

**STEPHEN M. ROSS SCHOOL OF BUSINESS
UNIVERSITY OF MICHIGAN
ANN ARBOR, MI 48109-1234**

INTRODUCTION TO FINANCE

COURSE OBJECTIVES

This is the introductory course in Finance prepared specifically for the online offering via Coursera. Its purpose is to equip you with a framework and basic tools and techniques necessary to make sound decisions. The main focus of the course is on valuation of both real and financial assets.

The course is designed with the following specific objectives:

- ❖ To teach the fundamental methods and skills of finance vital for understanding valuation of any asset, personal or corporate
- ❖ To prepare you to make sound personal and professional decisions
- ❖ To prepare you to take more advanced courses in finance
- ❖ To provide you with a base level of sophistication to enable you to better understand the role of finance in debates over corporate and public policy.

COURSE DESCRIPTION

This course is primarily devoted to the principles of financial valuation. We will first discuss the concept of time value of money in extensive detail with the use of several real world examples, and then apply the principles of valuation to value (a) real projects or ideas and (b) financial securities (stocks and bonds). Since decision-making virtually always involves risk and uncertainty, we will then introduce the concept of risk, and the relation between risk and return. This is followed by a discussion of the relation between financing and the weighted average cost of capital in a world without frictions. We will then integrate our knowledge of cash flows with our understanding of risk and financing to revisit valuation and decision-making. Although the concepts of competitive capital markets and market efficiency will not be covered in a separate session, they will be woven in the fabric of the course.

COURSE PEDAGOGY: THE IMPORTANCE OF PROBLEM SOLVING

This is a demanding course that will require a lot of hard work, from both you and me. I have deliberately pitched it at a relatively high level with an emphasis on deep understanding of what finance is all about, yet with a focus on practical applications. To achieve these dual objectives, this course is focused on **problem solving** and,

consequently, I will make a conscious attempt to introduce each topic with real-life examples. I strongly encourage you to attempt every problem in the video before we do it together. You will also be required to submit weekly assignments that involve multiple problem-solving exercises. Some of these problems are more complex by design than the examples we will do in “class” (the videos) because class time needs to be devoted to understanding the issues and concepts. In my view, doing problems soon after the relevant material is covered in class is the best way to learn.

We have carefully coordinated both the content and the pace of the course. Since it is important to acquire the basic concepts and skills of a subject matter before applying them to relatively complex situations, in the first half of the course we will concentrate more on the tools of finance. We will move at a fairly brisk pace and introduce you to several tools, which you will learn to apply within carefully constructed (but realistic) situations presented to you in “number-crunching” oriented assignments.

Class Structure

After a lot of thought, and listening carefully to the feedback of experts in online/virtual teaching, I have decided to conduct this class in “real time.” In other words, we will mimic the process of a face-to-face class in that the course will run for a fixed period and all of you will be exposed to the videos and assignments at the same time. **Based on our experience in offering the course the first time around, we have chosen the length of the class to be 15 weeks, with materials offered in two-week chunks, each followed by one week for assimilation and completion of relevant assignments.**

There are several reasons for this decision, but I would like to emphasize a couple. First, most learning happens via interactions among learners; in fact, all our assignments in the face-to-face version of this class are team assignments. Since you are dispersed all over the world, it is difficult to replicate that. I encourage you therefore to use online forums to discuss issues that, again according to experience in Coursera classes, will be facilitated if the class is conducted synchronously for all of you. By synchronously I mean making materials available in blocks, rather than making the whole course available to you at once. Based on our experience in the first offering of this class, the content can best be broken up into two-week blocks. This format is dictated by the nature of the content and has the advantage of providing you more flexibility to pace yourself. Second, adequate assimilation time is central to understanding anything. And therefore you need time to think about, and practice, all the concepts and applications covered in “class.” If you find the material for some sections easier than others, do more problems than required in the assignments and review more materials. For example, I have provided several textbooks to choose from, and each one has numerous problems at the end of referenced chapters. Again, based on our experience last time, we have decided to add an “assimilation/homework” week following each two-week block of content. Since the content is designed to be 10 weeks long to cover some basic material, and given its inherently applied nature that requires you to do practice, the total length of the class now is 15 weeks.

I of course cannot prevent you from reading chapters in advance, but then I can only control what I can. I strongly encourage you to pace yourself based on the videos.

