

University of Pennsylvania  
The Wharton School

**Real Estate Investment: Analysis and Financing  
REAL/FNCE 209/721**

**Fall 2018**

**TuTh 10.30-12.00 pm (209-401), VANC B11**

**TuTh 1.30-3.00 pm (209-402), VANC B11**

**TuTh 3.00-4.30 pm (721-405), JMHH 255**

**Preliminary and subject to change  
July 2018**

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Office Hours: Wednesday 1.30-3.00 pm  
(unless otherwise noted on Canvas)

***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. We delve more deeply into a handful of aspects of the real estate field when they are particularly relevant or when the example provides a more general insight. Higher-level classes in the Real Estate Department examine many of the topics from this class in more detail.

***Prerequisites:***

For undergraduate students, Finance 100 is a strict prerequisite for enrollment. By extension, the Wharton undergraduate economics sequence and Mathematics 104 are also prerequisites. In rare instances, the requirement may be waived for College, Engineering, or Nursing students with equivalent coursework in finance.

*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.

### **Course Materials:**

The **textbook** for the course is *Real Estate Finance and Investments, Fifth Edition*, by Peter Linneman. It is available at the Penn Bookstore. Two alternative texts, *Commercial Real Estate Analysis and Investments* by Geltner and Miller and *Real Estate Finance and Investments* by Brueggeman and Fisher, as well as two supplemental books, *Investing in REITs* (Block) and *A Primer of Securitization* (Kendall and Fishman), are available on reserve at Lippincott. You may find them useful as supplemental resources or for additional background and context.

Additional **readings** are available at Study.net. Some are required (Bulk Pack), others are recommended.

Please check **Canvas** regularly for updates relating to the class and additional materials:

- Copies of the slides used in class
- Updates to the class notes, when necessary
- Sample Excel spreadsheets from the in-class examples
- Practice problems, old exams, and solutions
- Supplemental class material and reading
- Case materials (when available)
- Announcements, updates, and clarifications
- Discussion threads

Non-Wharton students will need to apply for a Wharton account in order to get access to Canvas at <http://accounts.wharton.upenn.edu/>.

You should have a **financial calculator** capable of computing annuities, present values, and IRR. We don't recommend a specific brand or model, but it needs to be able to make these calculations in an efficient way. The calculator you were supposed to obtain for FNCE 100 will be more than adequate. **You are responsible for knowing how to use these functions!** We will not go over this in class and it is your responsibility to figure out how your own calculator works.

You will need a calculator of this kind for the exams. While you can bring any calculator you want, in order to finish the exam on time you will have to be able to compute annuities, present values and IRR fast. It is in your best interest to familiarize yourself with your financial calculator and with the relevant functions well in advance of the exams.

### **Classroom Policies and Expectation:**

- **I take attendance** by circulating a sign-up sheet at the beginning of each class. It is your responsibility to sign it. If you forget, I will count that as an absence. Attendance is a component of class participation, which counts towards your grade (see grading policies below). Attendance is required both for regular classes and for guest lectures (see below). You have two excused absences throughout the semester.
- I expect you to come to class prepared, i.e. up to speed with the material covered in class thusfar and having completed the *required* readings (listed on the syllabus with an asterisk \*). You

should be ready to comment on or discuss the class material.

- I expect you to **participate** in class discussions.
- I 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 who are considering a career in real estate development, for example, are interested in very different things than students who are considering a career on Wall Street. All the topics we will cover are of interest to someone in the class, but few are of interest to everyone. Please recognize that your classmates and you do not necessarily share the same tastes when I go into depth on a topic that you feel is not especially relevant to you.
- **You may not use computers, smart phones, etc.**, unless medically necessary. I appreciate that some of you like to take notes on a computer, but past abuses have forced me to this policy. I allow the use of tablets to take notes, but nothing else. Screens need to be flat on the table so as not to distract other students and my lecturing. I reserve the right to change this policy if this impacts the learning environment.
- The seat you choose on the fourth class meeting (September 6) is yours for the entire semester. Please sit there every class, except during exams, when I will randomly assign new seats.
- Please refer to the Wharton Program's Policy on Secular & Religious Holidays for information specifically relating to absences on account of religious observance.

### ***Guest Speakers:***

Guest speakers are scheduled outside of normal class time, as listed on the schedule below. These sessions are **required** material. **Attendance is required unless you have a valid conflict.** Please notify me by email if you have a conflict. I will circulate a sign-up sheet during each of the lectures – please remember to sign it. Generally, I do not videotape these lectures so the guests feel comfortable speaking freely. You will need to get the notes from someone else if you are unable to attend.

