

University of Pennsylvania
The Wharton School

Real Estate Finance: Investment and Analysis
REAL/FNCE 2090-401/403
Spring 2023
JMH 350

Subject to change
Last updated: December 15 2022

Professor Jessie Handbury (Q3)
Email: handbury@wharton.upenn.edu

Office Hours: Tuesdays, 3:00-4:00p.m.
and by appointment

Professor Mariaflavia (Nina) Harari (Q4)
Email: harari@wharton.upenn.edu

Office Hours: Thursdays, 1:30-3:00p.m.
and by appointment

Course Objectives:

There are two primary goals of this class:

1. To expose you to the terms, issues, and topics in commercial real estate.
2. To give you the basic skills and intuition you need to begin to evaluate a variety of real estate investments.

Real estate is a multi-faceted field, encompassing both an operating industry and a broad category of investments. It has its own institutional features, jargon, and investment structures. As the survey course in the Real Estate Department, this class aims to provide a broad overview of the real estate field, rather than a narrow focus on any particular topic. Higher-level classes in the Real Estate Department examine many of the topics from this class in more detail.

The presumption in this class is that you have no prior real estate experience, and no pre-existing knowledge of the real estate industry is necessary to do well in this class. If you have prior experience in the real estate industry, some topics might be familiar to you already.

FNCE1000 is a prerequisite for enrollment. In certain instances, the requirement may be waived for students with equivalent finance coursework or experience.

Course Materials:

All **readings** are available on Canvas or can be accessed online. Some of these are listed below. Others are articles that will be posted on the assignment for each class. Students are expected to cover any required readings (listed below with an asterisk *) before class. Other readings are optional, i.e. recommended but not required. Excerpts from the Linneman-Kirsch textbook are available under “Course Materials@PennLibraries”. Other readings are in the “Files>Readings” folder, linked to in the the Canvas class assignment, or available on Canvas via Study.net.

For students interested in learning more, we recommend reading all of *Real Estate Finance and Investments, Fifth Edition*, by Linneman and Kirsch. A good alternative with more technical detail is *Commercial Real Estate Analysis and Investments* by Geltner, Miller, Clayton, and Eichholtz. Other supplemental readings are *Investing in REITs* (Block) and *A Primer of Securitization* (Kendall and Fishman).

Copies of the **PowerPoint slides** used in class will be **posted on Canvas**. We recommend printing them out or downloading the most current version shortly before class. These slides are not designed to be a substitute for attending class. Please check **Canvas** regularly for updates relating to the class and additional materials (such as sample Excel spreadsheets from the in-class examples, practice problems and old exams, and supplemental class material and reading).

Throughout the class you will need to engage with annuity math. The types of quantitative exercises we will be covering in class and exams require simple annuity and present value calculations that can be performed either with a **financial calculator** or with Excel functions. You can use either on exams and the TA will demonstrate both methods. If you decide to use a financial calculator, we recommend the HP 10b11+. You can borrow one of these from the Lippincott library.

Grading:

The course grade will be based on your performance on **two midterm exams** (22 percent each), **three group case assignments** (16 percent for case 1, 12 percent each for cases 2 and 3), and **participation** (10 percent). In order to pass the class, you must pass both exams, contribute to and submit all individual and case assignments, and attend class regularly (i.e., we should recognize you when you come to the exam!).

Details on each deliverable are provided below. The due dates and times for all assignments are final. Failure to submit an exam or assignment on time will result in zero points for that exercise. The **regrade** policy is appended to this syllabus.

Each assignment is **curved** by section and the variance is standardized. The curved scores are totaled for each student and the total is curved again within section. In practice, this means that your grade is determined by how many standard deviations your assignment scores are above or below your section's mean and whether you have correlated over- or underperformance across assignments.

Exams:

The two midterm exams will be held in JMHH350 on **Wednesday February 22** and **Wednesday April 19** at your regularly scheduled class time. Exams must be completed on a laptop using Respondus Lockdown Browser. We will provide specific instructions for the installation and use of Respondus on the course Canvas site. If needed, you can borrow a laptop with Respondus loaded from Wharton Student Support. The second exam is not cumulative in content but assumes proficiency in basic skills taught in the first portion of the class. Exams will cover material discussed in class and during guest lectures, as well as the cases, practice problems, and required readings.

*Midterm exams must be taken in-person at the assigned time. **If you cannot attend class on the exam dates, please do not take this class.** Make-ups will only be given at the request of the Undergraduate Vice Dean's office.*

Cases:

There will be two group-based cases. They will each include a quantitative component (financial modeling) and a qualitative component.

You will choose your own group of **three to four members of your own section** and must work with the same team on all cases. **Register your team** on Canvas before Case 1 is due.