PREREQUISITES

This is a tough issue. I do not believe in prerequisites, except for a sense of curiosity and an attitude. Having said that, exposure to economics (the mother discipline of finance), accounting (the language of business), and/or algebra and statistics (we all need it) will clearly help. I will however try and cover everything starting with fundamentals and will highlight when there is a need for you to do some further work in specific areas. In fact, I hope the class will motivate you to learn more. I believe that learning usually happens when you are motivated by a curiosity to understand something.

COURSE MATERIALS

VIDEOS

The main resources provided by me for this online class are the videos, organized like a textbook in 10 Chapters. Each chapter/video is about 120 minutes long, and broken up into bite size pieces. I have worked with professionals to edit the videos, but I encourage you to pace yourself according to your style and background. Most importantly, there are numerous examples/problems in all the videos, and please try and take every opportunity to attempt an exercise before you see me analyze it. We have tried to create breaks wherever possible to facilitate this process, but I do not want the videos to become like TV advertisements; short and exciting, but with no real content.

It is important for you to know that I will not provide any notes to accompany the videos because I want you to create your own notes as you watch and listen to the presentation. The best part about this online class is that you can pause, rewind, and fast forward the videos at will. You can play it at faster speeds whenever needed. But it is also very easy for you to become a passive participant. I want you to be active listeners and I encourage you to make your own notes as you go along. This will help you to understand and learn the material really well, assuming of course that you find me engaging. If you do that, you will not need textbooks or other materials, except of course to review and/or read additional stuff.

ADDITIONAL RESOURCES

We have however provided you with several other resources. First, we have prepared some brief **notes** that cover: Use of Spreadsheets, Review of Statistics, and a Note on Formulae, etc. We have also constructed several assignments that will be critical to the learning process.

TEXTBOOKS

In addition, I provide below references of several alternative textbooks that are all very high quality. To help you with your reading, we have also provided you chapters from two books as examples of references. Please note that the videos do not follow any specific book and the book chapters are only references; they do not perfectly match the material we cover and may sometimes contain material that we will not cover. My goal is to expose you to the fundamentals of finance, not every detail in every textbook.

The list of textbooks is provided below. Please see the Class Schedule at the end of this syllabus, and provided as a Link on the main page, to refer to the specific chapters from two of these books. You are not required to purchase any of these books, but recognize that one of them is available to read for free on the web. You must follow the guidelines provided by the author for use of the online material. If you do choose to buy a book, a relatively recent edition will do, and look for used and/or paperback versions.

(1) *Corporate Finance, 2nd Edition*, by Ivo Welch.

This book can be purchased from Amazon or you can read it for free at <http://book.ivo-welch.info/ed3/toc.html>

Although reading the text and these chapters is free on this website, the material is copyrighted, not permitted to be distributed further, and not permitted to be posted elsewhere.

I have referenced chapters of this book as suggested readings in the detailed class schedule. This book is referenced as **IV**.

(2) *Corporate Finance, 9th Edition*, by Ross, Westerfield & Jaffee.

I have also referenced chapters of this book as suggested readings in the detailed class schedule. The book is referenced as **RWJ**.

A couple of other excellent textbooks are:

(3) *Corporate Finance, 2nd Edition*, by Berk & DeMarzo.

(4) *Principles of Corporate Finance, 10th Edition*, by Brealey, Myers & Allen.

There are several other books on finance and I encourage you to browse a few before settling on one or two as references. Note again that the idea is to provide you with resources and not to match each class/video with specific books or chapters within them.

Finally, since many of you may have had limited exposure to Finance, it is important to read institutional material at your own convenience. Please read business and financial news regularly. Cruise the web as often as possible not only to uncover the wealth of information

at your disposal, but to also learn how things work. A good web site to begin your search is <http://finance.yahoo.com>. I will use this web site at several points during the “class.” Read the Economist as often as you can; it has some thoughtful pieces. However, recognize that you need to develop the habit of reading material critically; just because something is published in a reputable outlet does not mean that the author knows what he/she is talking about. I guarantee you that there is no one out there who really understands what our current financial crisis, or even the crisis in the 1930s, is all about.

NUMBER-CRUNCHING AND SPREADSHEETS

The purpose of the class is to introduce you to concepts and applications, without worrying too much about the exact calculations. Having said that, knowing how to calculate and execute an analysis has a lot of practical value. I want you to know that most calculations can be done even using the formulae and a regular calculator. If you know what you are doing, you can calculate the stuff. I therefore encourage you to focus on the setting up of problems, rather than the calculations. When you get to the calculations, we will find that technology just helps you do so much faster. But, you will also realize that spreadsheets and calculators simply calculate stuff after you tell them what to do; they are a means and not the end! If you set up a problem incorrectly, you will get an incorrect answer. I will therefore de-emphasize the role of calculations in the videos and use a spreadsheet only to illustrate the logic and steps involved in making day-to-day financial calculations. I will use the functions built into spreadsheets, but again you can actually create your own formulae as well.

