B8331 REAL ESTATE FINANCE
Summer A 2021

PROFESSOR: BRIAN P. LANCASTER
Phone: 860-898-0436
E-mail: blancaster.nyc@gmail.com
Office Hours: Please contact me and we can arrange a meeting or call.

TEACHING ASSISTANTS
TBD
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Office hours: Zoom by appointment

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Phone: TBD
Email: TBD@columbia.edu
Office hours: Zoom by appointment

Communications from professor and teaching assistants about the course will take place through Canvas. Students should make sure they regularly check for announcements and messaging notifications.

SCHEDULE AND LOCATION
Tues, Thurs 8:30AM-11:45AM
Classroom: Sessions will be via Zoom remote learning. Assuming appropriate conditions, in-person meetings with the professor can be arranged.

COURSE DESCRIPTION
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 including apartments (i.e. commercial real estate). For those interested in residential real estate finance and development including single family homes, condominiums etc. the course Residential Real Estate: Dirt, Debt and Derivatives is recommended.

The general approach will be to teach you first the fundamental principles, 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 (e.g. CAPM, options theory) 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, what is an appropriate risk adjusted borrowing rate, when should

1 A brief biography of Professor Lancaster is at the back of this syllabus.
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 can we apply the CAPM model of required return on an asset like the Empire State Building which unlike a stock trades infrequently. 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? We will also teach less theoretically rigorous but oft used real estate investment approaches, such as “Cash on Cash Returns“ and “Replacement Value“ so you can understand the limitations and advantages of these different approaches as they are used in the industry. The professor’s professional background is leveraged to provide students with real situations and examples that support and sometimes contradict theory to help the students gain a deeper understanding of Real Estate Finance.

By the end of the course you should have: a solid understanding of how to directly invest and value real estate properties as well as distressed debt; 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!

REQUIRED COURSE MATERIALS

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. They may bring their lecture powerpoint slides with them to class, however powerpoint slides will be provided at the beginning of each class so that students may take notes on them. Readings that are optional are indicated. They are provided if students wish a deeper look into a particular topic. They are also helpful additional reference documents to keep should you pursue a career in real estate finance. Lectures will be recorded and made available on demand.

Reference Books:
- *Real Estate Finance and Investments: Risks and Opportunities* by Peter Linneman (5th edition)—*Strongly suggested*
  This book provides background material and context for many of the concepts covered in class. It is also useful as a reference book should you wish to pursue a career in commercial real estate.
- *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 or online. Four copies of each book are available at the library.

CONNECTION TO THE CORE
- Corporate Finance: Time value of money, risk, CAPM, Modigliani Miller Theorem, arbitrage pricing and the law of one price, efficient markets, frictions.
Managerial Economics: Maximization and thinking on the margin, analyzing complex decision-making under uncertainty, understanding market competition and equilibrium thinking.

Managerial Statistics: Statistics data analysis, probability intro, conditional probability, modeling uncertainty.

Global Economic Environment I: What causes inflation, what drives employment, what are the causes of business cycle, what are the effects of monetary policy, what is the role of financial markets in the economy.

CLASSROOM NORMS AND EXPECTATIONS

Students are expected to adhere to CBS Core Culture in this class by being Present, Prepared, and Participating.

Students are required to turn on their video during classes and turn off the audio. Students may ask questions (and are encouraged to do so) by turning on their audio and speaking up or raising the visual zoom hand. Class participation counts for 11% of your course grade. Please participate. The course is cumulative, so being lost gets quite costly very quickly. TAs will take attendance and note class participation. Excessive unexcused absences from class will weigh more heavily than 11% on your grade in accordance with the CBS attendance policy. Not speaking in class all semester means you receive a grade of 0 for the 11% class participation grade. For example, a student who scored perfectly on all written materials without participating in class would receive a scored of 89% or HP+ rather than an A. As such lack of participation can reduce a grade by one or two levels or more. Constructive comments in class will increase the participation points. All cell phones, iPads, laptops, Blackberries, and other electronic devices must be turned off. Absences or late arrivals will be considered as a factor in class participation. Materials covered by guest lecturers are required.

For team work, it is expected that students participate equally in homework assignments and cases. If team members report to the professor that some team members are not doing their fair share of the work, the grades of those who are not, may be marked down significantly.