The guest lectures for this semester are:

- Brandon Weber, VTS Inc, Wednesday September 26, 4.30-5.30 pm, room TBA
- Ronald J. Kravit, Cerberus Capital Management, Tuesday October 9, 4.30-5.30 pm, 350 SH-DH
- Nick Kittredge, Prologis, Wednesday November 7, 4.30-5.30, room TBA

One regular lecture is canceled for each guest lecture. These are indicated in the syllabus below and are not in the same week as the guest lecture.

### ***Grading:***

The course grade will be based on **two midterm exams** (30 percent each) and **three cases** (13.3 percent each). Details on each 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.

I will consider **class participation** in class and case discussions when deciding grades. Sub-par participation includes arriving late to or missing classes. As explained above, I take attendance by circulating a sign-up sheet at the beginning of each class and each of you has two excused absences. Class participation will contribute up to a third of a letter grade in your final grade.

The regrade policy is appended to the syllabus.

**Examinations:**

The two midterm exams will be held in regularly scheduled class time, one on **Tuesday, October 16** and the other on **Tuesday, December 4**. 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, the class notes, the cases, the practice problems, and the required readings. The exams are closed-book, but you are allowed to bring one 8.5 x 11" sheet of notes (double-sided) into each exam. You will need to bring a financial calculator to the exams (see the paragraph on the importance of financial calculators above). You will not be allowed to use a computer or tablet. In addition, **seats will be randomly assigned on exam days**.

*Both exams must be passed in order to receive a passing grade for the course. Exams must be taken at the assigned time. **If you cannot attend class on these dates, please drop the class now.** Make-up exams will not be administered except at the request of the Undergraduate Vice Dean's office (undergraduates) or a Wharton Dean's Office-approved excuse (MBAs). Notes from Student Health should be taken to the Vice Dean's office for endorsement by your advisor.*

**Practice problems** and **old exams** will be made available on Canvas, along with detailed solutions. Doing these problems is a fundamental part of the class. Please do the practice problems after the topic set in which they are covered - for example, do Practice Problems set #9 after we cover Topic #9. I will neither ask you to hand in the problem sets nor grade them, but this is not an indication that I consider these practice problems unimportant.

There will be *optional* **interactive review sessions** throughout the semester (dates will be announced on Canvas), during which you will have the opportunity to thoughtfully engage with the material by working in groups on relevant practice problems. Teaching assistants will be present to answer questions that relate to the material. These sessions are intended to encourage consistent review and collaboration, rather than cramming before exams.

**Cases:**

There will be three group project cases handed out in class. You will choose your own group of **three to five members**, from any of the sections that I teach. **Register your team** by signing up on Canvas **before September 6**.

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 may discuss the cases with other groups; however, each group must separately prepare their own case materials and write-ups.

It is your responsibility to form and maintain groups. You know your peers best! If you cannot find a team, I can facilitate the process by letting you know which teams have few members or if someone else is looking for a team. Unless exceptional circumstances arise, you should stick with the same team for the entire course.

**You are responsible for making your team work.** If you think a teammate is not working with good

faith, or has neglected to finish her/his share of work, you must try hard to work it out within the group. Conflicts can happen within teams, and working in teams is one of the skills that you are supposed to develop in this class. You will need this in the real world!

If you still feel aggrieved after the case is done, send me an email with your name, the case, the offending group member, the nature of the problem, and steps you have taken to mitigate the problem. If two or more serious complaints are registered against you by your group members, 20% will be deducted from your overall case grade.

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. Cases are to be submitted on Canvas by the due date and time reported in the syllabus, at which time submissions will be automatically locked. **Late cases will not be accepted nor will extensions be given.**

**Disclaimers:**

- The class **schedule** is an ambitious goal and may not reflect the actual timing, or even sequence, of the material covered.
- Be aware that it is the policy of the Real Estate Department that students who take the class **pass/fail** cannot count the course toward the real estate concentration. While non-majors can take the course pass/fail, grades will not be “uncovered” if a student later decides to become a real estate concentrator.