I am assuming that if you are taking this class you have access to a computer and the internet and, therefore, to spreadsheets. I will use Excel at various points in the videos and provide a note on Spreadsheets. You are responsible for learning how to use spreadsheets. The assignments are a great way to do so as virtually all questions will require you to do calculations using either a spreadsheet or an alternative method.

If you do not have access to a spreadsheet you can do the entire class using a financial calculator. While any financial calculator will suffice, an HP10BII is a good compromise between functionality and cost. Recognize however that you are responsible for learning the necessary skills since each calculator is different in some respect (after all, they need to be able to differentiate!) Fortunately, the financial functions are labeled similarly to spreadsheets, and the note on Spreadsheets will give you some hints. There may be a bit of learning involved, but it is not difficult.

SOME CONVENTIONS

Finance is so cool because it makes sense; there is therefore very little to memorize. The real issue in life is to understand the problem you are faced with. But there is one convention that is built into almost every formula and in spreadsheet functions. This convention is related to the fact that all decisions can be placed on a time line. All flows

(cash out or cash in) occur at points in time, while interest rates apply to periods of time. Unless otherwise specified, all flows occur at the end of a period. Therefore, if someone says that Maria received \$10 in year 1, it means the end of year 1. (Of course, most decisions involve an outflow/investment today; the beginning of the first period. But it will be obvious to you when that happens.) Do not worry about this; you will quickly get used to the convention once we start the class and we do problems together and, fortunately, every textbook uses the same convention.

ASSIGNMENTS

You will be evaluated regularly over the 15-week period using nine assignments and a final exam. Please use the Coursera web site to access *and* submit assignments. The submission deadlines are indicated on each assignment. Late papers will not be accepted!

The assignments for this course are quite intense. We will have **nine** assignments, each crafted to help reinforce the learning of concepts and problems covered in class. By design, a few problems are more difficult than those presented in class. I believe you will better understand the concepts by thinking through the issues involved in solving the problem and you will learn excel in the process.

EXAMINATION

Apart from the assignments, there will be **one final exam** in the 15th week. Although the exam will involve “number-crunching,” the main goal is to test your understanding of the concepts.

NATURE OF ASSIGNMENTS AND FINAL EXAM

Since all grading will be conducted using technology, all questions will take a True/False, fill in the blank, or multiple-choice form. The questions will almost always be word problems, like the ones covered in class, but there will be one specific answer to each question. We have set up the grading process so that you get feedback, regardless of whether you get the answer right or wrong, that is supposed to make you think in the right way about the issues. We hope to enrich the grading process in future offerings to enable a more informative evaluation process.

IMPORTANT GUIDELINES:

Always draw a timeline corresponding to a problem, until you are completely comfortable with doing your own analysis. Please read instructions for the questions/problems very carefully before you attempt to answer them. Some things to remember:

(a) Since an overwhelming majority of the questions involve numbers, do NOT enter any symbol in your answers, just the number. For example, do not enter “\$” before the number;

or “%” after it, even though the questions will have these expressions;

(b) Do not use commas;

(c) For simplicity, we will use dollars as the currency. Round off all answers involving dollars to the closest round number. Do not worry about decimals; the grading system has been set up to accept rounding to both round numbers. Similarly, you do not need to worry about decimals in a multiple choices answer containing dollars;

(d) Finance involves interest rates. We will express all interest rates in percentages. Do not use more than two decimals in your answers.

Please look out for any additional instructions in the assignments/final.

Example 1: Suppose your answer is \$3,221.32. The answer you enter should be 3221. There is no \$ sign or comma in it. (To give you the benefit of doubt, the computer will accept a range around 3221 as a correct answer.)

Example 2: Suppose the answer to an interest rate question is 6.253%. You should enter 6.25. There is no % sign or third decimal in it. (To give you the benefit of doubt, the computer will accept a range around 6.25 as a correct answer.)

COURSE EVALUATION PROCESS

Due to the nature of the class, and the high enrollments, all assignments and the final exam will be graded using technology. No person will be involved in the evaluation process. The technology provided by Coursera is ideally suited for grading and assessing performance.

