Course Syllabus
Finance 6352: Financial Modeling
The University of Texas at Dallas

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Course Information

Course

Course Number Section	Finance 6352-001
Course Title	Financial Modeling
Term and Dates	Spring 2017

Professor Contact Information

Professor	Ted Day
Office Phone	972-883-2743
Email Address	tday@utdallas.edu
Office Location	SM 14.330 (4th floor of new building)
Office Hours	Thurs 4PM – 6PM and by appointment

Course Description

   The objective for this course is to develop the financial modeling skills used in the application of financial theory to practical problems in investment analysis, portfolio management, and valuation. In particular, the course will cover the application of Excel spreadsheet functions and visual basic programming to the statistical analysis of financial market data, the use of optimization models to determine mean-variance efficient allocations of financial assets, and the valuation of fixed income and derivative securities. Additional topics to be covered include, active portfolio management, simulation and retirement planning, and the valuation of exotic options and high yield bonds.

Student Learning Objectives/Outcomes

   Learning objectives for Fin 6352 include (1) demonstrating proficiency in using regression analysis to estimate exposure to systematic and residual risk for individual securities and portfolios, (2) constructing and solving optimization models to determine the portfolio weights and total risk for mean-variance efficient portfolios, (3) demonstrating proficiency in creating visual basic functions and subroutines for pricing options and derivative securities, and (3) using Monte Carlo simulation to evaluate retirement investment strategies and value exotic options. Success in achieving the learning objectives will be assessed using spreadsheet assignments focused on the respective learning objectives described above.

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Required Textbooks and Materials

The required textbook for Finance 6352 is the **Fourth** Edition of *Financial Modeling* by Simon Beninga, MIT Press, 2014, ISBN number *978-0-262-02728-1*.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

The prerequisites for Finance 6352 are Finance 6301, OPRE 6301, and basic familiarity with the Excel spreadsheet package.

Course Policies

Make-Up Exams

Given the importance of providing timely feedback on examinations and the challenges involved in creating exams for "hands on" courses such as financial modeling, students must either obtain **explicit advance permission** from the instructor or else provide a doctor's note or other documentation for illness or the occurrence of a significant life event to be permitted to take a make-up examination. However, in most cases students will be required to complete examinations during the scheduled time.

Extra Credit and Special Assignments

There will be no extra credit or special assignments in Finance 6352.

Late Work

Late work will not be accepted.

Classroom Decorum and Conduct

Use of cell phones and e-mail while class is in session **is prohibited**. Although there is no dress code for Finance *6352*, apart from my request that students be dressed in **good taste,** students will be required to wear shoes or sandals at all times. Further, hats, stocking caps, or other head coverings may not be worn during class. While I am pleased to make **exceptions for any headwear having a link to the observance of religious custom,** no religious significance will be attributed to broad-brimmed hats, stocking caps, or hats bearing logos of sports franchises or automotive products. In the interest of keeping the classroom facilities in good condition, I plan to **enforce the School of Management ban on the consumption of food and beverages in the classroom**.

Policy on Server Unavailability or Other Technical Difficulties

The University is committed to providing reliable online course access to all users. However, unexpected interruptions of server access to the course site may occur from time to time. While disruptions should be infrequent and of short duration, the server may be unavailable while scheduled maintenance is performed (usually Sunday mornings). Students should assist in minimizing the impact of disruptions by downloading and uploading spreadsheet assignments and other course materials on a timely basis. In the event of a service disruption coincident with a deadline for the submission of a spreadsheet assignment, the submission deadline will be extended to provide reasonable opportunities to submit your work. Please report server problems to both the instructor and the eLearning Help Desk: http://www.utdallas.edu/elearninghelp, *1-866-588-3192.* The instructor and UTD's eLearning Help Desk are pleased to work with students to resolve any issues at the earliest possible time.

Student Assessment

Course Requirements and Grading Policy

The course requirements include four spreadsheet assignments, a proctored **midterm examination** and a **proctored final** examination that will be **cumulative**. **Late work will not be accepted**. Grades will be based on total points accumulated during the semester, allocated as follows:

Spreadsheet Assignment 1	*(10%)*	20 points
Spreadsheet Assignment 2	*(10%)*	20 points
Spreadsheet Assignment 3	*(10%)*	20 points
Spreadsheet Assignment 4	*(10%)*	20 points
Midterm Examination	*(20%)*	40 points
Final Examination	*(40%)*	80 points

Semester grades will be based on an end-of-semester ranking of students according to the total points accumulated in fulfilling the course requirements. **Every student is required to successfully complete each of the individual spreadsheet assignments**. Both the absolute number of points accumulated and students' respective rankings will be used in assigning each student to one of four groups: excellent, good, below average and substandard. Although I have a general standard for the absolute point totals required for assignment to each group, the precise cutoff points used to assign grades will be an end-of-semester decision based on overall class effort, difficulty of the exams and spreadsheet assignments, and other factors that I consider appropriate. Consistent with grading during prior semesters I plan to use pluses and minuses sparingly. There will be no constraint on the percentage of the class assigned any given grade.   Students can check their semester grades and the final exam scores by clicking "**My Grades**" under Course Tools once those grades have been released.

