

MBAX 6610

Real Estate Finance & Investment Analysis

Course Syllabus for Fall 2016

Lectures:	TuTh 11:00am-12:20pm KOBL S110
Instructor:	Professor Thomas G. Thibodeau
Office:	KOBL S417
Office Hours:	TuTh 9:00am-11:00am, 1:00pm-3:30pm, and by appointment.
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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 income property transactions; and (3) understand the financial assets securitized by real estate. The student will analyze income properties using Excel and ARGUS-Enterprise[®]. Techniques for structuring real estate transactions examined in this course include lender participations, sale-leasebacks, joint ventures, and real estate syndications.

Students are required to use ARGUS-Enterprise[®] in this class. ARGUS software is used throughout the real estate industry by equity investors, lenders, commercial brokers, appraisers and property managers to analyze and manage income producing properties. The students will receive some instruction on how to use ARGUS-Enterprise[®] during class. The take home portion of the mid-term exam will require students to use ARGUS-Enterprise[®] to analyze an income producing property.

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 residential mortgage-backed securities (RMBSs) and commercial 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 laptop computer is required; a financial calculator is highly recommended.
2. Text: *Real Estate Finance and Investments*, by Brueggeman and Fisher (BF). Fifteenth Edition. McGraw-Hill Irwin, Inc. 2016. ISBN 978-0-07-337735-3.
3. Copies of the PowerPoint slides used in class are available on Desire2Learn.

4. Students are required to use ARGUS-Enterprise® for this class. The software is installed in the student labs (Rooms 320 and 380). You may purchase a six-month student license of ARGUS Enterprise® for \$99. Students registered for this class will receive instructions on ordering the software directly from ARGUS.

ARGUS has initiated the ARGUS Software Certification (ASC) Program for Universities. Students who are serious about a career in real estate are ***STRONGLY ENCOURAGED*** to obtain ARGUS Enterprise® certification. This certification will differentiate you in the market for recently minted Real Estate graduate students. Professor Thibodeau is ASC.



Professor Thibodeau is planning to offer an ARGUS-Enterprise® certification course on Thursday evenings from 6:30pm to 9:00pm beginning Thursday, October 13. The class will meet for six consecutive weeks. The last class is Thursday, November 17, the last Thursday prior to Fall Break. Students are on their own to take the ARGUS Enterprise® Certification exam. The cost of the ARGUS Certification course is about \$500. This fee is paid directly to ARGUS software. If you plan to take the ARGUS Enterprise Certification course, **DO NOT** purchase the student license for \$99. A license for the software is included with the ARGUS Enterprise Certification course fee and the license is valid for six months.

Accommodation for Disabilities:

If you qualify for accommodations because of a disability, please submit a letter from Disability Services to Professor Thibodeau in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at dsinfo@colorado.edu. If you have a temporary medical condition or injury, see [Temporary Injuries guidelines](#) under the Quick Links at the [Disability Services website](#) and discuss your needs with Professor Thibodeau.

Religious Observances:

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please contact Professor Thibodeau if a course requirement conflicts with a religious observance.

Classroom Behavior:

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, 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. For more information, see the [policies on classroom behavior](#) and [the student code](#).

Discrimination and Harassment:

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been discriminated against should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or the Office of Student Conduct and Conflict Resolution (OSC) at 303-492-5550. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be found at the [OIEC website](#). The [full policy on discrimination and harassment](#) contains additional information.

Honor Council:

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; 303-735-2273). 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). Additional information regarding the [Honor Code policy can be found online](#) and at the [Honor Code Office](#).

Course Requirements and Grading:

1. A mid-term exam worth 30% of your course grade;
 - a. two-thirds of this grade will be determined by an in-class mid-term; and
 - b. one-third of this grade will be determined by a take-home ARGUS-Enterprise assignment.
2. An in-class final exam worth 30% of your course grade.
3. Two case studies (3300 Walnut and Belmont Buckingham) each worth 10% of your course grade.
4. Two Excel pro-formas each worth 10% of your grade. One pro-forma will generate expected cash flows and investment returns for an existing income producing property. The second pro-forma will generate expected cash flows and investment returns for a partnership.

5. The mid-term exam is scheduled for Thursday, September 29 and the final exam will be scheduled during the week of November 28. 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. The cases are individual projects. You should prepare a typewritten report **not exceeding ten, double-space pages with Times New Roman 12-point font and one-inch margins** (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. I reserve the right to change the cases from what is listed in the syllabus.

Excel:

In addition to the two case studies, each student is required to construct two Excel pro-formas: one for an existing property acquisition and a second for a partnership. Each spreadsheet is worth 10% of your total course grade.

Schedule of Classes, Course Outline and Assignments

Class Meeting 1: Tuesday, August 23, 2016

- I. Introduction to Real Estate Finance and Investments
 - A. This course
 - B. For credit homework assignments (each worth 10%)
 1. 3300 Walnut
 2. An Excel spreadsheet to analyze an existing multifamily property (Willowbrook)
 3. An Excel spreadsheet to analyze a real estate partnership (Durango Capital Partners)
 4. Belmont Buckingham
 - C. ARGUS Software Certification (ASC)
- 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. Prepayment Penalties
 - a. Percent of outstanding balance
 - b. Yield maintenance
 - c. Treasury defeasance
 5. Computing Points Necessary to Achieve a Desired Yield
 - B. Interest Only/Balloon Loans

Assignment: Read Chapter 4 and page 407 (on yield maintenance) of BF.
BF Chapter 4 problems 2, 10, 13, 15, and 20 on pages 108-110.

Class Meeting 2: Thursday, August 25, 2016

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

- D. History of Fixed and Variable Mortgage Rates

Assignment: Read Chapter 5 of BF.

