

## REAL ESTATE FINANCE AND DEVELOPMENT

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GSD 5204 FALL 2002 Office Hours – Thursday 2:00 – 5:00 p.m., Friday 9:00 – 11:00 a.m.

### Course Objectives:

This course is intended for GSD and other students interested in real estate. The course focuses on the fundamental skills one needs to engage in real estate investment, finance and development activities. It is designed for planning and design professionals who have a solid background in urban issues, problems, and solutions. The course's objectives are fivefold:

- (1) to help students achieve technical competence in understanding all forms of real estate finance ranging from fully amortized constant payment loans, to price-level adjusted mortgages, to bullet loans, to participating mortgages.
- (2) to give students the technical skills for analyzing the cash flows and economic returns of real estate development and investment: including office, industrial, retail, multifamily, hotel and land development,
- (3) to introduce students to the broad range of real estate capital markets with special attention to the recent public markets, with trends in securitization of real estate finance, including REITs and CMBS.
- (4) to give students an understanding of the implications of various tax issues for real estate development and investment, and
- (5) to expose students to as many aspects of real estate issues and decision-making as possible.

The course combines lectures with case studies. The cases are designed to place students in a number of decision-making situations commonly faced by real estate professionals.

When you complete the class, you should be able to perform all of the fundamental and many of the more advanced analytical computations required for real estate mortgage finance and investment analysis. You should also have a working knowledge of developing the five main investment property types – office, industrial, apartments, retail, hotel and land.

### Course Organization

**Class Meetings:** The class will meet twice a week Thursday and Friday for lectures and once a week for discussion groups. There may be multiple discussion groups, if so, you should select one discussion group and stick with it. Homework assignments will be discussed and turned in at the discussion group class meetings. We have two TAs who will be helping with the discussion groups. The purpose of the discussion groups is to help you solve problems, understand calculator and computer solutions, and answer questions about real estate terminology and practice.

### Instruction Tracks

The class is organized with four concurrent tracks. The first part of the course emphasizes basic financial analysis skills. The balance of the course uses case studies that cover several tracks in each session.

1. Basic analytic skills – Single Period Analysis / Ratios and Multi period analysis/ Discounted Cash Flow Analysis or 6 functions of a dollar (PV, FV, PMT), IRRs. These are applied to mortgage analysis, valuation, investment analysis, Justified Investment Price (JIP), return measures
2. Property types: office, industrial, retail, multifamily, hotel;(income-producing) versus land and housing (for-sale).
3. Investment Process – Equity and Mortgage financing (private), Securitization, and the capital markets.

Development Process - site selection, due diligence, design, financing, leasing/marketing, construction, operations, sale  
Existing versus new development – you make money in real estate by adding value through many different means (zoning, entitlements, leasing, financing, ownership, tax.)

4. Issues – Factors that impact real estate value (location, market, financing, government, infrastructure, ownership structure)  
Investment value  
Urban growth, development, and redevelopment - Impact on the city's short-term and long-term health  
Impact on society

**Required Texts:**

1. *Real Estate Finance and Investments*, W. Brueggeman and J. Fisher, Richard D. Irwin, 10th Edition, 1997.
2. Case packet (available at the Science Building Copy Center)
3. Article packet (available at the Science Building Copy Center)
4. Calculator: All students are expected to own and know how to use a calculator with financial function keys. Hewlett-Packard calculators (the HP12C is a Real Estate Standard) will be the only ones used for in-class keystroke illustration. You are on your own if you have another type of calculator.

Class Handouts: Several cases and many teaching notes will be handed out in class. You will be automatically billed for these materials on your term bill.