We welcome back and congratulate our long time guest speaker Ken Caplan of Blackstone. Given Ken’s new senior role as co-head of Global Real Estate at Blackstone (the position formerly held by Jon Gray), enrolled students may invite non-enrolled students to attend that class with the professor’s permission. We are also excited to have again Peter Lewis, CEO, Wharton Equity Partners who has been very well received by students. Finally, the mid-term exam was moved to a take home exam continuing last year’s very successful experiment to free up space for guest speaker, Paul Fried, one of the US’s leading distressed debt restructuring experts given the CRE opportunities and risks created by COVID. Paul will apply many of the distressed debt concepts learned in class to actual scenarios arising this past year. Students are required to study any materials guest speakers provide and come to class with thoughtful questions and participate fully in class discussions. Students SHALL NOT use any devices while guest speakers are speaking as this is extraordinarily ungracious. While this has not been a problem with the vast majority of students, there will sometimes be one or two students in the back doing this. Guest speakers in this course are among the most senior thought leaders in their respective fields and have generously taken time out of their day to teach us and so should be treated with the commensurate respect and everyone’s full attention.
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<thead>
<tr>
<th>Session</th>
<th>Topic(s)</th>
<th>Required Pre-Readings</th>
<th>Assignments Due (Type)</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Overview and Requirements</td>
<td>Session 1 Lecture notes (CANVAS)</td>
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<td>Linneman, Ch. 2 What is Real Estate? (CANVAS). Ch. 3 International Real Estate Investing (CANVAS)</td>
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<td>2</td>
<td>Introduction to Pro forma, Risk and Leases</td>
<td>Session 2 Lecture Notes (CANVAS)</td>
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<td>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.</td>
<td>Linneman, Ch. 5, Property level pro forma analysis.(CANVAS)</td>
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<td>Linneman, Ch. 7 Real Estate Due Diligence. (CANVAS)</td>
<td>HW #1 (CANVAS)</td>
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<td>HW #1 (CANVAS)</td>
<td>Due Session 5, May 18.</td>
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<td>3</td>
<td>Analysis of Income Producing Properties: Valuation and Cap Rates</td>
<td>Session 3 Lecture notes. (CANVAS)</td>
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<td>Definition and mechanics of calculating cap rates, the determinants of cap rates, linking discounted cash flows with cap rates.</td>
<td>Analysis of Income Producing Properties: Valuation and Cap rates (CANVAS)</td>
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<td>Emerging Trends in Real Estate 2021 (Optional reading). (CANVAS)</td>
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<td>4</td>
<td>Introduction to Mortgage Analysis and Introduction to Case 1 Part 1</td>
<td>Session 4 Lecture Notes (CANVAS)</td>
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<td>Features, mechanics and math of commercial real estate mortgages</td>
<td>Geltner and Miller, Ch. 16, p. 387-397. (CANVAS)</td>
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<td>(calculation of amortization schedules, effective yields in theory and using a financial calculator, commercial mortgage prepayments.</td>
<td>Geltner and Miller, ch. 17, pp. 407-416 (CANVAS)</td>
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<td>Case 1, Part 1 Sunset Apartments Template (CANVAS)</td>
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<td>Case 1, Part 2 Byline Template (CANVAS)</td>
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<td>Case 1, Part 2 Duke Template (CANVAS)</td>
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<td>5</td>
<td>Real Estate Capital Structure I: Implications for Risk and Return</td>
<td>Session 5 Lecture Notes (CANVAS)</td>
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<td>The impact of debt and equity on returns, how much debt to use, LTV,</td>
<td>Geltner and Miller, Ch. 16</td>
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<td>expected ROE, expected return on</td>
<td>Mortgage Basics I: An Introduction and Overview</td>
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| Session 6 | 05/18/2021 (T) | Real Estate Capital Structure II: Law of One Price  
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)  
Due Session 9, 5/25/21 | HW #1 Due (A: Group) |
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<td>Session 7</td>
<td>05/20/2021 (Th)</td>
<td>Discussion of Case #1 Part 1 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.</td>
<td>Session 7 Lecture Notes (CANVAS)</td>
<td>Case #1 Part 1 Due (A: Group)</td>
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| Session 8 | 05/20/2021 (Th) | Real Estate Capital Structure III: Subordinate Debt and Mezzanine Financing  
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, Understanding Managed CRE CDOs, p. 12 - 27 (CANVAS) This reading provides an in-depth analysis of subordinate debt, mezzanine debt and B notes. It is optional. | |
| Session 9 | 05/25/2021 (T) | Dynamic Valuation Spreadsheet  
Spreadsheet analysis and manipulations to determine mortgage rates, unlevered asset valuation. | Session 9 lecture notes (CANVAS)  
Dynamic Valuation Excel Spreadsheet (CANVAS) | |
| Session 10 | 05/25/2021 (T) | 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 #3 (CANVAS)  
Due Session 19, 6/10/21 | HW #2 Due (A: Group)  
Case #1 Part 2 Due (A: Group) |
| 11  | 05/27/2021 (Th) | 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 11 lecture notes. (CANVAS) |
|-----|----------------|---------------------------------------------------------------------------------|----------------------------------|
| 12  | 5/27/21 (Th)   | **Guest Speaker:** Paul Fried, Executive Managing Director, Greystar  
Discussion of the opportunities and risks of distressed debt investing, restructuring distressed debt, and property takeovers through distressed debt purchases. This session will apply, extend and elaborate on the concepts learned in Session 8: High Yield CRE Debt, Session 11, Default Decisions Over Time and Case 2 1800 L Street, to real situations arising this past year!! from COVID. |
| 13  | 06/1/2021 (T)  | Introduction to Case 2 and Real Estate Capital Structure IV: Financing Strategies beyond Plain Vanilla  
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) due Session 17, 6/8/21  
Case 2 1800 L Street Template (CANVAS) |
| 14  | 06/1/2021 (T)  | 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) |
| 15  | 06/3/2021 (Th) | Commercial Mortgage Backed Securities  
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) |
| 16  | 06/3/2021 (Th) | Real Estate Investment Trusts Part 1  
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) |
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<tr>
<th>Date</th>
<th>Content</th>
<th>Notes</th>
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<tr>
<td>17 06/8/2021 (T)</td>
<td>Real Estate Investment Trusts Part 2: 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.</td>
<td>Session 16 Lecture Notes (CANVAS) NAREIT website: <a href="http://www.REIT.com">www.REIT.com</a> (Good background material on REITs, video of REITs, good future reference source.)</td>
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<td>18 06/8/2021 (T)</td>
<td>Discussion of Case #2 (1800 L. Street)</td>
<td>1800 L Street Powerpoint (CANVAS) Case #2 Due (A: Group)</td>
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<td>19 06/10/2021 (Th)</td>
<td>Real Estate Private Equity Funds and Introduction to Case 3 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</td>
<td>Session 18 Lecture Notes (CANVAS) Case 3 Graybar Case Cover Explanation Page (CANVAS) Graybar Case (CANVAS) due Session 21, 6/15/21 HW #3 Due (A: Group)</td>
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<td>20 06/10/2021 (Th)</td>
<td>Guest speaker: Ken Caplan, Global Co-head of Real Estate (Blackstone.) 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.</td>
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<td>21 06/15/2021 (T)</td>
<td>Discussion of Case #3 (Graybar)</td>
<td>Graybar Syndications Case Powerpoint (CANVAS) Case #3 Due (A: Group)</td>
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<td>22 06/15/2021 (T)</td>
<td>Course Review</td>
<td>Lecture 22 Course Review (CANVAS)</td>
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<td>23 06/17/2021(Th)</td>
<td>Guest Speaker: Peter Lewis, CEO, Wharton Equity Partners will discuss future trends and opportunities in commercial real estate and commercial real estate finance.</td>
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**24 Take Home Final Exam (Thursday, 06/17/2021, 8:30AM – 6/21/2021 11:59PM)**
METHOD OF EVALUATION