Class Meeting 3: Tuesday, August 30, 2016

- E. 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 177-178 of BF. 3300 Walnut will be assigned today.

Class Meeting 4: Thursday, September 1, 2016

III. Income Property Investment Analysis (Chapter_11.ppt**)**

- A. (After Tax) Equity
- B. Computing Expected 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 6, 2016

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

Class Meeting 6: Thursday, September 8, 2016

- G. Introduction to ARGUS

Class Meeting 7: Tuesday, September 13, 2016**IV. Financing Income Producing Properties (Chapter_12.ppt)**

- A. Financial Leverage
- B. Interest rate swaps
- C. Weighted Average Cost of Capital (WACC)
- D. Participation Loans
- E. Interest Only
- F. Accrual Loans
- G. Convertible Mortgages
- H. Mezzanine Debt

Assignment: Read Chapter 12 of BF. 3300 Walnut is due today. You must develop your own Excel spreadsheet to analyze Willow Brook. More instructions to follow.

Class Meeting 8: Thursday, September 15, 2016

- 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, September 20, 2016**VI. Commercial Property Leases (Chapter_9.ppt)**

- A. Income
 - a. Base Rent
 - b. Rent Changes
 - c. Overage/Percentage Rent (Retail Leases)

- d. Non-Rental Income
- B. Expenses
 - a. Operating
 - i. Fixed
 - ii. Variable
 - b. Capital
 - i. Tenant Improvements
 - ii. Leasing commissions
 - iii. Capital Expenses
 - 1. Equipment
 - 2. Structural
 - 3. Grounds
- C. Lease Types
- D. Measuring Space
- E. Effective rent
- F. Non-monetary lease provisions

Assignment: Read Chapter 9 of BF. Do problems 1, 3, 4 and 5 on pages 291-292 of BF.

Class Meeting 10: Thursday, September 22, 2016

- G. Commercial lease illustrations in ARGUS
 - a. Johnson Office
 - b. Mustang Shopping Center

Class Meeting 11: Tuesday, September 27, 2016

Review for mid-term Exam. The exam will cover material in Chapters 4, 5, 6, 9, 11, 12 and 13 of BF. Your Willowbrook Excel spreadsheet is due today.

Class Meeting 12: Thursday, September 29, 2016

Exam 1. You must have your laptop and a writing instrument to take the exam. The ARGUS-Enterprise take home exam will be assigned today.

Class Meeting 13: Tuesday, October 4, 2016

VII. Financial Risk Management

- A. Managing Interest Rate Risk

Assignment: Reading assignment tbd.

Class Meeting 14: Thursday, October 6, 2016**VIII. 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 514 of BF.

Class Meeting 15: Tuesday, October 11, 2016**IX. Financing Development**

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

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

Class Meeting 16: Thursday, October 13, 2016**X. 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
 - i. return of capital
 - Unpaid equity
 - Unpaid preferred return
 - ii. promotes
 - iii. IRR preference
 - iv. look-back IRRs
 - 4. Capital Accounts
 - 5. Substantial Economic Effect
 - a. Balancing Capital Accounts
 - b. The Gain-Chargeback Procedure

B. Partner Returns

Assignment: Read Chapter 18 of BF. The ARGUS take-home portion of the mid-term exam is due by the beginning of today's class.

Class Meeting 17: Tuesday, October 18, 2016

- C. SYNDICAT.XLS: an Excel Syndication spreadsheet (after tax)
- D. (Before Tax) Partnerships Distributions
 - 1. Waterfall Distributions in Excel

Assignment: The partnership spreadsheet will be assigned today.

Class Meeting 18: Thursday, October 20, 2016

XI. 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: Tuesday, October 25, 2016

- e. Introduction to Collateralized Mortgage Obligations (CMOs)
 - i. Tranches
 - ii. Expected prepayments, maturity and pricing

Assignment: Read pages 649-664 of BF.

Class Meeting 20: Thursday, October 27, 2016**XII. 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

Assignment: Read pages 674-685 of BF.

Class Meeting 21: Tuesday, November 1, 2016

XIII. Public Finance

- A. Financing Metropolitan/Special Districts
- B. Tax Increment Financing

Assignment: Reading tbd. The partnership Excel spreadsheet is due today. Belmont Buckingham will be assigned today.

Class Meeting 22: Thursday, November 3, 2016XIV. 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 720-722 of BF.

Class Meeting 23: Tuesday, November 8, 2016 (VOTE!)

XVI. Real Estate Investment Performance (Chapter_22.ppt)

- A. Real Estate Investment Returns
 - 1. Public
 - 2. Private
- B. NCREIF Benchmark Indices
 - 1. Income, appreciation, total returns
 - 2. By property type
 - 3. By location
- C. Real Estate in a Mixed Asset Portfolio
 - 1. Domestic
 - 2. Global

Assignment: Read Chapter 22 of BF.

Class Meeting 24: Thursday, November 10, 2016

- D. Private Equity Funds (Chapter_23.ppt)
 - 1. Fund provisions
 - 2. Measuring performance
 - a. Property level vs fund level
 - b. Time-weighted returns

Assignment: Read Chapter 23 of BF. Do problem #1 on page 751 of BF.

Class Meeting 25: Tuesday, November 15, 2016

Belmont Buckingham due. Discuss Belmont Buckingham in class.

Class Meeting 26: Thursday, November 17, 2016

Review for Final Exam

Tuesday, November 22, 2016--No Class (Fall Break)

Thursday, November 24, 2016--No Class (Thanksgiving Day)

Final Exam: Time/Date To Be Determined

Week of November 28, 2016.