



**FBE-599: Advanced Financial Modeling  
3-Units**

**Fall 2019**

**Instructor:** *Mark D. Griffiths, Ph.D.*  
**Office:** *ACC226*  
**Office Hours:** *M&W 10-11, 4:30-5:30  
and by appointment*

**Email:** [markgrif@usc.edu](mailto:markgrif@usc.edu)

**TA:**  
**Office:**  
**Office Hours:**

*by appointment*

**Email:** *talweiss@usc.edu*

|                           |
|---------------------------|
| <b>COURSE DESCRIPTION</b> |
|---------------------------|

In this course students will learn how to analyze complicated financial situations and to present the analysis in a coherent and professional manner. The vehicle used for developing such models is the familiar spreadsheet Excel. Students will learn how to design specialized Excel tools and models to evaluate financial problems not covered by built-in Excel functions.

Specifically, students will learn modern techniques to perform such tasks as:

- Incorporating dynamic changes in growth-related profitability estimates using pro forma cash flow scenarios.
- Forecasting desired/implied levels of debt under changing economic conditions.
- Evaluating the accuracy and sensitivity of common financial tools (such as the weighted average cost of capital for capital budgeting purposes) and the errors therein.
- Preparing financial forecasts to support various financing alternatives including the valuation of collateral (eg., designing a bank's borrowing base for its clients).
- Evaluating the return to stakeholders in the event of insolvency and/or bankruptcy proceedings (eg., analyzing the implications of the Absolute Priority Rule).

## **COURSE PRE-REQUISITES**

There are no pre-requisites for this course other than successful completion of the following core courses and students are expected to be confident of the material learned in GSBA-510: Accounting Concepts and Financial Reporting and GSBA-548: Corporate Finance.

## **COURSE OBJECTIVES**

Upon successful completion of this course, students will be able to:

- (1) Improve their financial decision-making ability in an uncertain business context and reduce the amount of time needed to apply this knowledge.
- (2) Handle financial analysis in a more efficient and creative way leading to better appreciation by the target audience of what they are trying to achieve.
- (3) Improve their communication skills through both quantitative and graphical presentations.
- (4) Be able to clearly and concisely convey the impact of change on different aspects of the financial analysis.
- (5) Appreciate the role of a financial analyst in a complex investment environment.

## **COURSE EXPECTATIONS**

The level of rigor and the amount of course work required in this class (from both the professor and the student) far exceeds most courses. Specifically, financial modeling requires a tremendous amount of practice. Without practice, student cannot successfully master the material. Students will need to meet the following expectations to be successful in this course. First, students should read all required material before coming to class. Second, students will need to actively participate in lecture. Third, students will need to spend ample time practicing the skills and completing homework. Finally, students will need to attend class regularly. Students that cannot meet these expectations should reconsider taking this course.

## **COURSE MATERIALS**

*Recommended and Required:*

- (1) Mark D Griffiths & Tal Weiss, Financial Modeling for Mere Mortals (Book 1), (Wkshp) ***available electronically at amazon.com.*** (Required)
- (2) Isaac Gottlieb, Next Generation Excel: Modeling in Excel for Analysts and MBAs, (2ND) Second Edition, John Wiley & Sons, 2013, ISBN: 978-1118469101 (Recommended)
- (3) Simon Benninga, Financial Modeling (Using Excel), (BEN) 4<sup>th</sup> Edition, The MIT Press, 2008, ISBN: 978-0262027281 (Recommended)
- (4) Financial Calculator: Texas Instruments BAI – Plus (or Equivalent) (Required)
- (5) Laptop computer with Excel installed. N.B. if you have an illegal or pirated version of Excel, not all of the applications and functions will work properly. (Required)

## COMPUTERS AND SOFTWARE

You are required to have access to Excel 2016 running under Windows either on your own Mac or PC or via the Marshall Virtual Lab, which allows Marshall students to use a virtual desktop in the Marshall private cloud. **If you have a Mac and want to run Excel 2016 under Windows on your own laptop, you will need to check if you have enough memory to run Windows through a Windows emulator such as Boot Camp or Parallels.** If you want the software on your own computer, you can take advantage of the free version of Windows and Office 365 provided by USC.

You are welcome to use your computers in class as long the devices are used for the specific problem the professor is working on. They are not to be used for any other purpose.

