

REAL 4100 - Real Estate Finance & Investment Analysis

Instructor: Professor Stephen Billings

Office: Koelbel 443

Office Hours: M 4-6pm and by appointment.

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Class Meetings:

REAL4100-001: M 6:30-8:50pm KOBL 330

REAL4100-002: T/TH 9:30-10:45am KOBL 230

Description and Objective:

The primary objectives of this course are to: (1) understand home mortgages and commercial real estate financing; (2) conduct income property investment analyses; (3) develop the technical competence necessary to structure real estate transactions; and (4) understand the financial assets securitized by real estate. The student will analyze the financing of properties using Excel. 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 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 financial calculator is required. Students will need to take exams using a financial calculator.
2. Text: *Real Estate Finance and Investments*, by Brueggeman and Fisher (BF). Fifteenth Edition. McGraw-Hill Irwin, Inc. 2015. ISBN 978-0-07-337733-9.
3. Copies of the PowerPoint slides used in class are available on Desire2Learn.

Accommodation for Disabilities:

If you qualify for accommodations because of a disability, please submit a letter from Disability Services to Professor Billings 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 Billings.

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 Billings 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. 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 sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU's Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU Boulder's Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on 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 subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the [OIEC website](#).

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [academic integrity policy](#) of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at honorcode.colorado.edu.

Communication:

Class topics are subject to change, but exam dates are fixed. The unexpected cancelation of class is the only criteria for changing an exam date and would entail the exam occurring on the next class meeting. Notification regarding class schedule and material may take the form on an in-class announcement, email or Desire2Learn. All students are expected to regularly attend class and check course email and website.

Course Grades based on the following criteria:

Exams (x3) = 30% each = **90%**

Quizzes in class (**unannounced**) = **10%**

The mid-term exam is scheduled below and the final exam will be scheduled during final exam period. 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.

Schedule of Classes, Course Outline and Assignments

Week 1: August 22-26, 2016

I. Introduction to Real Estate Finance and Investments

A. This course

B. Grading

Review – Time Value of Money (Chapter_3.ppt)

Week 2: August 29 - September 5, 2016 (no classes September 5th – Labor Day)

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

A. Fixed Payment 1. Payments, Amortization Schedules and Balances

B. Interest Only/Balloon Loans

Assignment: Read Chapter 4 and page 395 (on yield maintenance) of BF.

BF Chapter 4 problems 2, 10, 13, 15, and 20 on pages 108-110.

C. Alternative Mortgage Instruments (**Chapter_5.ppt**)

Assignment: Read Chapter 5 of BF.

Week 3: September 6–12, 2016

D. Mortgage Analysis (**Chapter_6.ppt**)

Assignment: Read Chapter 6 of BF. Do problems 1-7 on pages 177-178 of BF.

E. Single-family Housing: Pricing, Investments, Tax (**Chapter_7.ppt**)

Tenure spreadsheet/appraisal

Week 4: September 13–19, 2016

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

A. (After Tax) Equity

B. Computing Expected After Tax Cash Flows from Operations

C. Computing After Tax Cash Flows from Reversion

Assignment: Read Chapter 11 of BF.

D. The Investment Decision

E. An Apartment Property Example

F: Income1: an Excel spreadsheet for income property analysis

Week 5: September 20–26, 2016

Exam Review – go over some homework problems

Exam 1– You will need a financial calculator to do this exam!!!

Week 6: September 27– October 3rd, 2016

G. Introduction to ARGUS (led by Professor Thibodeau)

IV. Financing Income Producing Properties (**Chapter_12.ppt**)

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

Assignment: Read Chapter 12 of BF.

Week 7: October 4th-10th, 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.

VI. Commercial Property Leases (**Chapter_9.ppt**)

- A. Income
- B. Expenses
- 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 292-293 of BF.

Week 8: October 11th-17th, 2016

G. Commercial lease illustrations

- a. Johnson Office
- b. Mustang Shopping Center

Review for mid-term Exam.

Week 9: October 18th-24th, 2016

Exam 2. Please bring a financial calculator!!!!

Week 10: October 25th-31st, 2016

VII. Financial Risk Management (**Presentation**)

- A. Managing Interest Rate Risk

Assignment: Reading assignment tbd.

VIII. Corporate Real Estate (**Chapter_15.ppt**)

A. Lease vs. Own (Unlevered and Levered)

B. Sales-leaseback

Assignment: Read chapter 15 of BF. Do problems 1, 2, and 3 on page 505 of BF.

Week 11: November 1st-7th, 2016

IX. Financing Development

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

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

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

A. Partner Contributions and Distributions

B. Partner Returns

Read Chapter 18 of BF.

C. SYNDICAT.XLS: an Excel Syndication spreadsheet (after tax)

D. (Before Tax) Partnerships Distributions

1. in ARGUS

2. Waterfall Distributions in Excel

Week 12: November 8th-14th, 2016 (No class – November 10th)

XI. The Secondary Mortgage Market and Mortgage Backed Securities

A. Operation of the Secondary Mortgage Market (**Chapter_19.ppt**)

Assignment: Read Chapter 19 of BF.

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

A. Introduction to CMBS

B. Rating CMBS

C. Delinquency and Default Risk

D. Pricing Issues

Assignment: Read pages 660-677 of BF.

Week 13 November 15th-28th, 2016 (no classes Nov 21-24th Thanksgiving Break)

BIG SHORT OR OTHER FINANCIAL CRISIS DOCUMENTARY

XIV. The Financial Crisis of 2007/2008

A. Mortgage Originators

B. Wall Street (couldn't package loans fast enough)

C. Mortgage Backed Securities

D. Rating Agencies (paid by Wall Street to rate MBSs)

E. The Insurers (AIG)

F. The Federal Reserve

G. The Federal Government

H. The Consequences

Week 14: November 29th-December 5th, 2016

XV. Real Estate Investment Trusts (**Chapter_21.ppt**)

A. Introduction to REITs

- B. Financial Analysis of REITs
- C. REIT Growth and Development
- D. REIT Examples

Assignment: Read chapter 21 of BF. Do problems 1 and 2 on pages 707-709 of BF.

XVI. Real Estate Investment Performance (**Performance.ppt**)

- A. Real Estate Investment Returns
- B. NCREIF Benchmark Indices
 - 1. Income, appreciation, total returns
- C. Real Estate in a Mixed Asset Portfolio

Assignment: Read Chapter 22 of BF.

Week 15: December 6th-December 8th, 2016

XIII. Public Finance (**Time permitting**)

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

Assignment: Reading tbd.

D. Private Equity Funds (**Time permitting**)

Assignment: Reading tbd. Do problem #1 on page 738 of BF.

Review for Final Exam

Final Exam:

REAL4100-01 : Monday, Dec 12 from 7:30 – 10:00 pm

REAL4100-02 : Sunday, Dec 11th from 4:30 – 7:00 pm