

FBE-545: Applied Financial Modeling
3-Units

Spring 2022

Instructor: *Mark D. Griffiths, Ph.D.*
Class Time: *Tuesdays & Thursdays 12:30-1:50 (JKP 210)*

Office:
Office Hours: Tuesdays & Thursdays after class
and by appointment (Zoom meetings acceptable)

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COURSE DESCRIPTION

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 lectures. 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) 4th 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. Students can download the latest version of Excel (and MS office for free) using this link: <https://itservices.usc.edu/officestudents/>. (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.

Announcements and lecture materials are available on the course BlackBoard site. If you have any questions or need assistance with the Blackboard Course Pages, please contact the Marshall HelpDesk at 213-740-3000 (option 2) or HelpDesk@marshall.usc.edu. Alternatively, (213) 740-5555 will get you the USC ITS Help Desk

GRADING

Assignments	% of Overall Grade
Contributions & Professionalism	10%
Homework	10%
Mid-Term Exams	40%
Final Exam	40%
TOTAL	100%

- Contributions & Professionalism (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 do not 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.
- 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.
- 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. The exams will be open book/computer and assigned on a take-home basis.
- 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-20201/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

Emergency Preparedness

In case of a declared emergency if travel to campus is not feasible, the USC Emergency Information web site (<https://emergency.usc.edu/>) will provide safety and other information, including electronic means by which instructors will conduct class using a combination of USC's Blackboard learning management system (blackboard.usc.edu), teleconferencing, and other technologies.

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. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, 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. 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.

Support Systems:

Student Counseling Services (SCS) - (213) 740-9355 – 24/7 on call studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call studenthealth.usc.edu/sexual-assault Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

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 equity.usc.edu, titleix.usc.edu Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Bias Assessment Response and Support - (213) 740-5086 or (213) 821-8298

usc-advocate.symplcity.com/care_report Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

USC Campus Support and Intervention - (213) 821-4710 campussupport.usc.edu Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC – (213) 740-2101 diversity.usc.edu Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency Information - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call dps.usc.edu, emergency.usc.edu Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety – UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call dps.usc.edu Non-emergency assistance or information.

The Office of Disability Services and Programs - (213) 740-0776 dsp.usc.edu Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

COURSE OUTLINE AND ASSIGNMENTS

The material coverage is subject to change with adequate notice.

	Lecture	Financial Application	Topics/ Activities	In-Class Exercises & Readings	Assignments
<i>Week 1</i>	1 1/10	Understanding basic coding	Excel Set-up Basics of Financial Modeling Understanding Excel Dates	<i>2ND: Chapter 1</i> <i>BEN: pgs 1 -10</i>	<i>Wkshp: 1.</i> <i>Training Day</i>
	2 1/12	Understanding the Basics of Functions & Formulae	Basics of Financial Modeling FORMULATEXT & Error Checks	<i>2nd: Chapter 3</i> <i>BEN: Chapter 1</i>	<i>Wkshp: 1. Cont'd</i> <i>Wkshp: 2.</i> <i>Error Checks</i>
<i>Week 2</i>	1 1/17	The Importance of Documentation	Revising a Bad Financial Model	<i>2ND: Chapter 8</i>	<i>Wkshp: 3.</i> <i>Documentation</i>
	2 1/19	Calculating Accrued Interest, Day Counts & Annual Interest Expense	Understanding the ACCRINT function	<i>Lecture</i>	<i>Wkshp: 4. & 5.</i> <i>Interest calcs</i>
<i>Week 3</i>	1 1/24	Understanding the Excel Basics of Accounting	Modeling a Business Start-up	<i>Lecture</i> <i>BEN: Ch. 5</i>	<i>Wkshp: 6. f/s</i> <i>extrapolation</i> Homework 1 Due
	2 1/26	Reconstructing Financial Statements Detecting False Financial Statements	Using Ratio Analysis to Understand Financial Statements. Benford's Law	<i>Lecture</i>	<i>Wkshp: 7. & 8.</i> <i>f/s preparation</i> <i>& e.p.s.</i>
<i>Week 4</i>	1 1/31	Modeling Integrated Financial Statements	Using Solver to resolve circular reference	<i>Lecture</i>	<i>Wkshp: 9. Debt</i> <i>plugs</i>
	2 2/2	Restating Financial Statements	Modeling Operating Leases Understanding eps (in & out of the money)	<i>BEN: Ch. 7</i>	<i>Wkshp: 10 & 11.</i> <i>f/s re-statement,</i> <i>e.p.s calcs</i>
<i>Week 5</i>	1 2/7	Understanding Bond Refunding	Modeling the refunding decision using Excel TVM	<i>Lecture</i>	<i>Wkshp: 12.</i> <i>Re-issuing debt</i> Homework 2 Due
	2 2/09	Modeling TVM with Excel Functions	Modeling NPV with different lives & risks	<i>BEN: pgs 14-16,</i> <i>856, 871-872</i>	<i>Wkshp: 13 & 14.</i> <i>Modeling npv</i>

