

**UNIVERSITY OF TEXAS AT EL PASO  
DEPARTMENT OF ECONOMICS AND FINANCE**

**FALL 2021 SYLLABUS  
FIN 4311A Managerial Finance Laboratory (1.5)**

**INSTRUCTOR AND RELATED INFORMATION**

Instructor of Record:

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FIN 4311A	15099	BUSN 311 0900-1020	F	Trang Pham
FIN 4311A	15100	BUSN 328 0900-1020	F	Asif UI Alam
FIN 4311A	15102	BUSN 328 1200-1320	F	Ivan Mejorado

**CATALOG DESCRIPTION/PREREQUISITES:**

FIN 4311A Managerial Finance Laboratory: The application of Excel, or other statistical software to problem solving of financial problems related to the topics covered in FIN 4310, such as the development and utilization of financial plans, policies and practices in business enterprises.

Prerequisite(s): FIN 3310 w/C or better

Corequisite(s): FIN4310

**COURSE MATERIALS:**

4 GB jump/thumb drive minimum  
Head phones or Ear Buds with standard iPod/iPhone plug  
Projects' Video Instructions on Course's Blackboard Site

### **Access to WRDS for Course Projects:**

username: a4310ai

psswrđ: xfsL6KwtCzt54P

### **OBJECTIVES:**

This Managerial Finance Laboratory (Fin 4311A) corresponds to the Managerial Finance Course (Fin 4311) and as such has several objectives that correspond with the objectives in the lecture course.

First, this laboratory will show the student how to apply managerial finance theory using financial data relevant to managerial finance integrated with use of a standard software package.

Second, the laboratory will expose the student to the process of creating financial models in the area of managerial finance.

Third, the laboratory will expose and educate the student in the use of Excel. Excel is a standard software package used extensively on Wall Street and in industry.

Finally, the data used in the laboratory projects is the same data used by practitioners in industry. The laboratory will expose and educate the student in the use of real world data, specifically from the COMPUSTAT financial statements database and the Center for Research in Security Prices (CRSP) stock market database in the Wharton Research Data Services (WRDS) platform.

### **OUTCOMES AND MEASUREMENT:**

Students will demonstrate knowledge of the application of managerial finance analysis through a set of assigned laboratory projects that will provide experience in highly marketable and valuable skills.

An additional objective of the managerial finance laboratory is the creation of a portfolio of project reports in the area of managerial finance. The reports can be used by students in interviews to show potential employers the quality of the student's work and demonstrate the skills acquired in the course of the laboratory

Student achievement in course objectives will be assessed based on performance on exams, accompanying lab projects, and through in class participation/attendance.

### **STUDENT ACCOMODATIONS:**

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other

beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#). If you have or suspect a disability and need accommodations you should contact Center for Accommodation and Support Services (CASS) at 747-5148 or at [dss@utep.edu](mailto:dss@utep.edu) or go to Room 106 Union East Building.

**E-Mail Policy of the Finance Department:** It is the policy of the finance department that all e-mails sent to professors or teaching assistants be of a professional nature and format. A formal greeting and salutation are required. Proper grammar, spelling, and format are required. You must clearly state the problem or question that will be addressed. **On the subject line of the email you must identify the class and section involved.** We reserve the right not to respond to any e-mail that does not meet these requirements and is not of a professional nature.

**Campus Carry:** Persons who hold a Concealed Handgun License can lawfully carry their gun into a UTEP classroom as long as it remains concealed. Open carry remains prohibited on campus. Should you feel someone is intentionally displaying a gun (or any other weapon for that matter), do not hesitate to call Campus Police (X 5611) or 9-1-1. For more information on campus carry, see <http://sa.utep.edu/campuscarry/>; for more information on overall campus safety, see <http://admin.utep.edu/emergency>.

## **LABORATORY ATTENDANCE REQUIREMENTS:**

Attendance is mandatory for the laboratory. There will be a sign-in sheet for each class. Perfect attendance is worth 100 points. If one class is missed there will be no penalty. If a second class is missed 10 points will be deducted from these 100 points resulting in a score of 90. If a third class is missed 10 additional points will be deducted resulting in a score of 80. If a fourth class is missed 10 additional points will be deducted resulting in a score of 70. Any additional missed classes will result in a score of 50. Exceptions to this attendance penalty for missing classes are possible on a case by case basis, but they will be limited to cases where the reason for missing class is completely beyond the student's control or the student has an official university exemption for missing a class.