Spreadsheet Assignments

Each student will be required to submit four spreadsheet assignments. Each assignment must be submitted electronically using the "assignment link" contained in the Spreadsheet Assignments link on the left-hand menu of the eLearning course site. Spreadsheet Assignment 1, which requires you to estimate market and factor risks for several individual stocks, **will be distributed on January 25 and will be due by 4 P.M. on Wednesday February 8.** Spreadsheet Assignment 2, which focuses on the creation of mean-variance optimal portfolios and style analysis, will **be distributed on February 8 and will be due by 4 P.M. on Wednesday February 22.** Spreadsheet Assignment 3, which requires that you simulate the future distribution of retirement wealth for alternative retirement investment strategies, **will be distributed on March 1 and will be due by 4 P.M. on Wednesday April 5**. Finally, Spreadsheet Assignment 4, which requires that you value exotic options and risky bonds **will be distributed on April 5 and will be due by 4 P.M. on Wednesday April 19**. Group work on spreadsheet assignments is prohibited. Each student is required to build their own unique spreadsheet and to provide an analysis of each of the exercises included in the assignment. Although each spreadsheet assignment will include modeling exercises requiring explicit numerical solutions, your ability to clearly present your work by annotating your spreadsheet and providing a concise discussion of your analysis may also be a consideration in determining your grade for spreadsheet assignments. **Late work will not be accepted**.

Each spreadsheet assignment must be submitted electronically on the eLearning course site for Finance *6352*. Your work should generally be submitted as a single Excel spreadsheet file. While there is no required format, your work should have a clean and understandable layout, including spreadsheet annotations such as **text boxes and formula displays** (created using the "GetFormula" macro function covered during our first class meeting) that will make your spreadsheet results and analysis more understandable. Depending on the nature of the assignment and the need for detail concerning your spreadsheet models, you may also be asked to submit a Word document with a detailed explanation of your model or results in some cases. Since making your spreadsheet analysis understandable and useful to others is an important skill that needs to be polished in Finance *6352*, you will generally be limited to submitting annotated spreadsheets. In the event that I do ask you to provide a more detailed explanation of your work, the explanation should be included in a Word document formatted to print on *8-1/2 x 11* paper, (*2*) double-spaced with *1*-inch margins, and (*3*) in a font no smaller than a *12 pt.* Any graphs or estimation results derived from your spreadsheet model must be displayed prominently in your spreadsheet model. Your graded assignments along with feedback on your work will be available once they are graded in the "My Grades" link on the left-hand side of the course home page.

Spreadsheet Assignment submission instructions

Please submit your completed spreadsheet assignments using the submission link for the respective assignments on the eLearning course site. To submit your work, click the assignment name link and follow the on-screen instructions to upload and submit your file(s). For additional information on submitting spreadsheet assignments, view the Submitting An Assignment video tutorial.

Midterm and Final Examinations

Each student is required to take **proctored Midterm and Final examinations.** The **Midterm exam** will include eight to ten problems and spreadsheet exercises related to spreadsheet assignments and classroom lectures, although questions on the midterm are likely to be more limited in scope than the exercises included on spreadsheet assignments. Both the Midterm and Final examinations will be **closed book** and **closed notes, although students will be allowed to reference a one page formula sheet described in the procedures for administration of the Midterm and Final exams**. The Final exam will be a **comprehensive multiple-choice exam,** with course material covered following the Midterm weighted more heavily. Each student must to complete the Midterm and Final exams within a *3*-hour time period.

The Midterm examination will be administered on the computers at the **UTD Student Success Center** located in the McDermott Library basement **Room MC *1.304***. Each student must make a reservation (free of charge) to take the Midterm at the UTD Testing Center by clicking the Reserve-A-Seat Button on the right-hand-side of the Testing Center Welcome Page. The **time window for taking Midterm exam is Tuesday March 7 through Thursday March 9. The University will publish the time and room location for the Final exam at a later date**. See the Testing Center Welcome Page for testing center hours of operation and additional information on scheduling or rescheduling your Midterm exam. Please carefully read and follow all testing center policies. When you arrive to take your exam, you must sign in with your **Comet Card** or with **a photo ID & UTD ID number** if you do not have a Comet Card.