**Recommended:**

1. *Professional Real Estate Development: The ULI Guide to the Business*, Richard B. Peiser with Dean Schwanke, The Urban Land Institute, Washington, D.C. 1992. This book is especially useful for understanding the nuts and bolts of developing and operating the five main property types: apartments, retail, office, industrial, and land.
2. *Dictionary of Real Estate Terms* by Jack P. Friedman, Jack C. Harris, and J. Bruce Lindeman, Fifth Edition, Barron's Educational Series, Inc. Hauppauge, NY, 2000. This is useful especially for international students and others who are brand new to real estate terminology. (Recommend you order through Amazon or other on-line book store.)
3. Computer: There will be several computer spreadsheet assignments using EXCEL. If you prefer to use LOTUS or another spreadsheet program, that is okay, but EXCEL is recommended if you expect to need assistance.

**Some Tips:**

**This is a 'terms and skills' course.** You learn a new vocabulary and a variety of technical skills that are necessary for understanding how investors – both private and public sector – evaluate all investments of which real estate represents one *asset class*. (The other asset classes are bonds and stocks). While an introductory finance class would be helpful for understanding the techniques, I assume that most students have not had such a class. We therefore begin with fundamental concepts of Discounted Cash Flow (DCF) analysis known as *6 Functions of a dollar, which include present and future value*.

**Understanding real estate requires mastering a new terminology.** While the concepts are not difficult, you will be introduced to many new terms. Simply learning who the players are, what they do, and what types of debt or equity instruments they deal with is a major part of the course. While we focus on U.S. players and debt and equity institutions (like banks, insurance companies, pension funds, REITs, and government agencies like Fannie Mae and Freddie Mac), they are applicable to almost all countries. While the legal structures differ, the United States, Western Europe, and Japan have all developed similar mechanisms for owning and financing real estate. The techniques you learn in this course should be applicable wherever you plan to work. Indeed, the course of progress in the United States, especially with securitization and growth of publicly-traded entities like REITs for owning real estate, is being followed in emerging market countries.

**Some Basic Concepts*****For-Sale versus Income Property***

There are two main classes of property-type. *For-sale* property which includes houses, condominiums, and land, and *Income-property* which includes apartments, industrial, office, retail, and hotels. The distinction is fundamental to real estate finance because the analytical approach is different, and the methods of financing are different. The market value of *for-sale* property is determined primarily from comparable sales of similar properties. The market value of *income property* is determined by capitalizing the income stream (dividing the Net Operating Income by the capitalization rate  $V=I/R$ ). This course deals primarily with *income property* analysis. We will cover techniques to analyze *for-sale* property in the latter part of the course beginning with the topic "land development".

***Debt versus Equity***

When you purchase a property, you pay for it usually with a combination of debt and equity. Debt includes long term and short term mortgages which may have multiple positions or *liens* if you have more than one mortgage. Equity refers to the cash you put into the purchase, often referred to as the *down payment*. In larger transactions the equity may be put up by a group of investors or form a joint venture or limited partnership to own the real estate. To understand real estate, you must understand both debt and equity. The course begins with debt – mortgage computations and the *effective cost of borrowing* from the borrower's and the lender's perspectives. The 'meat' of the course is determining the ultimate value to the owner (the equity investor). We measure the value using Discounted Cash Flow (DCF) techniques – primarily Net Present Value (NPV) and Internal Rates of Return (IRRs).

### ***Public versus Private Equities***

A revolution in the ownership of real estate has occurred in the United States during the 1990s. For the first time, significant amounts of property are owned by public companies, primarily Real Estate Investment Trusts (REITs). REITs and other publicly-traded real estate companies allow many investors to buy shares of stock in a portfolio of properties. This course will introduce you to REITs, securitized mortgages, and other publicly traded real estate instruments. However, its primary focus is the analysis of the real estate itself – called ‘direct ownership,’ usually in the form of *private* ownership through limited partnerships.

### **5 Stages of Analysis**

The analytical methodology for income property is organized into five stages of analysis. You should memorize these stages as they will be frequently referred to in class.