## **LABORATORY SESSIONS ARE SCHEDULED AS FOLLOWS.**

Fridays during the semester following standard lab day schedule

1. August 27, 2021
2. September 3, 2021
3. September 10, 2021
4. September 17, 2021
5. September 24, 2021
6. October 1, 2021
7. October 8, 2021
8. October 15, 2021
9. October 22, 2021
10. October 29, 2021 (Drop deadline)
11. November 5, 2021
12. November 12, 2021
13. November 19, 2021

Note: November 25, 2021 is Thanksgiving Holiday – no class session

Note: December 3, 2021 is dead day – no class session

## **COVID-19 PRECAUTION**

If you have tested positive for COVID-19, you are encouraged to report your results to [covidaction@utep.edu](mailto:covidaction@utep.edu), so that the Dean of Students Office can provide you with support and help with communication with your professors. It is important to follow all instructions that you receive as part of the diagnosis, including isolation and staying at home until a negative test is produced.

If you experience COVID-19 symptoms, please follow the isolation protocol by staying at home and getting tested as soon as possible. If the test is negative but you are still seeking accommodations, please contact the Dean of Students Office for guidance in a timely manner. Your instructor will work with the Dean of Students Office to determine the extent of any such accommodations.

We strongly encourage you to think and act proactively in all matters related to COVID-19 and your academic endeavors. The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit [epstrong.org](http://epstrong.org).

## LABORATORY PROJECT REQUIREMENTS

### NOTE:

Before starting project 1 confirm that the firm you have been assigned has a “Beta coefficient” either in [finance.yahoo.com](http://finance.yahoo.com) or [google.com/finance](http://google.com/finance).  
At these sites, enter your firm’s ticker symbol.

Also, make sure that the firm you have been assigned has at least five (5) bonds in the website: [finra-markets.morningstar.com/BondCenter/](http://finra-markets.morningstar.com/BondCenter/)  
At this site, tick on Search and enter your firm’s ticker symbol.

Your course grade will be determined by your weighted performance in the following categories, with the final course grade based on the 10 point scale, i.e. 90 percent is an A, 80 percent is a B, etc.

<u>ASSIGNMENT</u>	<u>PROJECTS</u>	<u>PROJECT DUE DATES</u>	
		<u>Excel file</u>	<u>Written report</u>
1.	<u>Project 1 Sales Forecasting</u> 100 total points (adjusted)* 50 points for Excel spreadsheet	<b>Sept 16, 2021</b>	<b>N/A</b>
	Excel report due on the indicated date (Sept 16) by 11:59pm at the latest, submit in Blackboard via “ExcelFileSubmission” tab; no late submissions are accepted		
2.	<u>Project 2 Income, Cash Flow and Balance Sheet Forecasting</u> 100 total points 50 points for Excel spreadsheet– requires Project 1 sales forecast 50 points for Written report	<b>Sept 30, 2021</b>	<b>Oct 5, 2021</b>
	Excel report due on the indicated date (Sept 30) by 11:59pm at the latest, submit in Blackboard via “ExcelFileSubmission” tab; no late submissions are accepted		
	Written report due on the indicated date (Oct 5) by 11:59pm at the latest, submit in Blackboard via “WrittenReportSubmission” tab; no late submissions are accepted		
3.	<u>Project 3 Financial Cash Flow Forecasting and Firm Value</u> 100 total points (adjusted)* 50 points or Excel spreadsheet – requires Project 2 cash/balance sheet forecast	<b>Oct 14, 2021</b>	<b>N/A</b>

Excel report due on the indicated date (Oct 14) by 11:59pm at the latest, submit in Blackboard via “ExcelFileSubmission” tab; no late submissions are accepted

4. Projects 4 and 5 (counts as one assignment) Weighted Average Cost of Capital (WACC) and Advanced Capital Budgeting  
100 total points\*\*                      **Nov 18, 2021**                      **Nov 23, 2021**  
25 points for Project 4 Excel spreadsheet  
25 points for Project 5 Excel spreadsheet – requires Project 1 sales forecast and Project 4 WACC  
50 points for Written report

Excel report due on the indicated date (Nov 18) by 11:59pm at the latest, submit in Blackboard via “ExcelFileSubmission” tab; no late submissions are accepted

Written report due on the indicated date (Nov 23) by 11:59pm at the latest, submit in Blackboard via “WrittenReportSubmission” tab; no late submissions are accepted

5. Project 6. Monte Carlo Simulation with Capital Budgeting  
100 total points (adjusted)\*                      **Dec 2, 2021**                      **N/A**  
50 points for Excel spreadsheet

Excel report due on the indicated date (Dec 2) by 11:59pm at the latest, submit in Blackboard via “ExcelFileSubmission” tab; no late submissions are accepted

Attendance

100 points

Total Points\*\*\*

500 points

\* Since for projects 1, 3 and 6, no written report is required, the 50 points value for the required Excel file is converted to 100 points maximum base value by taking the Excel grade earned for the project and dividing it by 50, and then multiplying by 100.