The cases require a variety of skills, from financial savvy to management, so try to have a mix of talents and backgrounds on your team. I strongly encourage you *not* to take the “divide and conquer” approach of having only one or two team members work on each case. You will be much more successful if the group uses a truly collaborative process. You are responsible to make your team work, so please **select your team members carefully**. 30% of your overall case grade will be based on the median evaluation you receive from your teammates at the end of the semester.

You may discuss the cases with other groups and give and receive assistance. However, each group must separately prepare their own case materials and write-ups. All cases should be submitted on Canvas on their respective due dates by the time indicated in the syllabus after which time submissions will lock automatically. **Late case submissions will not be accepted.**

Class Participation:

We seek to make this course an engaging experience and we need your help to make this happen. We expect you to **participate** in class discussions (unless we have discussed otherwise) and to **speak up if you are confused** (since this typically indicates that others are as well!). We will also **cold call**, as necessary, so we hear from everyone.

To facilitate productive class discussions, we assign short readings and class-prep questions. We expect that you do the **required readings** and, when assigned, submit a response to the **class-prep questions** by midnight the night before class. These questions are meant to help you think about the topic before we cover it in class. Some are qualitative and don't have a right or wrong answer. Others are quantitative and have a correct answer, but we do not expect you to get it right – the goal

is to make you think about a particular issue so that you can get the most out of class. We will review your answers and may call on you to expand on them in class. Your submission will be graded as complete if you have made an effort to think through question. You may skip two without penalty.

We will start recording **attendance** using the Canvas Wharton Attendance Module on **January 23** (Mon). Arriving five or more minutes late for class is treated as an absence. You may be absent from three classes that are without any grade penalty and, accordingly, may request **up to three class recordings**. You do not need to email us to let us know about these absences. If you expect to miss more than three classes due to an extended illness or personal/family emergency, please do email us, copying your undergraduate advisor, so that we can make accommodations to help you stay on track.

The participation component of your grade will be based on the share of class-prep assignments you complete (you can miss up to two without penalty), your attendance (you have three excused absences throughout the semester), and your general participation (in class and on Canvas discussion boards). Sub-par participation includes violations of the technology policy outlined below.

Technology:

Tablets may be used for note-taking only. Screens need to be flat on the table so as to not distract other students. I reserve the right to change this policy if it impacts the learning environment. Some lectures center around excel spreadsheets. I will notify you in advance if you can bring a **laptop**. Otherwise, you may not use a laptop unless medically necessary. If you have a medical excuse, please inform me before class begins. **Phones** must be turned off and put away at the start of class.

Classroom expectations:

- We expect that you will not find every topic we cover to be of interest to you, but that you will **be a good sport** about it. Students considering a career in real estate development, for example, are interested in very different things than those considering consulting. All the topics we will cover are of interest to someone in the class, but few are of interest to everyone. Please be patient I go into depth on a topic that is not especially relevant to you.
- The **seat** you choose on January 23 is yours for the entire semester. Please sit there every class, except during exams, when we will randomly assign new seats.
- We appreciate it if you display your **name tents**.
- This class strives to be an inclusive community, learning from the many perspectives that come from having differing backgrounds and beliefs. As a community, we aim to be respectful to all. Faculty and students are expected to commit to creating an environment that facilitates inquiry and self-expression, while also demonstrating diligence in understanding others' viewpoints.

Guest Speakers:

Guest speakers are scheduled outside of normal class time, as **listed on the schedule below**. Three regular lectures are canceled to make up for the three guest lectures. These sessions are **required** material. We do not record these lectures in instances where doing so would prevent the guest from speaking freely. If this is the case, you will need to get the notes from someone else if you are unable to attend.

Getting help:

- **Please contact us.** Do not think that a question is too “basic” to ask us. We are happy to help students understand any material they are having difficulty with. All we ask is that you take a stab at it yourself before turning to us. We both hold regular office hours throughout the semester, take appointments, and answer questions by email.
- Get help from **your TAs**. The TAs will hold *excel modeling recitations and office hours* to help you on case assignments and *optional review sessions* to review quantitative practice problems as they are taught and don’t have to play catch up the week exam. These office hours and review sessions will be scheduled and posted on Canvas shortly after the start of the semester. Each TA will advise students on a specific case or midterm prep as follows:
 - Case 1: Neha Surapaneni, (nehasur@sas.upenn.edu)
 - Case 2: Eli Kiani (elikiani@wharton.upenn.edu)
 - Case 3: Ashley Clarke (aeclarke@wharton.upenn.edu)
 - General help and review sessions: Lee Murphy (jlmurphy@wharton.upenn.edu) and Breland Finch (bfinch@wharton.upenn.edu)
- The TAs and instructors will post on **Q&A discussion boards** on Canvas ahead of case due dates and exams. Please check that we haven’t already answered your question there before emailing.