**Getting help:**

- **Contact me.** I am happy to help students understand any material they are having difficulty with. All I ask is that you take a serious stab at it yourself before turning to me. I hold regular office hours, take appointments, and answer questions by email. I will post on Canvas when I have availability for office hours, **typically Wednesdays 1.30-3.00 pm**. If you plan to come to my scheduled office hours, **please sign up through Canvas**. Contact a TA if you have trouble signing up.
- **Interactive review sessions** will be offered throughout the semester, roughly every other week. These are **optional** and will be advertised on Canvas. The TA will be present to answer your questions as you work in groups over practice problems. Right before the exams, these sessions will be structured like a traditional review session, with the TA going over some of the old exams posted on Canvas.
- **Get help from your TAs.**
  - Three TAs will be responsible for the cases and will hold office hours before a case is due. These will be announced on Canvas before each case is handed out.
  - Amrajan Aujla ([aaujla@wharton.upenn.edu](mailto:aaujla@wharton.upenn.edu)) will be your TA for general help with the class and help before the exams. He will be present for interactive review sessions and lead exam reviews before the first and second midterm. Both kinds of review sessions will be announced on Canvas.

***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. You are of course authorized to take notes in class for your own personal, noncommercial use. You may share them with other course participants, but you may not distribute them to anyone else without my prior permission. You may not record my lectures without my prior permission.

**Course Schedule**

Required readings are marked with an asterisk (\*). The other readings are optional.

<b>Date</b>	<b>Topic</b>	<b>Readings / Assignments</b>
Tuesday, August 28, 2018	Topic #1: Course requirements, class overview, and overview of real estate markets.	<a href="#"><i>Emerging Trends in Real Estate 2018</i></a> , chapters 1-2 (available on Canvas) Linneman, chapter 1: "Introduction: Risks and Opportunities" Linneman, chapter 2: "What Is Real Estate?"
Thursday, August 30, 2018	Topic #2: Elements of real estate value: Income and expenses; pro-forma setup.	* <b>Linneman, chapter 5:</b> "Property Level Pro Forma Analysis", <b>pp. 55-73</b> * <b>Linneman, chapter 6:</b> "Financial Modeling" Linneman, "Prerequisite I: The Basics of Discounted Cash Flow and Net Present Value Analyses" Linneman, "Prerequisite II: IRR: What It Is and What It Isn't" Brealey and Myers, <i>Principles of Corporate Finance</i> , chapter 3: "How to Calculate Present Values."
Tuesday, September 04, 2018	Topic #2, continued: Cap rates.	* <b>Linneman, chapter 9:</b> "The Use and Selection of Cap Rates"
Thursday, September 06, 2018	Topic #3: Mortgages and debt in the pro forma.  <b>Sign up for a case team</b>  <b>Case 1 handed out in class (no electronic copies available)</b>  <b>Choose your seats today!</b>	Linneman, "Prerequisite III: Amortization Fundamentals"
Tuesday, September 11, 2018	Topic #3, continued.	* <b>Linneman, chapter 5:</b> "Property Level Pro Forma Analysis", <b>pp. 74-77.</b>
Thursday, September 13, 2018	<b>No class.</b> <i>Canceled in lieu of 1<sup>st</sup> guest lecture</i>	

Tuesday, September 18, 2018	Topic #4: Taxes and Real Estate.	* <b>Linneman, chapter 5: “Property Level Pro Forma Analysis”, pp. 77-82.</b> * <b>Linneman, chapter 18: “Real Estate Exit Strategies.”</b>
Thursday, September 20, 2018	Topic #5: Property-level risk and return.	* <b>Linneman, chapter 15: “The Use of Debt and Mortgages”</b> Linneman, chapter 14: “Should You Borrow?”
Tuesday, September 25, 2018	Topic #6: Evaluating pro formas and appraisals.  <b>Case 1 part 1 due 10.00 am today</b>	* <b>BP #1: <i>Nine Abuses Common in Pro Forma Cash Flow Projections</i></b> * <b>Linneman, chapter 10: “Development Pro Forma Analysis”</b> OPT #1: <i>How Reliable Are Commercial Appraisals? Another Look</i>
<b>Wednesday,</b> September 26, 2018	<b>Guest lecture: Brandon Weber</b> 4.30 pm, room TBA	
Thursday, September 27, 2018	Topic #7: Financing structures.	* <b>BP #2: <i>Guide to Real Estate Capital Markets: Participating Debt and Equity. [This article is a bit dry. Do your best to wade through, and don't worry about the “Parameters” sections.]</i></b> * <b>Linneman, Chapter 17: “Ground Leases as a Source of Finance.”</b> * <b>Linneman, p. 269 “Return waterfall”</b> * <b>Linneman, p. 222 “Mezzanine finance”</b>
Tuesday, October 02, 2018	<b>Case 1 part 2 due 10.00 am today</b>  <b>Case 1 discussion</b>	
Thursday, October 04, 2018	<b>No class. Fall term break</b>	
Tuesday, October 09, 2018	Topic #7, continued.  and  <b>Guest lecture: Ron Kravit</b> 4.30 pm, 350 SH-DH	