\*\* Since Projects 4 and 5 are combined into one project worth 100 points, the Excel spreadsheets for each of these projects are worth 25 points. The computer grading system grades each of the Excel spreadsheets for projects 4 and 5 using a 50 points base. Thus, the computer system’s combined grade for the Excel spreadsheets for projects 4 and 5 will be divided by 2 to make their combined grade 50 points rather than 100 points

\*\*\*The total points add up to 500 because the lowest of the five assignment grades will be dropped – if an assignment is not turned in then its grade will be zero and this will be *de facto* the assignment grade that is dropped – **except note that you cannot skip project 1, 2 and 4/5 as the assignments associated with these projects are required for continuation of project 3 and 6.**

## PROJECTS:

There are six (6) Excel based projects for this class, with projects 4 and 5 counting as one (1) assignment. Each project incorporates advanced features of Excel and use actual company data, and some require an accompanying written report, as specified in the requirements section of the syllabus. Each student is assigned a company to analyze when a project requires such.

Students are guided through the projects by a series of YouTube videos showing the step-by-step process necessary to create their Excel file reports – these videos are available in the course's Blackboard site. Students are encouraged to assist or collaborate with each other with the technical aspects of creating their Excel file reports.

It is critical that students diligently follow the instructions in the YouTube videos, and develop their Excel files exactly as specified in the videos, even to the point where required data and calculations appear exactly in the cells that they are required to be located in. Otherwise, the Excel file report grade will be affected, perhaps dramatically so.

The idea is that in industry, Excel work done by one person is often forwarded to another person for additional work, as a file is developed. Then, if one person in the chain incorrectly does otherwise correct analysis but in the incorrect cell, such a mistake can be costly to the firm, not just because of the mistake itself, but because it may be costly to retrace the work to find out where the mistake is.

**A written report is required for projects 2 and 4-5.** Written reports are individual assignments, such that students should not assist or collaborate with each other on the writing of the written report. The style that the written report should follow is shown in this syllabus.

Students are encouraged to create a portfolio of their submitted projects that can be used in job interviews to demonstrate their proficiency in excel applications, writing, and finance.

For projects 1, 3 and 6, there is no written report required, such that the Excel portion, which will be automatically graded with a computer program, is worth 100% of the project's grade.

Excel files and Written reports will be returned via Blackboard to students, with their respective grades posted on Blackboard. Excel files returned to students will indicate error markings from the computer grading process.

The Excel file portion for all projects is to be submitted on the class Blackboard website using the tab "ExcelFileSubmission". The Written report, to be submitted in a MS Word file format (.doc or .docx) for projects 2, and 4-5, is to be submitted on the class Blackboard website using the tab "WrittenReportSubmission".

For project 2, the Excel portion of the project is worth 50% of the grade and the written report is worth 50% of the grade.

For projects 4 and 5, which count as one assignment, the Excel portion of each project is worth 25% of the grade (50% in total for both projects) and the written report is worth 50% of the grade.

**In the event of a Blackboard crash on the day of an excel project submission, students will be given 1 full day after Blackboard returns to operation to submit the excel file. The Blackboard crash must be significant in the view of the professor and the extension is at the discretion of the professor assigned to the class.**

Project 1: Sales Forecasting

Project 2: Income, Cash Flow and Balance Sheet Forecasting

Project 3: Financial Cash Flow Forecasting and Firm Value

Note: Projects 4 and 5 count as one project assignment.

Project 4: Weighted Average Cost of Capital

Project 5: Advanced Capital Budgeting

Project 6. Monte Carlo Simulation with Capital Budgeting

## **PLAGIARISM DETECTING SOFTWARE**

Your course work and assessments are submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used review assignment submissions for originality.



