

University of Pennsylvania  
The Wharton School

**Real Estate Finance: Investment and Analysis**  
**REAL/FNCE 2090-401/403**  
**Spring 2024**  
**JMHH 355**

*Subject to change*  
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***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 will be linked in the Canvas class assignments.

For students interested in learning more, we recommend reading *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 a **financial calculator** to perform simple annuity and present value calculations. 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** (25 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 JMHH355 on **Monday February 26** and **Wednesday April 17** at your regularly scheduled class time. 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 three group-based cases. They will each include a quantitative component (financial modeling) and a qualitative component. To ensure that everyone in each group realizes some competence in financial modeling, the first case includes a short individual component graded on a pass/fail basis.

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. We 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 will prompt you to start thinking about a 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 Wharton Attendance App on **January 24** (Wed). You must arrive and check-in during the first 5 minutes of class to be marked as present. Three absences will be excused without penalty. If you expect to miss more than three classes due to an extended illness or personal/family emergency, please email us, copying your undergraduate advisor, so that we can make accommodations to help you stay on track. Class recordings will be automatically made available for excused absences.

The participation component of your grade will be based on the share of class-prep assignments you complete, your attendance, and your general participation (in class and on Canvas discussion boards).

***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 if we go into depth on a topic that is not especially relevant to you.
- The **seat** you choose on January 24 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**.
- **Tablets** may be used for note-taking only. Screens need to be flat on the table so as to not distract other students. We reserve the right to change this policy if it impacts the learning environment. Some lectures center around excel spreadsheets. We 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 us before class begins. **Phones** must be turned off and put away at the start of class.
- 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**. We cancel one regular lecture in place of each guest lecture. These sessions are **required** material and not attending will count against your class attendance unless you register a class conflict on Canvas. We do not record these lectures in instances where doing so would prevent the guest from speaking freely. If this is the case, get the notes from someone else if you were unable to attend.

**Getting help:**

- Your first port-of-call to get help on the course are the **Q&A discussion boards** on Canvas.
- No 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 (and check that it hasn’t been addressed on the relevant Q&A discussion board) 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. Office hours will be scheduled and posted on Canvas shortly after the start of the semester. Each TA will advise students on a specific case as follows:
  - Case 1: Amaan Furniturewala ([amaan@wharton.upenn.edu](mailto:amaan@wharton.upenn.edu))
  - Case 2: Rikki Kong ([rkong01@wharton.upenn.edu](mailto:rkong01@wharton.upenn.edu))
  - Case 3: Dante Stefanelli ([danteste@wharton.upenn.edu](mailto:danteste@wharton.upenn.edu))

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 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 our 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 22 (Mon)		Introduction to real estate	
Jan 24 (Wed)	Module 1	Topic #1: Real estate valuation and returns	Linneman, "Prerequisite I: DCF and NPV" Linneman, "Prerequisite II: Internal Rate of Return" <a href="#">Keys, "Why Automation Is Killing the Property Appraisal Business"</a> *Linneman, ch. 9: "The Use and Selection of Cap Rates"
Jan 29 (Mon)		Topic #2: Pro forma set up <b>Case #1 distributed</b>	*Linneman, ch. 5: "Property Level Pro Forma Analysis," pp. 55-69
Jan 31 (Wed)		Topic #3: Leases <b>Seat selection</b>	*Linneman, ch. 4: "The Fundamentals of Commercial Leases," pp. 45-54 <b>Class Prep Question (CPQ):</b> Retail leases
Feb 5 (Mon)		Topic #4: Property-level risk and return	<b>Case #1 individual component due by 8am</b>
Feb 7 (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 <b>CPQ: Mortgage Math Refresher</b>
Feb 12 (Mon)		Topic #6: Risk and rewards of leverage	*Linneman, ch. 15: "The Use of Debt and Mortgages," pp. 233-236 <b>CPQ: Refinancing</b>
		<b>Guest lecture: Anar Chudgar, Co-President, Artemis Real Estate Partners (6-7pm, in person location TBD)</b>	
Feb 14 (Wed)		Case #1 discussion	<b>Case #1 due by 8am</b>
Feb 19 (Mon)	Module 3	Topic #7: Taxes	*Linneman, ch. 5: "Property Level Pro Forma Analysis," pp. 70-76
Feb 21 (Wed)		Topic #7: Taxes (continued)	<b>CPQ: Getting to ATCF</b>
Feb 26 (Mon)		<b>Midterm Exam #1</b>	
Feb 28 (Wed)		Class cancelled in lieu of guest lecture	

Date		Topic	Preparation
Mar 11 (Mon)	Module 4	Topic #8: Beyond mortgages <b>Case #2 distributed</b>	*Linneman, ch. 17: "Ground Leases as a Source of Finance," pp. 249-255
Mar 12 (Tue)		<b>Guest lecture: Zak Klinvex, CIO &amp; Hayley Morris, VP of Acquisitions, Post Brothers (6-7pm, location TBD)</b>	
Mar 13 (Wed)		Topic #8: Beyond mortgages (cont.)	*Maira, "Understanding Real Estate Joint Ventures" <b>CPQ: MA MF Pro Forma</b>
Mar 18 (Mon)	Module 5	Topic #9: Equity securitization and the REIT market	*BofAML REIT Primer, 6th edition, pp. 1-7 (pp. 23-24 optional)
Mar 20 (Wed)		Topic #9: Equity securitization and the REIT market (cont.)	<b>CPQ: REIT Cash Flows</b>
Mar 25 (Mon)		Class cancelled in lieu of guest lecture	
Mar 27 (Wed)		Class cancelled in lieu of guest lecture	
Apr 1 (Mon)		<b>Case #2 discussion</b>	<b>Case #2 due by 8am</b>
Apr 3 (Wed)	Module 6	Topic #10: Cycles <b>Case #3 distributed</b>	*Linneman, ch. 25: "Real Estate Cycles," pp. 344-358 Smith, Adjustment Mechanisms in Real Estate Markets (study.net)
Apr 8 (Mon)		Topic #10: Cycles (continued)	<b>CPQ: Smith Model</b>
Apr 10 (Wed)	Module 7	Topic #11: 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" <b>CPQ: Should you buy or rent?</b>
Apr 15 (Mon)		Topic #12: 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 <b>CPQ: Zynga's Sale-Leaseback</b>
Apr 17 (Wed)		<b>Midterm Exam #2</b>	
Apr 22 (Mon)	Module 8	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 24 (Wed)		Topic 12: JV Waterfall	
Apr 29 (Mon)		Case #3 Presentations (Part I)	
May 1 (Wed)		Case #3 Presentations (Part II)	
TBD		<b>Guest lecture: Name, Title, Firm (Time, place)</b>	

### Regrade Policy

We 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 our 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. Our 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, we 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 we 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 us know what you would like us to explain. We will set up a time to meet and we will explain it to you. **Under no circumstances will we go over the grading of your assignment in “real time,” with no forewarning.**

#### *General policies:*

- We 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. We will not consider regrade requests for one or two points total. The exception is if we totaled up your points incorrectly: in that case, we will correct any size error.
- Do not submit regrade requests by email.