REAL ESTATE FINANCE B8331
COURSE SYLLABUS
FALL 2016

Professor: Brian P. Lancaster
Adjunct Professor of Finance
Email: blancaster.nyc@gmail.com
Phone: 860-898-0436
Office Hours: Please contact me and we can arrange a meeting or call.

Teaching Assistants:
Section 1: Eric Liang: ErLiang17@gsb.columbia.edu
Section 2: Tiao Guan: TGuan17@gsb.columbia.edu
Office Hours: By appointment

Schedule and Location:
Section 01: Tues, Thurs 9:00AM-10:30AM
Section 02: Tues, Thurs 10:45AM-12:15PM
Classroom: Uris 333

Course Overview:
The objective of the course is to teach you the fundamental concepts, analytical methods, tools and
models used for making commercial real estate finance and investment decisions. For example,
how investors acquire real estate properties by issuing a variety of debt and equity claims. The
course will focus primarily on income producing properties (i.e. commercial real estate).

The general approach will be to teach you first the fundamental principals, the math, the
spreadsheet, the logic of real estate finance and then to apply this to the “reality” of real estate
finance – considerations you have to take into account at the sidewalk level.

The course is designed to ensure that you have a thorough understanding of the “science” (the
theory and models) as well as the “art” (reality) of real estate finance and real estate investing. The
approach utilizes a rigorous, unified finance-based framework in the lectures and spreadsheets that
integrates risk and expected return to answer real estate investment decision-making problems
encountered in the real world, such as deciding between the investment returns of two properties,

1A brief biography of Professor Lancaster is at the back of this syllabus.
what is an appropriate risk adjusted borrowing rate, when should vacant land be developed etc.

This theoretical approach is complemented in the lectures and case studies with the “art” of real estate investing - real situations to help students gain a deeper understanding of the issues both by applying these concepts and seeing the limitations of these principals and models when applied to reality. For example, what are the best assumptions to make in modeling cash flows for cap rates, vacancies etc. How sensitive is our analysis to our assumptions. How do we account for vacant land adjacent to a shopping mall we may consider developing? How do the physical attributes of a property impact its value (floorplates, windows, views) etc?

By the end of the course you should have: a solid understanding of how to directly invest and value real estate properties; when and how to use leverage, how to invest indirectly in real estate through various vehicles, such as private equity, real estate investment trusts, CMBS and other forms such as mezzanine debt and finally…How to make money!

**COURSE OUTLINE**

1. Sept 6: **Course Overview and Requirements**
   Session 1 Lecture notes (CANVAS)
   Linneman, Ch. 2 What is Real Estate? (CANVAS)

2. Sept 8: **Introduction to Pro forma, Risk and Leases**
   How to do a projected cash flow analysis of a property, limitations, NOI, CapEx, how to value different types of leases. Choosing the right discount rate. Tenant risk, zoning risk, operational risk, liquidity risk, rate risk.
   Session 2 Lecture Notes (CANVAS)
   Linneman, Ch. 4, Property level pro forma analysis, p. 37-50. (CANVAS)
   Linneman, Ch. 6 Real Estate Due Diligence. (CANVAS)
   Homework 1 Assignment Due Sept 17 (CANVAS)

   Definition and mechanics of calculating cap rates, the determinants of cap rates, linking discounted cash flows with cap rates.
   Session 3 Lecture notes. (CANVAS)
   Analysis of Income Producing Properties: Valuation and Cap rates (CANVAS)
   Emerging Trends in Real Estate 2015 (Optional reading). (CANVAS)

---

The dates on which various topics are discussed in class may change depending on when speakers can attend.
4. Sept 15: **Introduction to Mortgage Analysis and Introduction to Case 1 Part 1**
Features, mechanics and math of commercial real estate mortgages (calculation of amortization schedules, effective yields in theory and using a financial calculator, commercial mortgage prepayments
Session 4 Lecture Notes (CANVAS)
Geltner and Miller, Ch. 16, p. 387-397. (CANVAS)
Geltner and Miller, ch. 17, pp. 407-416 (CANVAS)
Case 1: The Associates Task, Part 1: Sunset Apartments (CANVAS)
Case 1, Part 1 Sunset Apartments Template (CANVAS)
Case 1: Part 2 Byline and Duke (CANVAS)
Case 1, Part 2 Byline Template (CANVAS)
Case 1, Part 2 Duke Template (CANVAS)

5. Sept 20: **Real Estate Capital Structure I: Implications for Risk and Return**
The impact of debt and equity on returns, how much debt to use, LTV, expected ROE, expected return on mortgage debt,
Session 5 Lecture Notes (CANVAS)
Geltner and Miller, Ch. 16 Mortgage Basics I: An Introduction and Overview (CANVAS)

Calculating state prices, pricing mortgage and equity, calculating a “fair” mortgage rate, quantifying the default risk embedded in mortgages, analyzing the relationship between mortgage rates and loan to value ratios.
Session 6 Lecture Notes (CANVAS)
Notes on State Prices (CANVAS)
HW #2 (CANVAS)