## ACADEMIC HONESTY

Academic honesty is paramount to the existence of academic integrity in a course. During the taking of exams, no student in this course is to receive or give assistance to any other student in this course, nor should assistance through the use of unauthorized materials be used by anyone. In fulfilling other course requirements, work submitted by any student, or any assigned group of students in the case of group projects, must be the original work of that student or group, with appropriate credit given when other sources are used.

Section 1.3.1 of UTEPs *Handbook of Operating Procedures* provides the basis for the academic administration of charges of scholastic dishonesty. The *Handbook* states: "Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Disciplinary proceedings may be initiated against any student for any of the following acts or omissions:

### 1.3.1.1 "cheating" includes:

- a. copying from the test paper of another student, engaging in written, oral, or any other means of communication with another student during a test, or giving aid to or seeking aid from another student during a test;
- b. possession and/or use during a test of materials which are not authorized by the person giving the test, such as class notes, books, or specifically designed "crib notes";
- c. using, obtaining, or attempting to obtain by any means the whole or any part of non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters, but which will be used again either in whole or in part without permission of the instructor; or accessing a test bank without instructor permission;
- d. substituting for another person, or permitting another person to substitute for one's self, to take a test; and
- e. falsifying research data, laboratory reports, and/or other records or academic work offered for credit;

**1.3.1.2 "plagiarism"** means the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own academic work offered for credit, or using work in a paper or assignment for which the student had received credit in another course without direct permission of all involved instructors.

**1.3.1.3 "collusion"** means the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on scholastic dishonesty."

## GENERIC WRITTEN REPORT FORMAT FOR PROJECT 2

NOTE: The report involves writing a 3 (single spaced) page report (+/-1 page) of the project, excluding ancillaries such as the heading page and any tables or figures, submitted using a normal font like courier or arial with a font size of 12. It must be submitted as an MS Word document through the Blackboard tab “WrittenReportSubmission” using the format shown below.

The file name should be in the following form “**LastNameFirstInitialStudentNumberProj2**” such as “**SmithJ80000000Proj2**”

### Grading focus on Project 2 written report will be on:

- Is the Outline structure and length limits followed in the required font size?
- Are the Tables and Figures appropriately numbered and titled, with appropriate information contained within, and are they properly integrated into the report and the text within it?
- Is the Material covered/described complete and presented in a well- crafted writing style, that is neat, seamless and smooth, and showing sound financial logic and understanding?

### Required Outline for Project 2:

#### Project 2

Income, Cash Flow and Balance Sheet Forecasting by

Joe (Jan) Smith

February xx, 2021

Finance 4311A Laboratory

### Executive Summary

The Executive Summary should state the overarching objective of the project and state the major results that were found in about a maximum 200-word paragraph.

Word Count \_\_\_\_\_.

### 1.0 Introduction

The introduction should state the overall objectives of the project in more detail than in the executive summary, and state how the objectives are to be accomplished. The introduction should not present the results. The introduction should also give the reader an idea of what to expect in the remainder of the report along the lines of the following type of statement – “Section 2 presents the data and the sample used in the analysis (divided this section into two subsections, one for data and one for sample), whereas Section 3 presents the results concerning the (note this section can be divided into

subsections if there are results for different components of the project). Section 4 presents the overall conclusions and summary.” Thus, the introduction should cover the goals of the project, the methods used to accomplish these goals, and the structural outline of the report.

## **2.0 Data and Sample:**

### **2.1. Data**

State the time periods involved in the data set (from year 20xx to 20xy), the frequency of the data (daily, monthly, yearly), and the sources from which the data comes.

### **2.2 Sample**

Is the data for stocks, bonds – if stocks, mention the stocks, if bonds, mention the bonds, and give some description about them, including the ticker symbol, an idea of what the company does, the industry it is in. Is the data some balance sheet data, or income statement data – if so, mention the items in the balance sheet or income statement that are being used. And also mention the company, its ticker symbol, what the company does, the industry it is in.

## **3.0 Results:**

This section of the report presents the results obtained from the project. It describes the results and backs up the written description with appropriate numbered tables and graphs that are neatly constructed with appropriate headers and legends. Examples are shown in the associated videos. Tables and graphs should be appropriately integrated with the written report. This section should be subdivided by each results topic. That is to say, the subdivisions for example for project 2 should be shown as follows:

3.1 Sales Forecast – present results (incorporate the sales forecast from project 1)

3.2 Income Forecast– present results

3.3 Cash Flow Forecast – present results

3.3. Balance Sheet Forecast – present results

## **4.0 Overall Summary and Conclusion**

An overall summary of your results should be presented in this section and also your overall conclusions, including any recommendations. This section should be no more than one page in length.

