

MBAX 6610

Real Estate Finance & Investment Analysis

Course Syllabus for Fall 2007

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| Lectures: | TuTh 5:00pm-6:15pm KOBL 375 |
| Instructor: | Professor Thomas G. Thibodeau |
| Office: | Koelbel S417 |
| Office Hours: | TuTh 3:00pm-4:45pm; and by appointment. |
| Phone: | 303.735.4021 (Office) 303.492.3643 (Katie Mrazik – CU Real Estate Center) |
| Email: | tom.thibodeau@colorado.edu |

Description and Objective:

The primary objectives of this course are to: (1) conduct income property investment analyses; (2) develop the technical competence necessary to structure real estate transactions; and (3) understand the financial assets securitized by real estate. The student will analyze income properties using Excel spreadsheets and ARGUS Financial Software. Techniques for structuring real estate transactions examined in this course include lender participations, sale-leasebacks, joint ventures, and real estate syndications.

The secondary market for mortgages and mortgage backed securities (MBSs) will be examined in some detail. Topics covered include a survey of the private and public institutions that participate in the secondary mortgage market; pooling mortgages to create a MBS; and pricing MBSs. The course will examine both single-family property MBSs and commercial property mortgage backed securities (CMBSs). The homogeneity of the mortgage pool, prepayment risk, and default risk are examined in some detail. The course will also examine real estate investment trusts (REITs) and returns to real estate investments.

Required Materials:

1. A financial calculator or a laptop computer.
2. Text: *Real Estate Finance and Investments*, by Brueggeman and Fisher (BF). Thirteenth Edition. McGraw-Hill Irwin, Inc. 2008.

3. Copies of the PowerPoint slides used in class are available on the course website:
<http://leeds-faculty.colorado.edu/thibodea/MBAX6610>

Optional Materials:

A student registered in this course can purchase Version 12 of ARGUS for \$50 at <http://www.realm.com/en/education/universityprograms.aspx>. ARGUS is also installed in the Leeds computer lab.

Disability Statement:

If you qualify for accommodations because of a disability, please submit a letter to me from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, or www.Colorado.EDU/disabilityservices.

Absences Due to Religious Observances:

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. If a scheduled exam conflicts with a religious obligation, I am willing to schedule an alternative time to take the exam.

Classroom Behavior:

Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. Faculty has the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

Policy on Discrimination and Harassment:

The University of Colorado at Boulder policy on Discrimination and Harassment (<http://www.colorado.edu/policies/discrimination.html>), the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships applies to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-

492-5550. Information about the ODH and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>.

Honor Code Policy:

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at <http://www.colorado.edu/policies/honor.html> and at <http://www.colorado.edu/academics/honorcode/>.

Course Requirements and Grading:

1. A mid-term exam worth 30% of your course grade; and
2. A final exam worth 50% of your course grade.
3. Two case studies (3300 Walnut and Clayton Lane) each worth 10% of your grade.

The mid-term exam is scheduled for Thursday, October 18 and the final exam is scheduled for Tuesday, December 18, from 7:30pm-10:00pm. All students must take each exam at the scheduled time. If a student has a valid excuse for missing an exam (i. e. a death in the family), then I will simply place a greater weight on the final exam.

Cases:

There are two cases assigned for this course: 3300 Walnut and Clayton Lane. The cases are to be analyzed by your study group. Your group should prepare a typewritten report **not exceeding ten pages** (excluding exhibits and supporting documentation). Cases should be prepared as executive reports. The case should begin with a one page executive summary that: 1) identifies the important aspects of the case; and 2) contains your recommendations. The remainder of the case must provide answers to the case questions. Each case is worth 10% of your course grade. Case assignments are due at the beginning of class on the dates scheduled for discussion. Late papers will not be accepted.

Schedule of Classes, Course Outline and Assignments

Class Meeting 1: Tuesday, September 11, 2007

I. Introduction to Real Estate Finance and Investments

- A. This course
- B. Homework/Cases
 - 1. Willowbrook Apartments (feasibility)
 - 2. 3300 Walnut (income property financing)—10% of your grade.
 - 3. Washington Tower (partnerships)
 - 4. Clayton Lane (all of the above)—10% of your grade.

II. Mortgage Mechanics (**Chapter_4.ppt**)

- A. Fixed Payment
 - 1. Payments, Amortization Schedules and Balances
 - 2. Expected Yields (IRRs)
 - 3. Effect of Prepayment on Expected Yield
 - 4. Computing Points Necessary to Achieve a Desired Yield
- B. Interest Only/Balloon Loans

Assignment: Read Chapter 4 of BF. Do problems 2, 10, 13, 15 and 18 on pages 100-103 of BF.

Class Meeting 2: Thursday, September 13, 2007

- C. Alternative Mortgage Instruments (**Chapter_5.ppt**)
 - 1. Graduated Payment Mortgages
 - 2. Price Level Adjusted Mortgages
 - 3. Adjustable Rate Mortgages
 - 4. Reverse Annuity Mortgages

Assignment: Read Chapter 5 of BF.