We are deeply aware of and sympathetic to the challenges that students may face both in and out of the classroom. Mental health concerns or stressful events (e.g., associated to the Covid 19 pandemic) may lead to diminished academic performance or reduce your ability to participate in daily activities. Free, accessible, confidential mental health services are available on campus (see the Counseling & Psychological Services (CAPS) website at <https://caps.wellness.upenn.edu/>). Students should also **feel free to reach out to discuss any issues or request accommodations as necessary.**

Honor code:

You may discuss the cases and problems with other students who are currently enrolled. You may not obtain assistance, or solicit advice, from former students, current or past employees of firms involved with the assignment, or anyone else involved in the real estate investment. Each case team must separately prepare their own case materials and write-ups without reference to anyone else’s case materials or write-ups. You may not share your written or Excel case materials, and you may not circulate suggested solutions to cases. Violations of these rules will be treated as violations of Penn’s Code of Academic Integrity and will be strictly enforced and reported.

Copyright information:

All federal and state copyrights reserved for all original material presented in this course through any medium, including lecture and print. Any copyrighted material provided in this course is for your personal, noncommercial use and may not be copied and distributed to others without the prior permission of the copyright owner. Individuals may not be paid for taking or transferring their class notes without my express written permission.

Course Schedule

Required readings are marked with an asterisk (*). Other readings are optional.
Class Prep Questions (CPQ) are provided in italics and are due at midnight the day before class.

| Date | | Topic | Textbook Readings (see Canvas assignments for current event articles) |
|--------------|----------|---|--|
| Jan 11 (Wed) | | Introduction to real estate | |
| Jan 18 (Wed) | Module 1 | Topic #1: Real estate valuation and returns | Linneman, "Prerequisite I: DCF and NPV" Linneman, "Prerequisite II: Internal Rate of Return" Keys, "Why Automation Is Killing the Property Appraisal Business" *Linneman, ch. 9: "The Use and Selection of Cap Rates" |
| Jan 23 (Mon) | | Topic #2: Pro forma set up Case #1 distributed | *Linneman, ch. 5: "Property Level Pro Forma Analysis," pp. 55-69 |
| Jan 25 (Wed) | | Topic #3: Leases Seat selection | *Linneman, ch. 4: "The Fundamentals of Commercial Leases," pp. 45-54 Class Prep Question (CPQ): Retail leases |
| Jan 30 (Mon) | | Topic #4: Property-level risk and return | |
| Jan 31 (Tue) | | Case #1 individual component due by midnight | |
| Feb 1 (Wed) | Module 2 | Topic #5: Simple mortgages & debt in the pro forma | *Linneman, "Prerequisite III: Amortization Fundamentals," p. 384-96 *Linneman, ch. 15: "The Use of Debt and Mortgages," pp. 225-233 CPQ: Mortgage Math Refresher |
| Feb 6 (Mon) | | Topic #6: Risk and rewards of leverage | *Linneman, ch. 15: "The Use of Debt and Mortgages," pp. 233-236 CPQ: Refinancing |
| Feb 8 (Wed) | | Financing options discussion | Bring laptops to class CPQ: Construction draws |
| Feb 13 (Mon) | | Case #1 discussion | Case #1 due by 8am |
| Feb 15 (Wed) | | Topic #7: Sharing risk via financing structures | *Linneman, ch. 17: "Ground Leases as a Source of Finance," pp. 249-255 *Maira, "Understanding Real Estate Joint Ventures" CPQ: MA MF Pro Forma |
| Feb 16 (Thu) | | Guest lecture: Eric Shiela, Chief Operating Officer, Rubenstein Partners (6-7pm, in-person location TBD) | |
| Feb 20 (Mon) | | Midterm Review | |
| Feb 22 (Wed) | | Midterm Exam #1 | |