## **Appendix**

The appendix would include any analysis tables separate from those in the body of the report and any other supporting material you wish to include in the report that does not belong in the body of the report. Your data is NOT to be included in this section. The appendix will not be page numbered, that is, its length will not count against or toward the maximum length required for the report.

## GENERIC REPORT FORMAT FOR PROJECTS 4-5

NOTE: The report involves writing a 4 (single spaced) page report (+/-1 page) of the project, excluding ancillaries such as the heading page and any tables or figures, submitted using a normal font like courier or arial with a font size of 12. It must be submitted as an MS Word document through the Blackboard tab "WrittenReportSubmission" using the format shown below. The file name should be in the following form "LastNameFirstInitialStudentNumberProj45" such as "SmithJ80000000Proj45"

### Grading focus on Projects 4-5 written report will be on:

- Is the Outline structure and length limits followed in the required font size?
- Are the Tables and Figures appropriately numbered and titled, with appropriate information contained within, and are they properly integrated into the report and the text within it?
- Is the Material covered/described complete and presented in a well-crafted writing style, that is neat, seamless and smooth, and showing sound financial logic and understanding?

### Required Outline for Projects 4-5:

Projects 4 and 5

Weighted Average Cost of Capital and Advanced Capital Budgeting

Joe (Jan) Smith

April xx, 2021

Finance 4311A Laboratory

### Executive Summary

The Executive Summary should state the overarching objective of the combination of projects 4 and 5 and state the major results that were found in about a maximum 200-word paragraph. It should also point out that the report is in two parts, Part I for the Weighted Average Cost of Capital analysis, and Part II for the Advanced Capital Budgeting analysis.

Word Count \_\_\_\_\_.

### Part I. Project 4: Weighted Average Cost of Capital

#### I.1. Introduction

The introduction to Part I should state the overall objectives of **project 4** in more detail than in the executive summary, and state how the objectives are to be accomplished. The overall introduction should not present the results. The introduction should also give the reader an idea of what to expect in the remainder of the report along the lines

of the following type of statement – “Section I.2 presents the data and the sample used in the analysis (divided this section into two subsections, one for data and one for sample). Section I.3 presents the results concerning the (note this section can be divided into subsections if there are results for different components of the project). Section I.4 presents the overall conclusions and summary. Any items for the Appendix are in Section 1.5.” Thus, the introduction in Part I should cover the goals of project 4, the methods used to accomplish these goals, and the structural outline of Part I of the report.

## **I.2. Data and Sample for Weighted Average Cost of Capital**

### **I.2.1. Data**

State the time periods involved in the data set (from year 20xx to 20xy), the frequency of the data (daily, monthly, yearly), and the sources from which the data comes.

### **I.2.2. Sample**

Is the data for stocks, bonds – if stocks, mention the stocks, if bonds, mention the bonds, and give some description about them, including the ticker symbol, an idea of what the company does, the industry it is in. Is the data some balance sheet data, or income statement data – if so, mention the items in the balance sheet or income statement that are being used. And also mention the company, its ticker symbol, what the company does, the industry it is in.

### **I.3. Results**

This section of the report presents the results obtained for project 4. It describes the results and backs up the written description with appropriate numbered tables and graphs that are neatly constructed with appropriate headers and legends. Examples are shown in the associated videos. Tables and graphs should be appropriately integrated with the written report.

### **I.4. Overall Summary and Conclusion**

An overall summary of your results for project 4 should be presented in this section and also your overall conclusions, including any recommendations. This section should be no more than one page in length.

## **Part II. Project 5: Advanced Capital Budgeting**

### **II.1 Introduction**

The introduction to Part II should state the overall objectives of **project 5** in more detail than in the executive summary, and state how the objectives are to be accomplished. The overall introduction should not present the results. The introduction should also

give the reader an idea of what to expect in the remainder of the report along the lines of the following type of statement – “Section II.2. presents the data and the sample used in the analysis (divided this section into two subsections, one for data and one for sample). Section II.3. presents the results concerning the (note this section can be divided into subsections if there are results for different components of the project). Section II.4. presents the overall conclusions and summary. Any items for the Appendix are in Section II.5.” Thus, the introduction in Part II should cover the goals of project 5, the methods used to accomplish these goals, and the structural outline of Part II of the report.