7. Sept 27: **Discussion of Case #1 Part 1 (Case #1 Part 1 Due) and Dynamic Valuation**
Analysis of whether or not to invest in several commercial real estate properties, calculating risk and return on both a levered and unlevered basis. Unlevered asset valuation, calculating debt service, IRR and NPV with leverage, LTV, DSCR.
Session 7 Lecture Notes (CANVAS)

Overview of different types of CRE subordinate debt (mezzanine, B-notes, preferred equity), pricing/valuing subordinate debt, calculating the “fair” mortgage rate on junior debt, legal aspects of junior debt, risks, workouts, how to acquire commercial real properties at a discount by mezzanine lending.
Session 8 lecture notes (CANVAS)
Lancaster, Schultz, Fabozzi, Ch. 15, p. 347-365 (CANVAS) This reading provides an in-depth analysis of subordinate debt, mezzanine debt and B-notes. It is optional.

3
9. Oct 4: **Dynamic Valuation Spreadsheet**
Spreadsheet analysis and manipulations to determine mortgage rates, unlevered asset valuation.
Session 9 lecture notes (CANVAS)
Dynamic Valuation Excel Spreadsheet (CANVAS)

10. Oct 6: **Case #1 Part 2 (The Associate’s Task) Due, HW #2 Due, and Real Estate and Taxes**
Quantitative and qualitative analysis and determination of a commercial real estate property investment. Taxation on income and capital gains, NOI and before-tax and after-tax cash flows, tax treatments for depreciation and interest income, tax shields.
Session 10 lecture notes. (CANVAS)
HW Assignment #3 (CANVAS)

11. Oct 11:

12. Oct 13: **Midterm Exam**

13. Oct 27: **Default Decisions over Time and Distressed Debt**
The economics of borrower default decisions, apply dynamic valuation framework, make sense of what is observed in the real world, differentiation between book and market values.
Session 12 lecture notes. (CANVAS)

Analysis of ground leases, participating mortgages and their impact on borrowing rates, the value of recourse and personal guarantees.
Linneman, Ch. 15
Session 13 lecture notes (CANVAS)
Case 2 1800 L Street Cover Explanation (CANVAS)
Case 2 1800 L Street Case (CANVAS)
Case 2 1800 L Street Template (CANVAS)

15. Nov 3: **Land Development, Valuation, Risk, and Return**
Analysis and decisioning as to when to develop land, how to value land, land as a physically levered asset, predictions on return and volatility of land, why is land valuable.
Session 14 Lecture Notes (CANVAS)
What are commercial mortgage backed securities, how to value and invest in them, risks and returns, borrowing through conduit lenders versus balance sheet lenders, pros and cons, influence on real estate values.
Session 15 Lecture Notes (CANVAS)

17. Nov 15: Real Estate Investment Trusts
What are equity REITs, why invest in REITs, what are the tax advantages of a REIT structure, valuing REITs and measuring their profitability, FFO vs AFFO, mortgage REITs.
Session 16 Lecture Notes (CANVAS)
NAREIT website: www.REIT.com (Good background material on REITs, video of REITs, good future reference source.)

18. Nov 17: Case #2 (1800 L. Street) Due: Discussion of case
1800 L Street Powerpoint (CANVAS)

19. Nov 22: Real Estate Private Equity Funds and Introduction to Case 3 (HW #3 Due)
Private equity business models, managerial and investments skills of a general partner, fund investment strategies, considerations for investing in private equity CRE, distribution waterfalls, REITs versus private equity real estate funds
Session 18 Lecture Notes (CANVAS)
Graybar Case Cover Explanation Page (CANVAS)
Graybar Case (CANVAS)

20. Nov 29: Guest speaker: Senior commercial real estate bank lending officer (Wells Fargo) discussing as in a bank large loan committee (+$25million) valuation of a property using pro forma concepts, how to value property, qualitative risks (zoning, tenant risk, environmental, operational, legal risks, borrower quality, pricing of loan, LTV, debt yield, DSCR. This session will refresh and apply many of the concepts learned in Sessions 1, 2, 3, 4, 5, 6 to a real lending situation.

21. Dec 1: Guest speaker: Senior private equity manager (Blackstone or Related Cos.) discussing a potential investment in a commercial real estate property, how much leverage to use, risks of the property etc. This session will apply many of the concepts learned in the cases as well as sessions 6, 7, 8, 9, and 18 to a real investment situation.

22. Dec 6: Case #3 (Graybar) Due: Discussion of case
Graybar Syndications Case Powerpoint (CANVAS)
Course handouts: Powerpoints of lectures, readings, and cases will be available on CANVAS before classes. Students should make sure to read lecture powerpoint slides and readings for each class BEFORE each class and bring their lecture powerpoint slides with them to class so that students may take notes on them if necessary. Readings that are optional are indicated. They are provided if students wish a deeper look into a particular talk. They are also helpful additional reference documents to keep should you pursue a career in real estate finance.

Reference books:

- **Real Estate Finance and Investments: Risks and Opportunities** by Peter Linneman (2nd edition)—Strongly Recommended. This book provides background material and context for many of the concepts covered in class. It is also useful as a reference book.