<table>
<thead>
<tr>
<th>Type</th>
<th>Designation</th>
<th>Grade</th>
<th>Preparation of submission</th>
<th>Discussion of Submission*</th>
<th>Discussion of Concepts**</th>
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<tr>
<td>A</td>
<td>Group Work</td>
<td>Same grade for all group members</td>
<td>By the group</td>
<td>Permitted to discuss (within group)</td>
<td>Permitted</td>
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<tr>
<td>B^1</td>
<td>Individual w/ Discussions of Concepts and Submission</td>
<td>Individual grade</td>
<td>Individual preparation</td>
<td>Permitted to discuss; sharing solutions or submission files is not</td>
<td>Permitted</td>
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- Assignments: There will be homework assignments and cases. They jointly account for 45% of your grade. Homework assignments and cases will be completed in groups up to a maximum of 3 students. It is your responsibility to form the group. 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 expected that it will be offered in class. Make-ups are not given unless you have written authorization from the Office of Student Affairs (OSA).
- 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 Office of Student Affairs (OSA).
- Case 1 actually consists of 3 cases: Sunset Apartments, Duke Office, Byline Industrial.
- There is likely to be one additional “raw case” associated with a guest speaker regarding the origination of an actual recent, large commercial real estate loan. If this happens students must be prepared to discuss the case in class with the guest speaker and turn in a one page writeup that will be graded and taken into consideration in the case course grade.