## GRADING

| Assignments         | % of Overall Grade |
|---------------------|--------------------|
| Class Participation | 10%                |
| Homework            | 10%                |
| Mid-Term Exams      | 40%                |
| Final Exam          | 40%                |
| TOTAL               | 100%               |

1. **Class Participation (10%).** A student earning this grade will be engaged in class discussions, which means he/she will answer questions if called upon, if not correctly, then at least in a way that shows he/she was paying attention and understands the question, and will raise relevant questions and comments from time to time. Higher grades will be assigned to students who are more actively engaged in the class discussion; lower grades will be assigned to students who don't seem to be fully engaged in the class discussion, for example, having little or nothing to say when called upon. A grade of zero in participation is possible.
2. **Homework (10%).** Homework will be based upon the Workshops assigned in this course. It is expected that students will work on the assigned Workshops by the assigned due dates. **Working in groups is acceptable but individual Workshops must be submitted.** Performance on class participation, the two mid-term exams and the final exam will clearly be impacted by how much effort has been put into the homework. Homework grades will be based on correctness and format.
3. **Mid-term Exams (40%).** There will be two mid-term exams, worth 20% each. **No make-ups exams will be given.** A grade of zero for a missed exam will be awarded unless a written excuse from your doctor or the USC Health Center is provided to the instructor prior to the exam.
4. **Final Exam (40%).** The final exam will be scheduled according to the University's Final Exam Schedule. If you miss the final exam for a medical emergency reason that can be documented and verified, there will be a makeup final to be arranged as soon as possible. Otherwise, a grade of zero will be assigned to the final exam. <https://classes.usc.edu/term-20193/finals/>

Final grades represent the student's performance in the class relative to other students. The rank of the weighted average of class participation, homework, mid-term exams and final exam will be compared to others in the class and used to determine the grade. The average grade for this class is expected to be about 3.5.

## STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

### **Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>. Failure to adhere to the academic conduct standards set forth by these guidelines and our programs will not be tolerated by the USC Marshall community and can lead to dismissal.

### **Students with Disabilities:**

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs ([www.usc.edu/disability](http://www.usc.edu/disability)). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: [ability@usc.edu](mailto:ability@usc.edu).

### **Support Systems:**

*Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline - 1-800-273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

### *Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

### *Student Support & Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

### *Diversity at USC – <https://diversity.usc.edu/>*

Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students.

### *USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. [emergency.usc.edu](https://emergency.usc.edu)

*USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.*

Provides overall safety to USC community. [dps.usc.edu](https://dps.usc.edu)

### *Emergency Preparations*

In case of an emergency if travel to campus is not feasible, the USC Emergency Information web site (<http://emergency.usc.edu/>) will provide relevant information, such as the electronic means the instructors might use to conduct their lectures through a combination of USC's Blackboard learning management system ([blackboard.usc.edu](https://blackboard.usc.edu)), teleconferencing, and other technologies.

## COURSE OUTLINE AND ASSIGNMENTS

Since this is only the second time this course is offered, the material coverage is subject to change with adequate notice. **NOTE: Midterms will take place as scheduled!**

|        | Lecture   | Financial Application   | Topics/ Activities  | In-Class Exercises & Readings                  | Assignments  |
|--------|-----------|---|---|--|--|
| Week 1 | 1<br>8/27 | Understanding basic coding  | Excel Set-up<br>Basics of Financial Modeling<br>Understanding Excel Dates             | 2 <sup>ND</sup> : Chapter 1<br>BEN: pgs 1 - 10 | Wkshp: 1. Training Day                                 |
|        | 2<br>8/29 | Understanding the Basics of Functions & Formulae                            | Basics of Financial Modeling<br>FORMULATEXT & Error Checks                            | 2 <sup>nd</sup> : Chapter 3<br>BEN: Chapter 1  | Wkshp: 1. Cont'd<br>Wkshp: 2. Error Checks             |
| Week 2 | 1<br>9/3  | The Importance of Documentation   | Revising a Bad Financial Model  | 2 <sup>ND</sup> : Chapter 8                    | Wkshp: 3. Documentation                                |
|        | 2<br>9/5  | Calculating Accrued Interest, Day Counts & Annual Interest Expense          | Understanding the ACCRINT function  | Lecture  | Wkshp: 4. & 5. Interest calcs<br><b>Homework 1 Due</b> |
| Week 3 | 1<br>9/10 | Understanding the Excel Basics of Accounting                                | Modeling a Business Start-up  | Lecture<br>BEN: Ch. 5                          | Wkshp: 6. f/s extrapolation                            |
|        | 2<br>9/12 | Reconstructing Financial Statements<br>Detecting False Financial Statements | Using Ratio Analysis to Understand Financial Statements.<br>Benford's Law             | Lecture  | Wkshp: 7. & 8. f/s preparation & e.p.s.                |
| Week 4 | 1<br>9/17 | Modeling Integrated Financial Statements                                    | Using Solver to resolve circular reference  | Lecture  | Wkshp: 9. Debt plugs                                   |
|        | 2<br>9/19 | Restating Financial Statements  | Modeling Operating Leases<br>Understanding eps (in & out of the money)                | BEN: Ch. 7                                     | Wkshp: 10 & 11. f/s re-statement, e.p.s calcs          |
| Week 5 | 1<br>9/24 | Understanding Bond Refunding  | Modeling the refunding decision using Excel TVM                                       | Lecture  | Wkshp: 12. Re-issuing debt                             |
|        | 2<br>9/26 | Modeling TVM with Excel Functions   | Modeling NPV with different lives & risks<br><br>Modeling Capital Budgeting Decisions | BEN: pgs 14-16, 856, 871-872                   | Wkshp: 13 & 14. Modeling npv<br><b>Homework 2 Due</b>  |