COURSE GRADING AND CERTIFICATE

Your performance will be evaluated using a pass/fail grade. The philosophy behind our grading is to make sure you gain adequate competency to be granted a certificate. To qualify for a certificate, you will need to fulfill the following requirements:

- A score of at least 70% on five of the nine assignments;
- A minimum of 60% on the final exam.

You will be allowed **two attempts** at each assignment as well as the final exam; but both attempts must be completed by the respective deadlines. You may of course attend the whole class regardless of your performance on assignments or the final, but a passing grade is necessary to receive a certificate.

TEACHING ASSISTANCE

Owen Henkel has very graciously agreed to help me with this class. Consistent with our philosophy that you will learn from each other, our hope is that you will resolve most/all issues on your own by reviewing the videos, doing problems, reading chapters, and discussing among yourselves. But Owen will monitor the Forums and post comments if there is an error, especially in an assignment or in the evaluation of the assignment.

IMPORTANT ISSUES TO CONSIDER

Assignments

The assignments are meant to be challenging, though we have tried hard to increase the difficulty level gradually within each assignment. More importantly, the assignments reflect my belief about learning. No one can really make you learn; you have to be willing to work hard and struggle. The teacher's role is to expose us to the fundamental building blocks, and we need to learn by applying them to challenging problems. The reason I love finance is its applicability to all types of real world situations.

Solutions to Assignments

In the first offering, some people wanted answers to the assignments. This is a seemingly reasonable request but very difficult to accommodate. Creating questions for the videos and the assignments has been the most challenging part of this new endeavor. It took four people several weeks to create these, test them, and then modify them to fit the grading structure imposed by technology. We believe our assignments are well thought out and reflect a good balance of conceptual and applied stuff. Due to copyright issues, we cannot simply give you questions from existing books, and I would not want to do that anyway. It will therefore be very difficult for us to offer this class multiple times if we have to keep preparing new sets of questions with multiple versions to allow you to attempt each one more than once. Handing out answers will force us to do that. We have instead chosen to provide a lot of hints about the main issue in each question and you can always revisit the videos, go back to the questions, work in teams, etc., to learn the content. Over time, we hope to work with Coursera to create richer ways of grading and providing feedback depending on the type of errors that you may make.

Honor Code

While learning from each other is very important, we all recognize the difference between collaboration and simply copying and pasting work done by others. I strongly encourage you to work collaboratively using proper judgment. Similarly, please respect all copyright rules of all materials, including books, articles, etc.

While we ultimately cannot monitor everything, Coursera and my team will monitor our

Forums for any activity that violates such codes of conduct and basic civility to each other.

Contact with TA and Instructor

Given the large number of students, neither Owen nor I should be contacted with any questions. While we love all of you, responding to questions will be virtually impossible. But Owen will monitor the forums and keep me informed on a regular basis.

CLASS SCHEDULE: TOPICS and READINGS				
Week	Topic	Video	Book Chapters	Assignments and Notes
WEEK 1	Introduction Time Value of Money: PV & FV for Single Cash Flows	1	IV(1, 2), RWJ(4)	<i>Background Note: Spreadsheets.</i>
WEEK 2	Time Value of Money: PV & FV for Multiple Cash flows	2	IV(2,3), RWJ(4)	<i>Background Note: Formulae.</i>
WEEK 3	ASSIGNMENTS 1 & 2 due by end of Week.			
WEEK 4	Decision Criteria	3	IV(4), RWJ(5)	
WEEK 5	Decision Criteria & Cash Flow Estimation	4	IV(4,13), RWJ(5,6)	<i>Background Note: Sample Cash Flow Template.</i>
WEEK 6	ASSIGNMENTS 3 & 4 due by end of Week.			
WEEK 7	Bonds	5	IV(3,5), RWJ(8)	
WEEK 8	Stocks	6	IV(3), RWJ(9)	
WEEK 9	ASSIGNMENTS 5 & 6 due by end of Week.			
WEEK 10	Risk	7	IV(6,7,8), RWJ(10)	<i>Background Note: Review of Statistics.</i>
WEEK 11	Risk & Return	8	IV(9), RWJ(11)	
WEEK 12	ASSIGNMENTS 7 & 8 due by end of Week.			
WEEK 13	Valuation: Putting it All Together!	9	IV(16), RWJ(16)	<i>Background Note: The Capstone Problem.</i>
WEEK 14	REVIEW			
WEEK 15	Assignment 9 & FINAL due by end of Week.			