The 5 stages of analysis for income-producing property in real estate are

Stage 1 - Simple Capitalization methods

Stage 2 - Discounted Cash Flows during Operating Period (Investment Analysis for income properties)

Stage 3 - Combined Cash Flows of Development and Operating Periods

Stage 4 - Monthly Cash Flows during Development Period

Stage 5 - Joint Venture and Syndication Analysis

In this course, I emphasize Stages 1,2, and 5. We do not have time to cover Stages 3 and 4, but they are described in detail in Peiser’s book, *Professional Real Estate Development*.

Analysis of *for-sale* property (land, single-family homes, condominiums) uses a different methodology from that used for *income property*. The methodology referred to in-class as “Land Development analysis” is appropriate for all for-sale property types.

### **Course Requirements and Grading**

There will be one mid-term and a final examination or final paper. Both exams will consist of essay and problem-type questions. There will also be homework problem sets and cases. **Attendance** – is required at all class meetings. As busy professionals this is not always possible, however each student **is responsible for everything said in class!** Thus those that are not able to attend class must find a partner who will give them all the details and notes from class or have that partner audio or video tape the class so that the student can listen to all class presentations and discussions prior to the next class period. **DO NOT CALL ME FOR MISSED ASSIGNMENTS.** Students are expected to keep up with the assignments. . Please have a fellow student in the class deliver and pick up all assignments and notes for you. I will also tape the class for you if you give me a recorder ahead of class. Class Participation will represent 10% of the overall course grade.

Problem sets and cases will be turned in each week and will be graded either full credit or zero credit. If you must miss your Discussion Group, you should give your homework to another student to turn in for credit. A reasonable attempt at solving the assigned exercises will yield full credit. You should show all your work. Answers-only will receive no credit. If you cannot work a problem, at least give it your best "graduate" try.

I encourage you to find a study/case group. 4-5 people is the ideal size. You should attempt to work the problems on your own, but you are welcome to go over them together. However, Xeroxes of study group solutions will **not** be accepted for homework credit. Homework must be hand-written original work. Computer solutions are acceptable and are encouraged, but printouts must also be originals. Answers to the homework assignments will be available for you to check in the Loeb Library. Since you will have the solutions available, the homework credit is given for your hand-written – or computer spreadsheet – attempt to solve the problem; not for getting the right answer. **The only way to learn this material is by struggling with the problems yourself. You should plan on 2-5 hours of problem sets each week plus case preparation.**

The mid-term will be worth approximately 125 points; the final approximately 150 points. Students who have questions or complaints about the grading of exams should return their exams with a list of the questions to be regraded and/or their justifications for "wrong" answers. Oral complaints will not be accepted. If there is continued disagreement after I have re-graded the exam, at that time an appointment should be made to discuss the exam.

The mid-term exam will be given during regular class. The format of the final is subject to change, but will likely be a three-hour exam on January 13, 2-6 pm (the assigned day of exam week). The mid-term and the final exams are required. No make-ups will be given. Please mark the midterm date on your calendar and the final as soon as it is announced. Students are encouraged to do the **Term Project** (described below) rather than the exam. It will take more time but you will learn more.

### Class Participation

Class participation is a key 10% element of this course. Students will be graded on the quality of their questions and comments, not the quantity. I have found that students' questions and comments during class add to the learning experience for everyone. Questions concerning techniques or issues that you do not understand are especially valuable. Usually, if you do not understand a point, there are others in the same boat. Do not be offended if I defer a question you have asked until later in the class or suggest you see me after class. Sometimes, my plan for the class simply does not allow time for answering your question. I never count "stupid" questions against a student unless it is clear that he or she was not listening to the class discussion. In fact, I consider it a plus that a student is intellectually curious enough to try to clarify his/her understanding of material. The quality of a student's questions is frequently the best indicator of superior work.

Because the importance of class, I will need to learn your names as quickly as possible. At the second class, please sit where you will be comfortable for the remainder of the course. At that time, a seating chart will be passed around.

