, Adjunct Professor
- Office hours: TBD or by appointment
- apb321@nyu.edu

Course Information

- FRE-GY 7851 I2
- Course Title: Topics in Financial and Risk Engineering 2
- Course Description: See Course Overview and Goals below.
- Co-requisite or prerequisite: This is an advanced course, so most Grad classes.
- Fridays, 6:30 pm – 9:10 pm; 1/22/2024 – 3/10/2024
- Classroom number and building: 2 MetroTech Center Room 825; Brooklyn Campus
- Virtual (online) meeting days and times: TBD in extreme weather.

Course Overview and Goals

The course will teach methods of identifying and analyzing different dimensions of risks related to real estate. These risks include but are not limited to operational risk, leasing assumptions and rollover risk, overall market risk, credit risk, prepayment risk, liquidity risk, etc. The course will assume basic knowledge of statistics and probability distributions. We will use Trepp, NCREIF and ESG data to conduct exploratory analysis. In the first half of the course, we will introduce income-producing properties and their valuation. In the second half of the course, we will understand the hierarchies of property level, loan level, bond level and deal level data. Then, we will shift gears to portfolio theory and recap portfolio return and risk, diversification, etc. We will cover Environment, Social and Governance (ESG) concepts and again relate ESG to the risk dimensions. We will briefly cover sustainable development and climate risk.

Upon completion of this course, students will be able to:

- Apply risk management principles to real estate.
- Understand real estate as an alternative asset class for investment.
- Understand how fixed income, mortgages and structured products work with real estate.

Course Requirements

Class Participation

I expect all students to be present in class. This is an advanced course and requires keen attention. The content will not be repeated if you miss a class.

Assignments: Project Report and Homework

Tests & Quizzes: Midterm and Final Project Presentation

Grading of Assignments

The grade for this course will be determined according to the following formula:

Assignments/Activities	% of Final Grade
Class participation	10%
Homework (Individual)	30%
Midterm	30%
Final Project Presentation (Group)	20%
Final Project Paper/Report (Group)	10%

Letter Grades

Letter grades for the entire course will be assigned as follows:

F	0
C	70
C+	76.67
B-	80
B	83.33
A-	90
A	93.33

Course Schedule

Topics and Assignments

Week/Date	Topic	Reading
Week 1, 1/26/24	1. Income Producing Properties 2. Valuation of Income-producing Properties	Ch 9 BF Ch 10 BF
Week 2, 2/2/24	1. Introduction to Risk and Uncertainty 2. Introduction to Leases	My slides Ch 13 BF
Week 3, 2/9/204	1. Leasing Vs Owning 2. Real Estate Investment Portfolio 3. Performance, Benchmark, Attribution	Ch 15 BF Ch 22 BF Ch 23 BF
Week 4, 2/16/24	1. Trepp Introduction and Q&A 2. Demonstration of the use of Trepp Data 3. Mid-term Exam	Trepp Handbook
Week 5, 2/23/24	1. Sustainability and ESG 2. Climate Risk	My slides
Week 6, 3/1/24	Machine Learning Applications in Real Estate	My research papers
Week 7, 3/8/24	Final Project Presentations	

Course Materials

Required Textbooks & Materials

- Real Estate Finance and Investments, by Bruggeman and Fisher, 16th Edition. (BF)

Resources

- **Access your course materials**: NYU Brightspace
- **Databases, journal articles, and more**: Bern Dibner Library (library.nyu.edu) NYU Virtual Business Library (guides.nyu.edu/vbl)
- **Obtain 24/7 technology assistance:** Tandon IT Help Desk (soehelpdesk@nyu.edu, 646.997.3123) NYU IT Service Desk (AskIT@nyu.edu, 212-998-3333)

Policies

Academic Misconduct

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 have 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.

Disability Disclosure Statement

Academic accommodations are available for students with disabilities. Please contact the **Moses Center for Students with Disabilities** (212-998-4980 or mosescsd@nyu.edu) for

further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

Inclusion Statement

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.