| Date | | Topic | Preparation |
|--------------|----------|--|---|
| Feb 27 (Mon) | | Class cancelled in lieu of guest lectures - <i>tentative date (might be moved in event of unexpected events)</i> | |
| Mar 1 (Wed) | | Class cancelled in lieu of guest lectures - <i>tentative date (might be moved in event of unexpected events)</i> | |
| Mar 13 (Mon) | Module 3 | Topic #8: Taxes Case #2 distributed | *Linneman, ch. 5: "Property Level Pro Forma Analysis," pp. 70-76 |
| | | Guest lecture: Helen Gurfel, Head of Sustainability and Innovation, CBRE (6-7pm, in-person at 350 SHDH) | |
| Mar 15 (Wed) | | Topic #8: Taxes (continued) | CPQ: Getting to ATCF |
| Mar 20 (Mon) | Module 4 | Topic #9: Cycles | *Linneman, ch. 25: "Real Estate Cycles," pp. 344-358 Smith, Adjustment Mechanisms in Real Estate Markets (study.net) |
| Mar 22 (Wed) | | Topic #9: Cycles (continued) | CPQ: Smith Model |
| Mar 27 (Mon) | | Class cancelled in lieu of guest lectures - <i>tentative date (might be moved in event of unexpected events)</i> | |
| Mar 29 (Wed) | | Case #2 discussion | Case #2 due by 8am |
| Apr 3 (Mon) | Module 5 | Topic #10: Equity securitization and the REIT market Case #3 distributed | *BofAML REIT Primer, 6th edition, pp. 1-7 (pp. 23-24 optional) CPQ: REIT Cash Flows |
| Apr 5 (Wed) | | Topic #11: Securitization of Debt Interests: Commercial Mortgage-Backed Securities | *Cibelli, Lord Abbett Investment Brief, CMBS 2017 Di Salvo and Johnston, "Skin in the Game in the CMBS Market" |
| Apr 10 (Mon) | Module 6 | Topic #12: Housing and the Rent-vs-Own Decision | *Falcone, "Why Buying a Home is a Smart Investment for Millennials" *Olick, "It's Better to Rent than Buy in Today's Housing Market" CPQ: Should you buy or rent? |
| Apr 12 (Wed) | | Topic #13: Corporate Real Estate Usage Decisions | *Raice, "Zynga to Spend \$228m on SF Property" *Takahashi, "Zynga sells its SF HQ for \$600m" Linneman, ch. 23, "Corporate Real Estate Decision-Making," pp. 320-33 CPQ: Zynga's Sale-Leaseback |
| | | Guest lecture: Richard Gorsky, Managing Director, RCG Longview (6-7pm, in-person location TBD) | |
| Apr 14 (Fri) | | Case #3 due by 8am | |
| Apr 17 (Mon) | | Midterm Review | |
| Apr 19 (Wed) | | Midterm Exam #2 | |
| Apr 24 (Mon) | | Case #3 Presentations (Part I) | |
| Apr 26 (Wed) | | Case #3 Presentations (Part II) | |

Regrade Policy

I strive for accuracy and equity in the grading for this class. However, despite our best efforts, grading is sometimes imperfect and the onus for bringing any errors to my attention falls upon you. The following set of rules provides a mechanism for requesting regrades to correct grading errors. **If you do not follow these rules, you will forfeit your right to a regrade.** The rules are designed to maintain fairness by not rewarding gratuitous regrade requests, while also not penalizing students for bringing errors to my attention.

1. **If we made an error in adding up your points to obtain your total score**, all you need to do is *type* up a short explanation describing the points we failed to add, attach it to your assignment, and submit it to the relevant “Regrade” assignment on canvas.
2. My intent is that you only lose points *once* for a mistake. Sometimes, an error in one part of an assignment creates incorrect answers in another part of the assignment. In that case, we look for internal consistency. If your answer would have been correct had you not made your earlier mistake, we will note the mistake but not deduct further points for it. Similarly, if in a case you repeat the same calculation in a number of circumstances, we will deduct points only once for a calculation error but we will try to note it every time. **If you believe that we inadvertently deducted points multiple times for the same error**, please *type* up a *detailed* explanation and submit it to the relevant “Regrade” assignment on canvas. Be sure to take the time to make sure you understand the errors you made before submitting the regrade request.
3. To aid your understanding of the material and of the grading philosophy, I typically provide an explanation of how the points were allocated. **If you believe your grading was not consistent with the stated guidelines**, please *type* up a *detailed* explanation and submit it to the relevant “Regrade” assignment on canvas. Be sure to take the time to make sure you understand the errors you made before submitting the regrade request. If not, you run the risk that you actually did worse than you thought and were too generous with the points given. In addition, under no circumstances will I consider regrade requests that allege that the grading guidelines are unfair. The guidelines are applied equally to everyone, thus are equitable. Rather, the regrade request is intended to correct errors in adhering to the standard.
4. **If you merely would like an explanation of the grading on an assignment**, submit your assignment with a typed cover letter letting me know what you would like me to explain. We will set up a time to meet and I will explain it to you. **Under no circumstances will I go over the grading of your assignment in “real time,” with no forewarning.**

General policies:

- I personally do all the regrades, in conference with the graders.
- If you request a regrade, the entire assignment will be reviewed. Errors tend to be random and offset each other. It would be unfair to the rest of the class to correct only the grading errors that went against you but not the ones in your favor.
- Regrade requests will be accepted for **one week** following the return of an assignment. If an assignment has multiple parts, the deadline for a regrade request for *any* part of the assignment is one week after the return of the *last* part of the assignment.
- The acceptable margin of error on a 100-point assignment is +/- 2 points. I will not consider regrade requests for one or two points total. The exception is if we totaled up your points incorrectly: in that case, I will correct any size error.
- Do not submit regrade requests by email.