Students requiring special accommodations for the taking the Midterm and Final exam should inform both the course instructor and the UTD Testing Center prior to February 1 in order to help assure that the appropriate accommodation can be provided. If you have questions concerning the use of UTD's on-campus testing center please email TestingCenter@utdallas.edu.

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Guidelines for Administration of the Midterm and Final Examinations

Students will have *three hours to complete the Midterm and Final exams,* which will be *closed book and closed notes* in that students *will not be allowed* to refer to textbooks, class notes, or any other class materials during the exam. Solutions for spreadsheet exercises/problems on the midterm exam must be stored in the designated Excel worksheet within the Midterm Exam spreadsheet that you will be allowed to download at the Testing Center. Your answers must be submitted/uploaded to the eLearning course site when you have completed the exam. Students *may not access cell phones or other wireless devices* during exams. Students may use a *simple scientific calculator* and will have access to Excel on the computers available in the Testing Center*.* Students may not use personal *laptop and tablet computers or calculators that permit text storage during the exam*. Acceptable calculators include any of the models authorized for use on the CFA exam, the TI BA II Plus (or Plus Professional) and HP 12C *(*or 12C Platinum*).* During the exams, each student *may reference one handwritten note sheet that may include formulas and short explanatory notes* (students *may not cut and paste formulas* from class notes). The *note sheet* must be fully contained on the two sides of a *single sheet of paper no larger than 8.5"x 11".*

About the Instructor

Theodore E. Day is Professor of Finance in the School of Management at the University of Texas at Dallas, where he teaches courses in corporate finance and portfolio management. Prior to joining the UTD faculty in 1990, Professor Day held faculty positions at Vanderbilt University and at the University of North Carolina. A Certified Public Accountant born in Collinsville, Oklahoma, Professor Day earned his M.B.A. from the University of Oklahoma and a Ph.D. in Finance from Stanford University's Graduate School of Business. Professor Day's research on inflation and stock market returns, the term structure of interest rates, analysts' earnings forecasts, the volatility of derivative asset markets, along with more recent research on the discounts for closed-end mutual funds, has been published in academic journals such as the *Journal of Financial Economics*, the *Review of Financial Studies*, the *Journal of Finance*, and the *Journal of Political Economy*. In addition, Professor Day is the co-author of *Taxes, Financial Policy, and Small Business*, a monograph funded by a grant from the Small Business Administration. Professor Day's research on the quality of analysts earnings forecasts, "Following the Leader: An Analysis of Analyst's Earnings Forecasts", with Rick Cooper and Craig M. Lewis, received the 2002 Fama/DFA prize as the best paper on Capital Markets and Asset Pricing published in the *Journal of Financial Economics*.

Scholastic Dishonesty

The *Rules and Regulations* of the Regents of the University of Texas System demand that students be above reproach with respect to all scholastic activities, including but not limited to spreadsheet assignments and exams. Some of the spreadsheet exercises to be assigned this semester have been used previously at UTD by either myself or by my colleagues. The term "above reproach in all scholastic activities" specifically prohibits any use of spreadsheet templates distributed during prior semesters. Use of *any* prohibited materials or *any violations* of the rules for taking examinations will be treated as a serious honor code violation. Although the sanctions for honor code violations imposed by the Office of Judicial Affairs are often lenient, my referral with regard to *any honor code violations* will be accompanied by my recommendation that the student in question receive a failing grade for the course and be placed on *permanent academic suspension.* Detailed information on University policies and disciplinary procedures regarding scholastic dishonesty is available on the UTD Judicial Affairs web page.

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Course Outline/Schedule

    The outline below lists class meeting dates, lecture topics, and the assigned reading for that topic. Readings titled "Lecture Note" and other materials yet to be created will be made available in the Lecture Notes and Outlines folder on the eLearning course site. Since I will be creating course materials as the semester progresses, these dates and topics should be viewed as approximate. Depending on the interests of the class and the need to spend additional class time discussing various aspects of spreadsheet design and Visual Basic programming, we may spend either more or less time discussing individual topics. Spreadsheet assignments are printed in bold-faced font. Please remember that ***you are required to submit "well-annotated" solutions for all spreadsheet exercises***.