Class Meeting 3: Tuesday, September 18, 2007

- D. Mortgage Analysis (**Chapter_6.ppt**)
 - 1. Marginal Borrowing Cost
 - 2. Refinancing
 - 3. Market Value of a Loan
 - 4. Effective Cost of Two or More Loans
 - 5. Cash Equivalency

Assignment: Read Chapter 6 of BF. Do problems 1-7 on pages 170-171 of BF.

Class Meeting 4: Thursday, September 20, 2007**III. Income Property Investment Analysis (Chapter_11.ppt)**

- A. (After Tax) Equity
- B. Computing After Tax Cash Flows from Operations
 - 1. Net Operating Income
 - 2. Before Tax Cash Flow from Operations
 - 3. Business Expenses
 - a. Amortization of Loan Fees
 - b. Mortgage Interest
 - c. Depreciation
 - 4. After Tax Cash Flow From Operations
- C. Computing After Tax Cash Flows from Reversion
 - 1. Before Tax Cash Flow from Reversion
 - 2. Taxation of the Gain from the Sale of Income Producing Properties
 - 3. After Tax Cash Flow from Reversion

Assignment: Read Chapter 11 of BF.

Class Meeting 5: Tuesday, September 25, 2007

- C. The Investment Decision
 - 1. The Internal Rate of Return.
 - 2. Net Present Value
 - 3. Financial Ratios
- D. An Apartment Property Example
- E. Income1: an Excel spreadsheet for income property analysis

Assignment: Read "Is There A Risk Premium Puzzle in Real Estate," by James Shilling. The Willow Brook Apartments problem will be assigned today.

Class Meeting 6: Thursday, September 27, 2007

- F. Introduction to ARGUS.

Class Meeting 7: Tuesday, October 2, 2007**IV. Financing Income Producing Properties (Chapter_12.ppt)**

- A. Financial Leverage
- B. Participation Loans
- C. Interest Only

- D. Accrual Loans
- E. Convertible Mortgages
- F. Mezzanine Debt

Assignment: Read Chapter 12 of BF. 3300 Walnut will be assigned today.

Class Meeting 8: Thursday, October 4, 2007

- V. Risk (**Chapter_13.ppt**)
 - A. Sensitivity Analysis
 - B. Partitioning the IRR
 - C. Lease Risk
 - D. Introduction to Real Options

Assignment: Read Chapter 13 of BF.

Class Meeting 9: Tuesday, October 9, 2007

- VI. Disposition and Renovation (**Chapter_14.ppt**)
 - A. Disposition: IRR for Hold vs. Sell
 - B. Renovation IRR

Assignment: Read chapter 14 of BF. Do problems 1, 2, 3 and 4 on pages 433-435 of BF.

Class Meeting 10: Thursday, October 11, 2007

Class discussion of 3300 Walnut.

Class Meeting 11: Tuesday, October 16, 2007:

Review for Mid-Term Exam. The exam will cover material in Chapters 4-6 and 11-14 of BF.

Class Meeting 12: Thursday, October 18, 2007:

Exam 1. You must have your calculator and a writing instrument to take the exam.

Class Meeting 13: Tuesday, October 23, 2007

- VII. Corporate Real Estate (**Chapter_15.ppt**)
 - A. Lease vs. Own (Unlevered and Levered)
 - 1. Acquisition Cash Flows
 - 2. ATCF from Operations
 - 3. ATCF from Reversion
 - 4. The Return on the Business vs. the Return on the Property

- B. Sales-leaseback
 - 1. Tax Aspects
 - 2. After Tax Cash Flows from Operations
 - 3. After Tax Cash Flows from Reversion
 - 4. Effective Cost of a Sale-Leaseback

Assignment: Read chapter 15 of BF. Do problems 1, 2, and 3 on page 456 of BF.

Thursday, October 25, 2007: No Class--ULI Meetings in Las Vegas

Class Meeting 14: Tuesday, October 30, 2007

VIII. Financing Development

- A. Financing Project Development (**Chapter_16.ppt**)

Assignment: Read chapters 16 and 17 of BF and Winfern at Metric.

Class Meeting 15: Thursday, November 1, 2007

IX. Partnerships, Joint Ventures and Syndications (**Chapter_18.ppt**)

- A. Partner Contributions and Distributions
 - 1. Introduction
 - 2. Partnership Contributions
 - 3. Allocating the Cash Flows
 - a. from operations
 - i. preferred return
 - b. from reversion
 - 4. Capital Accounts

Assignment: Read Chapter 18 of BF.

Class Meeting 16: Tuesday, November 6, 2007

- 5. Substantial Economic Effect
 - a. Balancing Capital Accounts
 - b. The Gain-Chargeback Procedure

- B. Partner Returns

Assignment: Willow Brook Syndication.