- **Commercial Real Estate Analysis and Investments** by Geltner and Miller, with Clayton and Eichholtz, (Southwestern Press, 2nd edition)—Recommended. This book is a very useful reference that provides a more detailed coverage and offers more quantitative analysis.

- These two books are complementary to each other and are available for purchase at the bookstore. Four copies of each book are available at the library.

Grading: Your grade will be determined by assignments including three homework exercises and three cases, a midterm, a final, and class participation.

Assignments: There will be homework assignments and cases. They jointly account for 60% of your grade. Homework assignments and cases will be completed in groups ranging from 3 to 5 students. It is your responsibility to form the group.

**Cases:** You will do three cases. Each case counts 15% towards your course grade.

**Homework Exercises:** You will have three homework exercises. Each homework assignment accounts for 5% of your course grade.

Assignments should be turned in at the beginning of class on the day it is due. Late assignments will not be accepted.

Midterm: The midterm exam covers material for the first half of the lecture. It is only offered in class. Make-ups are not given unless you have written authorization from the
Final exam: The final exam covers material primarily from the lectures after the 1st midterm. Some material from the first half of the class may also be included. It is only offered in class. Make-ups are not given, unless you have written authorization from the student affairs office.

The mid term and final exams jointly account for 35% of your course grade. More specific instructions on what to expect will be given later.

The readings distributed over the semester are to help you better understand concepts and materials covered in class. Materials only in the readings but not covered in class are not required for the exams.

Class Participation:

Please bring name plates to every class. Class participation counts for 5% of your course grade. Please participate. The course is cumulative, so being lost gets quite costly very quickly. Constructive comments in class will increase the participation points. Please turn off cell phones, Blackberries, etc. Absences or late arrivals will be considered as a factor in class participation. Materials covered by guest lecturers are required.

Professor’s Biography:

Professor Lancaster has over twenty five years of professional experience in real estate finance and capital markets including President, The Minot Group (real estate finance and capital markets consulting to hedge funds, private equity, REITs, banks and insurance companies); Co-head Financial Analytics and Structured Transactions, RBS; Chief Investment Officer, Real Estate Division, Wachovia/Wells Fargo; Head of Commercial Real Estate Research, Wachovia Capital Markets; Head of Structured Products Research, Wachovia Capital Markets; Managing Director Principal Bear Stearns (commercial and residential real estate securities); Senior Capital Markets Economist Federal Reserve Bank of NY and Bank of England.

He also invests in real estate development projects in New York, real estate private equity in Asia and Europe and is currently a partner developing condominiums in Tribeca.

He has also taught in the MBA program at the Columbia Business School and at the Stern School of Business, New York University.

He holds a BSc in Economics from the Massachusetts Institute of Technology, an MBA in Finance, Stern School of Business, New York University, and a Master of International Affairs and Public Policy, Columbia University.

He is a board member of the Commercial Real Estate Finance Association, a former
Executive Committee member of the Mortgage Bankers Association and Editor in Chief of Commercial Real Estate Finance journal. He periodically lectures at Duke University and the Wharton School of Business, University of Pennsylvania.

The course will utilize, build on and extend concepts covered in the following core courses:

<table>
<thead>
<tr>
<th>Core Course</th>
<th>Connection with Core</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Finance</td>
<td>1. Time value of money</td>
</tr>
<tr>
<td></td>
<td>2. Risk</td>
</tr>
<tr>
<td></td>
<td>3. CAPM</td>
</tr>
<tr>
<td></td>
<td>4. Modigliani Miller Theorem</td>
</tr>
<tr>
<td></td>
<td>5. Arbitrage pricing and the law of one price</td>
</tr>
<tr>
<td></td>
<td>6. Efficient Markets</td>
</tr>
<tr>
<td></td>
<td>7. Frictions</td>
</tr>
<tr>
<td>Managerial Economics</td>
<td>1. Maximization and thinking on the margin</td>
</tr>
<tr>
<td></td>
<td>2. Analyzing complex decision-making under uncertainty</td>
</tr>
<tr>
<td></td>
<td>3. Understanding market competition and equilibrium thinking</td>
</tr>
<tr>
<td>Managerial Statistics</td>
<td>1. Statistics data analysis</td>
</tr>
<tr>
<td></td>
<td>2. Probability intro</td>
</tr>
<tr>
<td></td>
<td>3. Conditional probability</td>
</tr>
<tr>
<td></td>
<td>4. Modeling uncertainty</td>
</tr>
<tr>
<td>Global Economic Environment I</td>
<td>1. What causes inflation</td>
</tr>
<tr>
<td></td>
<td>2. What drives employment</td>
</tr>
<tr>
<td></td>
<td>3. What are the causes of business cycle</td>
</tr>
<tr>
<td></td>
<td>4. What are the effects of monetary policy</td>
</tr>
<tr>
<td></td>
<td>5. What is the role of financial markets in the economy</td>
</tr>
</tbody>
</table>

Students will be expected to have mastered these concepts and be able to apply them in the course.