## **II.2. Data and Sample for Advanced Capital Budgeting**

### **II.2.1. Data**

State the time periods involved in the data set (from year 20xx to 20xy), the frequency of the data (daily, monthly, yearly), and the sources from which the data comes.

### **II.2.2 Sample**

Is the data for stocks, bonds – if stocks, mention the stocks, if bonds, mention the bonds, and give some description about them, including the ticker symbol, an idea of what the company does, the industry it is in. Is the data some balance sheet data, or income statement data – if so, mention the items in the balance sheet or income statement that are being used. And also mention the company, its ticker symbol, what the company does, the industry it is in.

### **II.3. Results**

This section of the report presents the results obtained for project 5. It describes the results and backs up the written description with appropriate numbered tables and graphs that are neatly constructed with appropriate headers and legends. Examples are shown in the associated videos. Tables and graphs should be appropriately integrated with the written report.

### **II.4. Overall Summary and Conclusion**

An overall summary of your results for project 5 should be presented in this section and also your overall conclusions, including any recommendations. This section should be no more than one page in length.

### **Appendix**

The appendix would include any analysis tables separate from those in the body of the report and any other supporting material you wish to include in the report that does not belong in the body of the report. Your data is NOT to be included in this section. The appendix will not be page numbered, that is, its length will not count against or toward the maximum length required for the report.

## DETAILED DESCRIPTION OF THE ASSIGNED PROJECTS

**Comment:** Project overviews are meant to layout the minimum requirements for a given project and to explain the motivation for a given project. Meeting the minimum requirements does not guarantee an A or even a passing grade. These projects are very rich, with many possible extensions to the analysis, various interpretations and recommendations from the results, and alternative methods of analysis that can be applied or discussed relative to the primary method introduced in the project. The finance faculty wishes to give students a chance to differentiate themselves to potential employers in the interview process and have left “meat on the bone” for the students to explore.

In industry, project overviews are rarely, if ever, created. Your boss will simply say “do this” and expect you to formulate the required aspects of the project. In addition, detailed written reports, as are required for this class, are also rarely done in industry. However, employers want to know that potential employees are not only technically capable, but also can communicate their findings effectively in written form. Proof read your papers. DO NOT write sentences that you do not understand but think that the professor will. Use proper grammar, spelling, and effective organization of the material presented. Do not think “what does the professor want”, rather think “what would impress my boss” or “what would get the customer to choose my company”. Bosses and customers are busy. They hate too much information more than to little information. Be clear and to the point. Look for ways to table or plot critical information so that readers can understand the results at a glance. Good Luck.

## **4311A Finance Lab Project 1**

### Time Series Sales Forecast

**Motivation:** Finance is about the future while accounting is about the past. For finance, predicting the future consists of two parts; the estimate and the standard error of the estimate. The estimate represents the value you expect to occur in the future. The standard error of the estimate represents the accuracy or confidence you have in this prediction. In general, the smaller the standard error of the estimate, the better the model is.

The first project for the 4310 lab is to create a forecast model for sales. Forecasting sales is a natural starting point for companies. Sales drives labor requirements, material requirements, short term and long-term financing requirements, and just about every other aspect of a company, including taxes. Sales can be forecast on a short-term basis, next week, next month, next year, or on a long-term basis over many years. We adopt a long term sales forecast method because future projects in the Fin 4311A lab on capital budgeting will be based on the long-term sales forecast. While long-term sales forecast models can be very complex, we selected a simple time series approach that is often the starting point for more complex modeling methods.

The goal of forecasting is to create an accurate forecast, not to 'fit' the historic data used to generate the forecast. Typically, the most recent several data points are not used in forming the base model, but rather are used to validate the out of sample predicting power of the model. While small standard errors of the estimate is considered a better model, a model with a slightly higher standard error but a better error structure to the out of sample data points is considered the better forecast model. After a model is selected, it is updated with the out of sample data points to create the final forecast model.

This project will give the student practical skills in forecasting. The forecast model created by the student is subsequently used in other projects, as is typical of a sales forecast in industry. Various Excel skills will be acquired in this project.