Thursday, October 11, 2018	Topic #8: Introduction to leases and the economics of retail malls.	<b>*Linneman, chapter 4:</b> “The Fundamentals of Commercial Leases.”
Tuesday, October 16, 2018	<b>1<sup>st</sup> MIDTERM EXAM</b>	
Thursday, October 18, 2018	Topic #9: Equity securitization and the REIT market.  <b>Case 2 posted on Canvas</b>	<b>*BP #3:</b> <i>Basic Valuation of a Real Estate Investment Trust</i> <b>*Linneman, chapter 21:</b> “REITs and Liquid Real Estate” OPT #2: <i>REIT Share Prices and the Declining Relative Importance of Commercial Real Estate</i> OPT #3 <i>Liquid Real Estate</i> OPT #4 <i>REITs as an Alternative Investment in Volatile Financial Markets</i>
Tuesday, October 23, 2018	Topic #9, continued.	<b>*Linneman, chapter 12:</b> “Real Estate Company Analysis.” <b>*BP #4:</b> <i>UPREITs: A Vehicle for Tax Deferral and Asset Growth</i> OPT #5 <i>The Five Overlooked Features of the Real Estate Capital Markets</i>
Thursday, October 25, 2018	Topic #10: Securitization of debt interests: Commercial Mortgage-Backed Securities.	<b>*Linneman, chapter 16:</b> “Sources of Long- and Short-term Debt” Linneman, “Supplemental II: CMBS Case Study”
Tuesday, October 30, 2018	Topic #10, continued.	
Thursday, November 01, 2018	<b>Case 2 due 10.00 am.</b> <b>Case 2 discussion.</b>  <b>Case 3 handed out in class (no electronic copies available).</b>	
Friday, November 02, 2018	<b>Zell-Lurie Fall meetings.</b>	Not required, but highly recommended.

Tuesday, November 06, 2018	Topic #11: Real estate cycles.	<b>*BP #5:</b> <i>Adjustment Mechanisms in Real Estate Markets</i> OPT #6: <i>The Making of an Asset Class</i> <b>*Linneman, chapter 25:</b> "Real Estate Cycles" OPT #7: <i>Living Downtown</i> OPT #8: <i>Developer: Villain or Hero?</i>
<b>Wednesday,</b> November 07, 2018	<b>Guest lecture:</b> Nick Kittredge 4.30 pm, room TBA	
Thursday, November 08, 2018	Topic #12: The rent/own decision in corporate and residential real estate.	<b>*Linneman, chapter 23:</b> "Corporate Real Estate Decision Making"
Tuesday, November 13, 2018	Topic #12, continued.	
Wednesday, November 14, 2018	<b>Case 3 due 12.00 pm.</b> (No class, no discussion)	
Thursday, November 15, 2018	<b>Case 3 discussion.</b>	
Tuesday, November 20, 2018	<b>No class.</b> <i>Canceled in lieu of 2<sup>nd</sup> guest lecture</i>	
Thursday November 22, 2018	<b>No class.</b> <b>Thanksgiving</b>	
Tuesday, November 27, 2018	Topic #13: Return and risk in housing markets	<b>*BP #6:</b> <i>Safety in Renting</i> OPT #9: <i>Assessing High House Prices: Bubbles, Fundamentals, and Misperceptions</i>
Thursday, November 29, 2018	Wrap-up / Final Review.	
Tuesday, December 04, 2018	<b>2<sup>nd</sup> MIDTERM EXAM</b>	

Thursday, December 06, 2018	<b>No class</b> <i>Canceled in lieu of 3<sup>rd</sup> guest lecture</i>	
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**Regrade policy**

I strive for accuracy and equity in the grading for this class. However, despite my best efforts, grading is sometimes imperfect. 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.

- The onus for bringing any errors to my attention falls upon you. Pick up your assignments promptly so you can check the grading and make sure that your grade on Canvas matches the grade on your assignment.
- 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. 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 we were too generous with the points given.
- Regrade requests will be accepted for **three weeks 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 three weeks after the return of the last part of the assignment.
- The acceptable margin of error on a 100-point assignment is **+/- 2 points**. Please do not submit 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.
- 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 place both in my mailbox in SHDH.
- 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 along with the assignment to my mailbox in SHDH.
- 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 along with the assignment to my mailbox in SHDH.
- 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.

- **Do not submit regrade requests by email.**