

Finance 370: Special Topics in Finance – Financial Modeling Spring 2011

Time: Tuesday 6:00-9:50pm Room: BB 224

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Text: *Financial Modeling* by S. Benninga, 3rd edition, MIT Press, 2008

Course description:

In this course we will explore three topics in finance: portfolio optimization, option valuation and bond valuation & portfolio management. In our study of these topics, we will need to understand and apply popular financial models. A good portion of this course will be dedicated to implementing these models with Microsoft Excel.

More on the three areas that we will explore:

- Portfolio Optimization
 - Quantify and measure portfolio risk and return
 - Find portfolios that maximize return at various levels of risk
 - Solve portfolio optimization problem with and without short sales
 - Find optimal portfolios for various levels of risk aversion
 - Option Valuation
 - Overview of options: Put, Call, American, European
 - Exotic and barrier options
 - The three approaches to option valuation
 - Closed form Black-Scholes
 - Monte Carlo simulation
 - Lattices
 - Real options – example: gold mine valuation
 - Valuing Bonds and Managing Bond Portfolios
 - Finding bond values
 - Finding bond durations
 - Portfolio immunization
 - The term structure of interest rates
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Outline

| Week | Date | Topic/Readings |
|------|--------|---|
| 1 | Jan 18 | Course Introduction Risk and Return, Markowitz Portfolio Construction, CAPM – Chapters 8 and 9 |
| 2 | Jan 25 | Optimal Portfolio Construction – Chapters 9 and 10 |
| 3 | Feb 1 | Betas and the Security Market Line – Chapter 11 |
| 4 | Feb 8 | Efficient Portfolios without Short Sales – Chapter 12 |
| 5 | Feb 15 | Introduction to Options, Overview of Valuation Techniques Black-Scholes – Chapters 16 and 19 |
| 6 | Feb 22 | The Binomial Lattice for Valuation of Options – Chapter 17 |
| 7 | Mar 1 | Binomial Lattice Continued. |
| 8 | Mar 8 | Spring Break – No Class |
| 9 | Mar 15 | Introduction to Simulation – Chapters 22 and 29 |
| 10 | Mar 22 | Simulation for Valuation of Options – Chapters 18 and 23 |
| 11 | Mar 29 | Real Options, Option Greeks and Portfolios of Options – Chapters 20 and 24 |
| 12 | Apr 5 | In Class Midterm |
| 13 | Apr 12 | No Class (the date of this class cancellation is subject to change, it could be the week before) |
| 14 | Apr 19 | Bond Portfolio Immunization – Chapter 26 |
| 15 | Apr 26 | Modeling the Term Structure of Interest Rates – Chapter 27 |

Final Exam: Date TBD

Grading: Your course grade will be determined by:

| | |
|----------------------------|-------------|
| Midterm Exam | 40% |
| Final Exam | 30% |
| Projects (2) | 25% |
| Class participation | 5% |
| TOTAL | 100% |

The Projects:

This course requires the completion of two projects. The projects will be done in teams of 3 or 4 students. The first project will likely involve portfolio optimization and the second option valuation. Project deliverables will be a short written report and a spreadsheet. More information will be given at the beginning of the semester.

SELECTED TCNJ POLICIES

TCNJ's final examination policy is available on the web:
<http://www.tcnj.edu/~academic/policy/finalevaluations.htm>

Attendance

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. At the first class meeting of a semester, instructors are expected to distribute in writing the attendance policies which apply to their courses. While attendance itself is not used as a criterion for academic evaluations, grading is frequently based on participation in class discussion, laboratory work, performance, studio practice, field experience, or other activities which may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange with their instructors for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Students are expected to attend class and complete assignments as scheduled, to avoid outside conflicts (if possible), and to enroll only in those classes that they can expect to attend on a regular basis. Absences from class are handled between students and instructors. The instructor may require documentation to substantiate the reason for the absence. The instructor should provide make-up opportunities for student absences caused by illness, injury, death in the family, observance of religious holidays, and similarly compelling personal reasons including physical disabilities. For lengthy absences, make-up opportunities might not be feasible and are at the discretion of the instructor. The Office of Academic Affairs will notify the faculty of the dates of religious holidays on which large numbers of students are likely to be absent and are, therefore, unsuitable for the scheduling of examinations. Students have the responsibility of notifying the instructors in advance of expected absences. In cases of absence for a week or more, students are to notify their instructors immediately. If they are unable to do so they may contact the Office of Records and Registration. The Office of Records and Registration will notify the instructor of the student's absence. The notification is not an excuse but simply a service provided by the Office of Records and Registration. Notifications cannot be acted upon if received after an absence. In every instance the student has the responsibility to initiate arrangements for make-up work.

TCNJ's attendance policy is available on the web:
<http://www.tcnj.edu/~recreg/policies/attendance.html>

Academic Integrity Policy

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his or her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

TCNJ's academic integrity policy *is available on the web:*
<http://www.tcnj.edu/~academic/policy/integrity.html>.

Americans with Disabilities Act (ADA) Policy

Any student who has a documented disability and is in need of academic accommodations should notify the professor of this course and contact the Office of Differing Abilities Services (609-771-2571). Accommodations are individualized and in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992.

TCNJ's Americans with Disabilities Act (ADA) policy is available on the web:
<http://www.tcnj.edu/~affirm/ada.html> .