### Use a Name Placard or Badge in EVERY class

**Professor Availability** - My job is to help you learn and I will try to be available as much as possible to facilitate your learning. My office, home and mobile phone numbers have been provided to you so that you can contact me at any time 7 days per week between the hours of 8 a.m. and 10 p.m. (Except Sundays, which will be Noon to 10 p.m.) If you do not get me directly please leave a phone number and time during the next 24 hours when I can return your call. I will also respond to emails as quickly as possible – due to my travel please use BOTH email addresses at all times. [gmueller@gsd.harvard.edu](mailto:gmueller@gsd.harvard.edu) AND [grmueller@leggmason.com](mailto:grmueller@leggmason.com)

### Final Grades

Students may choose to take the course either pass/fail or for a grade. You must turn in a written request (not email) to take the course pass/fail within one week after receiving back your mid-term exam grade. If no written request is received, I will assume you are taking the course for a grade. The following approximate weights will be used to determine your final grade:

	<u>For grade</u>	<u>pass/fail</u>
Mid-term exam	30%	40%
Final exam or project	30%	20%
Groups (problems / cases and other homework assignments)	30%	30%
Class participation	<u>10%</u>	<u>10%</u>
	100%	100%

### Optional Final Project or Paper in lieu of final exam

You may elect to do a final project or paper in lieu of the final exam. The paper or project will be due on **January 13**. If you want to select this option, you must do so in writing by turning in an outline of your proposal by **November 22**. The choice of topic or project is up to you. You are encouraged to do an analysis of a real estate acquisition or new development project. The project analysis should include the following sections.

	<u>points</u>
Location – metro area, city, neighborhood	20
Market Analysis	20
Appraisal Comps	20
Construction Costs (if new or renovated)	20
Numbers – DCF analysis	30
Quality of Presentation	20
Complexity of deal	<u>15</u>
<b>Total</b>	<b>145</b>
Bonus for joint venture analysis (IRR to equity partner)	15
Bonus for Sensitivity analysis	<u>15</u>
Bonus	30

**Paper** – Project analyses are preferred to papers, but if you have a burning desire to use the final project to explore a real estate area of interest to you, you may do so. The paper should be limited to 30 pages of main text plus exhibits (shorter is better). Topics may range from Pricing of REITs to Securitization of Mortgages in Croatia. Topics may also combine social and planning issues with real estate such as the Impact of Sports Stadiums on Urban Revitalization, or an analysis of the evolution and redevelopment of a neighborhood center such as Davis Square or Newton Corner.

**Appraisal Exercise (due in your discussion group October 21)  
(part of assignment grade)**

This is a team exercise for which you may work in groups selected by you of **up to five people**. The purpose is for you to practice the art of appraising property – determining its market value. The assignment is to estimate the value of five buildings – office, industrial, houses, mixed use –of your own choosing. They should be the same property type (for example, five industrial buildings or five apartment buildings). They do not need to be next to one another or even in the same neighborhood, but you may appraise five adjacent buildings if you prefer.

This appraisal is expected to be crude – a rough estimate of value based on your visual inspection of the property and your comparison of it to similar properties which have recently sold. You will be taught how to find recent transactions in Boston over the internet as well as tax appraisals which are available using the GIS data for Boston. You do not need to have precise square footages or actual lease/income information, although if you can find it, that will be a plus.

What you should turn in:

1. A one page summary sheet per property including a photograph, address, approximate square footage, summary characteristics (condition, features, amenities, renovation, date built, parking, lot size) and your estimate of value. In addition, you should show how you derived that value.
2. Add your properties to the GIS data base for the class. (Due one week later.) You will learn what data to add and how to do it, along with your picture of the building. We will use this data in class to understand how value changes by location and property characteristic.

**GSD 5204**  
**REAL ESTATE FINANCE AND DEVELOPMENT**  
**ARTICLES**

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