## 4311A Finance Lab Project 2

### Balance Sheet and FCF Forecast

**Motivation:** The sales forecast typically form the basis for the establishment of management goals, budgets, and plans throughout a firm. This project uses the sales forecast to create pro-forma estimates of the current assets and liabilities of a balance sheet and the free cash flow. The method introduced can also be applied to other financial statements. A critical aspect of forecasting and financial management is risk management. Risk, in the sense of the sales forecast, refers to the standard error of the estimate. In other words, the sales forecast will likely be different from the actual value achieved, but inside of the high and low limits with a high degree of probability. Management must develop plans that account for this risk, such that the plans will work with the most probable range of sales values. As a simple example, a labor plan could include overtime and temporary workers when sales are on the high side or reduced working hours and layoffs if sales are on the low side. By making these plans ahead of time, companies can become more efficient and quickly react to changes in the market.

Change is a constant in business. Strong spreadsheet techniques include the ability to quickly update tables and results with only minimal changes to inputs. The technique of dynamic tabling is introduced in this project using the VLOOKUP function of Excel. Proper tables for management and planning purposes should incorporate the risk of the forecast from the standard error. Excel has a process called the Scenario Manager that quickly incorporates the forecast risk to generate tables that can be used for planning purposes. This project also introduced the students to the Scenario Manager of Excel.

### Basic requirements of the report:

- 1) A short description of the company assigned to the student is required. Give the reader key details of what the company does and how it performs, without boring them with details about the founding date, the address, and other needless information that can be quickly referenced but has no bearing on the sales forecast.
- 2) A formatted table showing the mean, standard deviation, low, and high values of the percentage of sales for each item in current assets and current liabilities is required.
- 3) A pro-forma table of current assets, current liabilities, and working capital for 1, 5, and 10 years ahead of the current year is required. Discussion should focus on the change in total current assets, total current liabilities, and working capital.
- 4) A working capital scenario table is required for 1 year ahead. Discuss the key aspects of this table in your view.
- 5) A formatted table showing the mean, standard deviation, low, and high values of the percentage of sales for each item in free cash flow is required.
- 6) A pro-forma table of free cash flow for 1, 5, and 10 years ahead of the current year is required. Discussion should focus on the change in free cash flow.
- 7) A free cash flow scenario table is required for 1 year ahead. Discuss the key aspects of this table in your view.
- 8) All tables and plots, except the working tables, must be integrated in the text and labeled as Table 1, Table 2, or Figure 1, Figure 2, etc.
- 9) Working tables should be labeled and included in the appendix as indicated in the videos.

## 4311A Finance Lab Project 3

### Free Cash Flow Firm Valuation

**Motivation:** By necessity, the data used in our projects is publically available data. A company will have more detailed internal data to forecast sales and other financial parameters. However, financial analyst can only legally use publically available data to evaluate stock prices and firm values. There are multiple ways to value a firm. P/E ratios, free cash flow, dividend discount models, and other methods are applied to value a company for mergers, acquisitions, and for investment decisions. In this project we use the sales forecast to estimate the value of the stock price and high and low limits for the price. The project uses a simple Monte Carlo simulation to estimate the value of a firm. In forecasting free cash flow, there is uncertainty about the level of sales and uncertainty about the percent of sales that will be free cash flow. It is the joint distribution of sales and percent free cash flow that should be used in the valuation of the company. Although not part of the project, the uncertainty of the discount rate can also be incorporated into the financial model. This project introduces the concept and application of a sales forecast, integrated with a Monte Carlo simulation, to value a company.

There are two key Excel concepts introduced in this project. The first concept is that of Excel macros. Macros allow the user to execute a series of commands at the press of a button. We also introduce macro programming. There are many applications in finance and business where macros will be required. Our goal is to introduce the student to the macro process and programming language. The second Excel concept is Goal Seek. Goal Seek allow the Excel user to identify the exact input value needed to get an exact output value. The use of Goal Seek requires the correct setup of the spread sheet, but will allow the user to quickly answer many questions regarding many applications in business.

## 4311A Finance Lab Project 4

### Weighted Average Cost of Capital

**Motivation:** Perhaps one of the most difficult aspects of evaluating a capital project is using the correct discount rate. In this project, we calculate the Weighted Average Cost of Capital. Our calculations are based on the debt and equity position of public firms. For private firms, the required return on equity is provided by the firm owner or management. While the evaluation of a WACC is fairly straight forward, though tedious, it is an important skill to acquire. Pay particular attention to the standard error of the estimate for the required rate of return equity. While the cost of debt can be estimated from market data, the cost of equity is estimated with error and sometimes substantial error.