0. Introduction to Functions, Macros, Data Downloads, and Imports   January 11

    Beninga: Chapters 0 (pages 1-10), 36 (pages 945-970) and 39 (pages 1047-1054)

1. Portfolio Models, Matrix Operations, and Data Tables   January 18

    Beninga: Chapter 8, Chapter 31 (pages 823-828) and Chapter 32 (pages 839-844*)*

2. Estimation of Systematic Risk and Factor Sensitivities   January 25

    Beninga: Chapter 10 (pages 251-259 *and* 266-268*)* and Chapter 11

    Lecture Note 1: Estimation of Systematic Risk and Tests of Asset Pricing Models

    Spreadsheet Assignment 1: Estimation of Systematic Factor Risks (Due February 8)

3. Using Matrix and VBA Functions to Create Mean-Variance Efficient Portfolios   February 1

    Beninga: Chapters 9 *and* 12

4. Active Portfolio Management and the Black-Litterman Approach   February 8

    Beninga: Chapter 13

    Lecture Note 2: The Theory of Active Portfolio Management

    Spreadsheet Assignment 1 due by 4 PM (Submit electronically on eLearning course site)

    Spreadsheet Assignment 2: Portfolio Optimization and Style Analysis (Due February 22)

5. Time Diversification and Long-Run Investment Risk   February 15

    Lecture Note 3: Time-Diversification and Asset Allocation

6. Using Random Numbers to Create Monte Carlo Simulations   February 22

    Beninga: Chapters 24 and 25

    Spreadsheet Assignment 2 due by 4 PM (Submit electronically on eLearning course site)

7. Simulating Stock Prices and Portfolio Returns   March 1

   Beninga: Chapters 26 and 27

   Spreadsheet Assignment 3: Simulating the Growth of Retirement Assets (Due April 5)

Midterm Examination: [Make exam reservation with UTD Testing Center](#)   March 7–9

8. Pricing Options and Structured Products using the Black-Scholes Model   March 22

   Beninga: Chapters 15 and 17, and pages 474-482.

   Lecture Note 4: Option Pricing

9. The Binomial Option Pricing Model   March 29

   Beninga: Chapter 16.

10. Using Monte Carlo Methods to Price Exotic Options   April 5

    Beninga: Chapter 30

    Spreadsheet Assignment 3 due by 4 PM (Submit electronically on eLearning course site)

    Spreadsheet Assignment 4: Valuing Exotic Options and Risky Bonds (Due April 19)

11. Evaluating Option Trading and Portfolio Insurance Strategies   April 12

    Beninga: Chapter 29

12. Estimating Interest Rate Sensitivity and Default-Adjusted Returns for Bonds   April 19

    Beninga: Chapters 21 and 23

    Lecture Note 5: Interest Rate Sensitivity and Bond Duration

    Spreadsheet Assignment 4 due by 4 PM (Submit electronically on eLearning course site)

13. Controlling Interest Rate Sensitivity using Immunization Strategies   April 26

    Beninga: Chapter 21

    Lecture Note 6: Portfolio Immunization and Duration

    Final Exam: Exact time and location of final exam to be published by the University.   ***May 2–8***

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation

This web site for the course was developed using a web course tool called eLearning. Students may use their UTD NetID account to login at: http://elearning.utdallas.edu. Please see more details on course access and navigation information. To familiarize yourself with the eLearning tool, please see the Student eLearning Tutorials.

UTD provides eLearning technical support 24 hours a day/7 days a week. The services include a toll free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service. Please use this link to access the UTD eLearning Support Center: http://www.utdallas.edu/elearninghelp.

Communications with eLearning Messages Tool

This eLearning course site for Finance 6352 has built-in communication tools that will be used for interaction and communication. In particular, the **course Messages tool** will be used extensively to make announcements and distribute course materials. For more details, please visit the eLearning Tutorials webpage for video demonstrations on numerous tools in eLearning.

Student Resources

McDermott Library:

UTD students living outside the boundaries of Collin, Dallas, Denton, Rockwall, or Tarrant counties will need a UTD-ID number to access all of the library's electronic resources (reserves, journal articles, e-books, interlibrary loan) from off campus. For UTD students living within those counties who are taking online courses, a Comet Card is required to check out materials at the McDermott Library. Additional information on library resources is available at http://www.utdallas.edu/library/distance.html.

Course Evaluation

As required by UTD academic regulations, every student must complete an evaluation for each enrolled course at the end of the semester. A link to an online instructional assessment form will be emailed to you for your confidential use.

University Policies

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for these policies.