Class Meeting 17: Thursday, November 8, 2007

- C. SYNDICAT.XLS: an Excel Syndication spreadsheet (after tax)
- D. Partnerships in ARGUS (before tax)

Assignment: Read Washington Tower case. Clayton Lane case will be assigned today.

Class Meeting 18: Tuesday, November 13, 2007**X. The Secondary Mortgage Market and Mortgage Backed Securities****A. Operation of the Secondary Mortgage Market (Chapter_19.ppt)**

1. Mortgage securitization
 - a. introduction to pricing the security
 - i. Mortgage Backed Bonds
 - ii. Mortgage Pass Through Securities
 - b. Examples
 - i. GNMA consisting of 20 identical \$50,000 loans
 - ii. GNMA consisting of 20 \$50,000 loans; 10 with a 9% rate, 10 with 11%.
 - c. MBS terms
 - i. pool factor
 - ii. mortgage balance
 - iii. prepay rates
 - iv. weighted average life
 - v. half life
 - vi. duration
 - d. Prepayments
 - i. Why Homeowners Prepay
 - (a) Financial Incentives
 - (b) Socioeconomic Influences
 - (c) Other (Disaster Losses, etc.)
 - ii. Prepayment Models
 - (a) No Prepayments
 - (b) Prepay in 12
 - (c) Constant Prepay Rates (CPR)
 - (d) FHA Experience (Historical Survival Rates)
 - (e) FHA Multiples
 - (f) Public Securities Administration (PSA) Model

Assignment: Read Chapter 19 of BF. The GNMA MBS problem will be assigned today.

Class Meeting 19: Thursday, November 15, 2007

- B. New Products in the Secondary Market (Chapter_20_CMO.ppt)
 1. Collateralized Mortgage Obligations (CMOs)

- a. Prioritized Principal Repayments
- b. CMO Mechanics
- c. CMO Residuals
- d. Duration

Assignment: Read Chapter 20 in BF (including the Appendix)

Tuesday, November 20, 2007—No Class (Fall Break)

Thursday, November 22, 2007--No Class (Thanksgiving Day)

Class Meeting 20: Tuesday, November 27, 2007

Discuss Clayton Lane in class.

Assignment: Do problems 1 and 2 on pages 616-617 and problem A-1 on page 620 of BF.

Class Meeting 21: Thursday, November 29, 2007

XI. Commercial Mortgage Backed Securities (**Chapter_20_CMBS.ppt**)

A. Introduction to CMBS

- 1. What is a CMBS?
- 2. The market for income property debt
- 3. Anatomy of a CMBS
 - a. Expected Cash Flows
 - b. Multi-class Sequential Pay Pass Through
 - c. The unrated piece
 - d. The IO piece
 - e. Required subordination
- 4. CMBS Risks
 - a. Call protection
 - i. lock-outs
 - ii. prepayment penalties/yield maintenance
 - iii. Treasury defeasance
 - b. cross-collateralization
 - c. cross-default
 - d. lock-box
- 5. Underwriting CMBSs
 - a. Rating Agencies
 - b. CMBS Servicers
 - i. Master servicer
 - ii. Sub-servicer
 - iii. Special servicer

B. Rating CMBS

- 1. Property Cash Flow Adjustments
- 2. Capitalization Rate Adjustments

3. Pool Analysis
- C. Delinquency and Default Risk
 1. Default Research
 2. ACLI Data
 3. Predicting commercial mortgage delinquency and default
- D. Pricing Issues

Class Meeting 22: Tuesday, December 4, 2007

XII. Real Estate Investment Trusts (Chapter_21.ppt)

- A. Introduction to REITs
 1. Legal requirements
 - a. Asset
 - b. Income
 - c. Distribution
 - d. Management
 2. Why REITs?
 - a. Taxes
 - b. Liquidity
 - c. Economies of Scale
 3. Types of Trusts
 - a. Equity, Debt, Hybrid
 - b. REITs, UPREITs, DownREITs
 4. Property Type REITs
 5. REIT Capitalization
- B. Financial Analysis of REITs
 1. Funds from Operation (FFO)
 2. Net Asset Value
 3. Capital Structure
 - a. Leverage
 - b. Finite Life REITs
 - c. Closed vs. Open end REITs
- C. REIT Growth and Development
 1. Internal
 2. External
- D. REIT Examples

Assignment: Read chapter 21 of BF. Do problems 1 and 2 on pages 645-647 of BF.

Class Meeting 23: Thursday, December 6, 2007

XIII. Real Estate Investment Performance (Chapter_22.ppt)

- A. Real Estate Investment Returns
 1. Public
 2. Private

B. Pension Funds and Real Estate

Assignment: Read Chapter 22 of BF; “Pension Funds Allocation to Real Estate Equities: The Past, Present and Future”, by Godley and Thibodeau.

Class Meeting 24: Tuesday, December 11, 2007

XIV. Real Estate Capital Markets

Assignment: To be determined.

Class Meeting 25: Thursday, December 13, 2007

Review for Final Exam.

Final Exam: Tuesday, December 18, 2007, 7:30pm-10:00pm.