### Basic requirements of the report:

1) A short description of the company assigned to the student is required. Give the reader key details of what the company does and how it performs, without boring them with details about the founding date, the address, and other needless information that can be quickly referenced but has no bearing on the sales forecast. You may copy this from the prior report, incorporating any feedback from the professor.

2) If your company has 10 outstanding bonds or less, the cost of debt must be estimated with all bonds. If your company has more than 10 outstanding bonds, select 10 sample bonds to estimate the cost of debt. Discuss the selection of these bonds. Table the key bond characteristics and discuss. It is possible that your company has no long term debt. Note this in your report if it occurs.

3) Estimate the cost of equity using the market model based on 5 years of monthly data. Table and discuss the result of the regression. Compare the beta of the estimate to the beta from Yahoo Finance.

4) Calculate the WACC. Table and discuss the results.

5) All tables and plots, except the working tables, must be integrated in the text and labeled as Table 1, Table 2, or Figure 1, Figure 2 etc.

6) Working tables should be labeled and included in the appendix as indicated in the videos. Remember, you are building a portfolio of projects and work examples that can be used in the interview process, not just creating a report for a grade. While the projects will give you many marketable skills in Excel, the ability to clearly communicate your findings is another marketable skill that can only be demonstrated through the writing of your report.

## **4311A Finance Lab Project 5**

### Advanced Capital Budgeting

**Motivation:** Capital is a limited resource that must be used wisely if a company is to survive in the long-term. This project combines the sales forecast and WACC projects to evaluate a capital budget. The project also incorporates Goal Seek so that key questions can be answered quickly and efficiently. The law of supply and demand is also incorporated into this project. As prices go up quantity goes down, but the margin on the product increases. We use Excel to set the price for the product so that the Net Present Value of the project is maximized. Each student will be given a unique set of parameters to use in their projects.

The capital budget project is broken into three applications. The first uses a onetime capital expense. This would equate to a simple project such as buying a machine tool, computer, or software system. The second uses capacity balancing, where the project requires an expansion at some point in the future. New plants or production lines are budgeted this way. The third method uses a demand curve to price the product while maximizing the NPV. This is used for plant sizing and capital requirements. True capital budgeting is an iterative process but this project will give you the basic skills required to conduct capital budgeting in a practical world environment.

### **Basic requirements of the report:**

1) A short description of the company assigned to the student is required. Give the reader key details of what the company does and how it performs, without boring them with details about the founding date, the address, and other needless information that can be quickly referenced but has no bearing on the sales forecast.

2) Table your input parameters and discuss the parameters. This includes the WACC.

3) Table and discuss the sales growth evaluation.

4) Plot the NPV, IRR, and MIRR for each capital budget method. Table the main results for each method. Discuss the results and plots. As always tables and plots should be correctly labeled.

5) Create a table of your results from the demand estimation and discuss.

6) Conduct and table, for each capital budget method, a Goal Seek analysis that answers the following questions. Achieve a NPV of 0 in year 5 by changing 1) Price, 2) Units, 3) Capital required, 4) SG&A, and 5) the tax rate. Discuss the results relative to management objectives.

7) All tables and plots, except the working tables, must be integrated in the text and labeled as Table 1, Table 2, or Figure 1, Figure 2 etc.

8) Working tables should be labeled and included in the appendix as indicated in the videos.

## 4311A Finance Lab Project 6

### Capital Budgeting Monte Carlo Simulation

**Motivation:** A capital budget represents the intersection of multiple predictions of the future. We predict sales, prices, demand, discount rates, and many other variables into the future in order to estimate the NPV of a project. All predictions of the future come with uncertainty or risk. The previous capital budgeting project assumed that the mean values of the predictions were in fact the realized values. For example, the growth of sales in the 10<sup>th</sup> year was assumed to be exactly, for example, 2.41%. Every year government regulation increases at the federal, state, and local level, increasing the SG&A of a company. Inflation tends to increase the cost of creating a product faster than the price can increase to compensate due to competitive forces. For example, healthcare costs increase faster than inflation. In order to control for these factors and uncertainty a Monte Carlo simulation can be used to estimate the joint probability distribution of all modeled variables. In this project, we execute a Monte Carlo simulation for the capital budget project.

The Monte Carlo simulation will be based on 500 lifetimes. Variable costs and the price of the project will be based on a triangular distribution with drift. SG&A percentage will be based on a normal distribution with drift. The drift term for SG&A models regulatory costs increases and other overhead increases over time. The Monte Carlo simulation will be based on the demand optimized capital budget results.