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.

ASSIGNMENTS

All of your assignment submissions are subject to the [CBS Honor Code](https://www.columbia.edu/cu/cbs/honorcode/). Violations of the CBS Honor Code may lead to failing the assignment, failing the course, suspension, and/or dismissal. In order to avoid ambiguity that may lead to unintentional violations of the Honor Code, assignment description types have been standardized and specified below.
**ATTENDANCE POLICY**

Students are required to attend each class. Students should reach out to the [Office of Student Affairs (OSA)](https://columbia.edu/office-of-student-affairs) by using Core Absence Form on this course’s Canvas page regarding excused absences (for religious observances; personal, medical, and family emergencies; military service; court appearances such as jury duty). Unexcused absences will affect your course grade.

**NOTE:** The following is applicable for Core Courses and influences the professor’s judgment in this course:

- Students that miss more than **33%** of their classes (unexcused absences) will at most receive a **P for the course grade**
- Students that miss more than **50%** of their classes (unexcused absences) will receive a **F for the course grade**

**NOTE:** The following is applicable for Core Courses and for any electives with OSA-administered exams:

- Students that miss the exam for an **excused** reason but are unable to take the exam within the stated make-up period will receive a **zero for the final exam grade**
- Students that miss the exam without notifying OSA (**unexcused**), will receive an **F for the course grade**

Taking exams off schedule creates significant logistical challenges in finding rooms and proctors and most importantly, has the potential to jeopardize the integrity of the exam. Therefore, requests for rescheduling of exams should only be made within the first three weeks of the semester and only for serious conflicts. Rescheduling of exams for weddings, early travel home are not acceptable. Last minute rescheduling of exams may only be done for very serious cause.

**INCLUSION, ACCOMMODATIONS, AND SUPPORT FOR STUDENTS**

At Columbia Business School, we believe that diversity strengthens any community or business model and brings it greater success. Columbia Business School is committed to providing all students with the equal opportunity to thrive in the classroom by providing a learning, living, and working environment free from discrimination, harassment, and bias on the basis of gender, sexual orientation, race, ethnicity, socioeconomic status, or ability.

Columbia Business School will make reasonable accommodations for persons with documented disabilities. Students are encouraged to contact the Columbia University’s Office of Disability Services for information about registration. Students seeking accommodation in the classroom may obtain information on the services offered by Columbia University’s Office of Disability Services online at [www.health.columbia.edu/docs/services/ods/index.html](http://www.health.columbia.edu/docs/services/ods/index.html) or by contacting (212) 854-2388.

Columbia Business School is committed to maintaining a safe environment for students, staff and faculty. Because of this commitment and because of federal and state regulations, we must advise you that if you tell any of your
instructors about sexual harassment or gender-based misconduct involving a member of the campus community, your instructor is required to report this information to a Title IX Coordinator. They will treat this information as private, but will need to follow up with you and possibly look into the matter. Counseling and Psychological Services, the Office of the University Chaplain, and the Ombuds Office for Gender-Based Misconduct are confidential resources available for students, staff and faculty. “Gender-based misconduct” includes sexual assault, stalking, sexual harassment, dating violence, domestic violence, sexual exploitation, and gender-based harassment. For more information, see http://sexualrespect.columbia.edu/gender-based-misconduct-policy-students.

**PROFESSOR’S BIOGRAPHY**

Professor Lancaster has over twenty five years of professional experience in real estate finance and capital markets including his current role as President, The Minot Group, LLC voted one of Forbes “America’s Best Management Consulting Firms” (2017, 2018, 2019, 2020) (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, $86B 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 and securities); Senior Capital Markets Economist Federal Reserve Bank of NY and Bank of England.

He also invests in real estate development projects, distressed real estate, real estate private equity in Asia, mezzanine and bridge funds, securitized products and developed condominiums in NYC. His passion for real estate started with his work on the redevelopment of Boston’s waterfront as a sophomore at MIT.

He is a full time professor in the MBA program at the Columbia Business School where for the last four years he has taught and/or created the following courses: Real Estate Finance; Real Estate Debt Markets; Residential Real Estate: Dirt, Debt and Derivatives; Debt Markets; Capital Markets and Investments; as well as co-taught with Professor Zach Aarons, Real Estate Entrepreneurship. He has also been faculty sponsor for Chazen trips to Thailand, East Africa (Tanzania and Rwanda) and faculty sponsor for Real Estate Association/Chazen Trips (most recently scheduled for Australia). He was formerly an adjunct professor at the Columbia Business School for two years and at the Stern School of Business, New York University, for two years.

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 former 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.