|         |            |  |  |  |   |
|---------|------------|--|--|--|---|
| Week 6  | 1<br>10/1  | Modeling TVM with Excel Functions (cont'd)   | Modeling NPV with different lives & risks<br><br>Modeling Capital Budgeting Decisions (cont'd) | Lecture                                    | Wkshp: 13 & 14.. Constrained cap. budget & value metrics        |
|         | 2<br>10/3  |  | <b>Midterm Exam #1</b>   |  |   |
| Week 7  | 1<br>10/8  | Modeling issues in the Dividend Growth Model | Preparation for WACC calculations  | BEN: pgs 71-113<br>2 <sup>nd</sup> : Ch. 8 | Wkshp: 15. Applications of conditional IF                       |
|         | 2<br>10/10 | The Weighted Average Cost of Capital         | Modeling various methods of measurement  | BEN: pgs 493-511                           | Wkshp: 16. Drop down boxes                                      |
| Week 8  | 1<br>10/15 | Understanding the differences in Betas       | Downloading external data  | BEN: pgs 715-720                           | Wkshp: 17 & 18. Revising cap structure<br><b>Homework 3 Due</b> |
|         | 2<br>10/17 |  | <b>No Class – Fall Recess</b>  |  |   |
| Week 9  | 1<br>10/22 | Modeling a Cash Funded Valuation             | Forecasting debt requirements (Adjusting iterations)   | Lecture                                    | Wkshp: 19. Project finance                                      |
|         | 2<br>10/24 |  | <b>No Class – FMA Conference</b>   |  |   |
| Week 10 | 1<br>10/29 | Modeling a LBO                               | Forecasting the returns to a LBO   |  | Wkshp: 20. LBO modeling   |
|         | 2<br>10/31 | Scenario Analysis in Excel                   | Modeling issues in Depreciation  | Lecture<br>2 <sup>nd</sup> : Ch. 33        | Wkshp: 21. Scenario switching                                   |
| Week 11 | 1<br>11/5  | Scenario Analysis in Excel                   | Modeling issues in Capital Structure (Solver & Goal Seek)                                      | 2 <sup>nd</sup> : Ch. 34 & 35              | Wkshp: 22. Scenario switching cont'd                            |
|         | 2<br>11/7  | Modeling Credit Issues                       | Determination of a Borrowing Base  | Lecture                                    | Wkshp: 23. Credit issues  |
| Week 12 | 1<br>11/12 | Modeling Corporate Insolvency                | Valuation of a Distressed Company  |  | Wkshp: 24. Identification using Z-scores                        |
|         | 2<br>11/14 |  | <b>Midterm Exam #2</b>   |  |   |

|                   |            |  |  |                         |   |
|-------------------|------------|--|--|-------------------------|---|
| <i>Week 13</i>    | 1<br>11/19 | Modeling Risk and Value-at- Risk           | Standard risk measures for Investments & forecasting maximum expected losses   | <i>BEN: pgs 723-744</i> | <i>Wkshp: 25. &amp; 26. Corporate risk &amp; VaR</i>                                  |
|                   | 2<br>11/21 | Sensitivity Analysis in Financial Analysis | <b>[Black-Scholes Option Pricing]</b>  | <i>BEN: pgs 426-462</i> | <i>Wkshp: 27. Modeling options</i>  |
| <i>Week 14</i>    | 1<br>11/26 | Real Option Valuation                      | Acquisition of a Resource Company  | <i>BEN: pgs 493-511</i> | <i>Wkshp: 28. M&amp;A with real options</i><br><b>Homework 4 Due</b>                  |
|                   | 2<br>11/28 |  | <i>No Class - Thanksgiving</i>   |                         |   |
| <i>Week 15</i>    | 1<br>12/3  | Real Option Valuation in Bankruptcy        | Valuation of Equity of a Bankrupt Airline                                      | <i>BEN: pgs 493-511</i> | <i>Wkshp: 29. Assessing residual value</i>  |
|                   | 2<br>12/5  | Modeling Corporate Liquidation             | Valuation of returns to private equity in insolvency<br><br><b>Exam Review</b> | <i>Lecture</i>          | <i>Wkshp: 30. Corporate break-up –Absolute Priority Rule</i><br><b>Homework 5 Due</b> |
| <i>FINAL EXAM</i> |            |  | <b>As Scheduled by USC</b>   |                         |   |