<i>Week 6</i>	1 2/14	Modeling TVM with Excel Functions (cont'd)	Modeling NPV with different lives & risks	<i>Lecture</i>	<i>Wkshp: 13 & 14. Constrained cap. budget & value metrics</i>
	2 2/16	<i>Midterm Exam #1 Due</i>	<i>Class will be held Catch up session</i>		
<i>Week 7</i>	1 2/21	Modeling issues in the Dividend Growth Model	Preparation for WACC calculations	<i>BEN: pgs 71-113 2nd: Ch. 8</i>	<i>Wkshp: 15. Applications of conditional IF</i>
	2 2/23	The Weighted Average Cost of Capital	Modeling various methods of measurement	<i>BEN: pgs 493-511</i>	<i>Wkshp: 16. Drop down boxes Homework 3 Due</i>
<i>Week 8</i>	1 2/28	Understanding the differences in Betas	Downloading external data	<i>BEN: pgs 715-720</i>	<i>Wkshp: 17 & 18. Revising cap structure</i>
	2 3/02	Modeling a Cash Funded Valuation	Forecasting debt requirements (Adjusting iterations)	<i>Lecture</i>	<i>Wkshp: 19. Project finance</i>
<i>Week 9</i>	1 3/7	Modeling an LBO	Forecasting the returns to a LBO	<i>Lecture</i>	<i>Wkshp: 20. LBO modeling</i>
	2 3/09	Scenario Analysis in Excel	Modeling issues in Depreciation	<i>Lecture 2nd: Ch. 33</i>	<i>Wkshp: 21. Scenario switching</i>
<i>Week 10</i>	1 3/14		<i>No Class Spring Break</i>		
	2 3/16		<i>No Class Spring Break</i>		
<i>Week 11</i>	1 3/21	Scenario Analysis in Excel	Modeling issues in Capital Structure (Solver & Goal Seek)	<i>2nd: Ch. 34 & 35</i>	<i>Wkshp: 22. Scenario switching cont'd</i>
	2 3/23	Modeling Credit Issues	Determination of a Borrowing Base	<i>Lecture</i>	<i>Wkshp: 23. Credit issues</i>

Week 12	1 3/28	Modeling Corporate Insolvency	Valuation of a Distressed Company	Lecture	Wkshp: 24. Identification using Z- scores
	2 3/30	Midterm Exam #2 Due	Class will be held Catch up session		
Week 13	1 4/04	Modeling Risk	Standard risk measures for Investments	BEN: pgs 723-744	Wkshp: 25. Corporate risk Homework 4 Due
	2 4/06	Modeling Value-at- Risk	Forecasting maximum expected losses	BEN: pgs 723-744	Wkshp: 26. VaR
Week 14	1 4/11	Sensitivity Analysis in Financial Analysis	[Black-Scholes Option Pricing]	BEN: pgs 426-462	Wkshp: 27. Modeling options
	2 4/13	Real Option Valuation	Acquisition of a Resource Company	BEN: pgs 493-511	Wkshp: 28. M&A with real options
Week 15	1 4/18	Real Option Valuation in Bankruptcy	Valuation of Equity of a Bankrupt Airline	BEN: pgs 493-511	Wkshp: 29. Assessing residual value
	2 4/20	Modeling Corporate Liquidation	Valuation of returns to private equity in insolvency <i>Absolute Priority Rule</i>	Lecture	Wkshp: 30. Corporate break-up – Homework 5 Due
Week 16	1 4/25	Modeling Corporate Liquidation	Valuation of returns to private equity in insolvency Absolute Priority Rule	Lecture	Wkshp: 30. Corporate break-up –
	2 4/27		Exam Review		