

The Wharton School
Corporate Finance (1008)

Mr Krishna Ramaswamy
Fall 2023

FNCE 1008-301: Corporate Finance (Honors)

Meeting Times Mon-Wed 1:45–3:15pm Room 1203 SHDH

1 Course Description

The Honors course is a version of the introductory (CORE) finance class. Here's the description of that *non-Honors* class that every Wharton UG Student must take:

The purpose of this course is to introduce techniques of financial analysis, with applications to corporate finance. The concepts developed in Finance 100 form the foundation for all elective finance courses. The main topics covered include (1) the time value of money and the net present value rule; (2) valuation of bonds and stocks; (3) capital budgeting decisions; (4) uncertainty and the tradeoff between risk and return; (5) corporate financing decisions; and (6) options.

Now here are supplementary paragraphs in *slanted* font that I would use to describe this HONORS class:

*The honors section takes a more analytic approach, explaining the logical reasons (“WHY”) and the operational aspects (the “HOW”) while exposing students to the institutional aspects of markets and market mechanisms. It is a **wider** exposure to the subfields – they are the focus of follow-on electives in Investments, Corporate Finance, Fixed Income (Bond) Markets, Derivatives (Options) Markets, & Valuation. All the finance electives will rely on the use of financial (“capital”) markets and that’s emphasised. A minimal level of effort beyond the alternative core offering in this version – reading, mostly but with some examples that delve into computation – that will broaden your knowledge base beyond the textbook learning, aid in critical thinking as befits a seminar, and be tinged with a sense of **fun**. I try to run the honors course in a way that will appeal to all UGs (**not just intended finance majors & Wharton students, and not just sophomores!**) who like the deeper dive into the WHY and the HOW.*

The Course Coverage will include all the topics that are covered in the non-Honors sections; but each lecture will go beyond that coverage and include coverage of associated analytical material in the relevant markets with examples. That’s the principal reason I must run the course at a faster pace.

Students from the College & SEAS may take the course in their sophomore or junior years; they should however pay attention to course requirements in discussion w their advisors and preferably have elected a major. Those who are thinking of a career in business or in financial markets will find that (a) the Honors course proceeds at a pace comparable to those in the College’s STEM classes; and hence (b) that the coverage is wide and informative, while the workload in the course is greater than that in the non-Honors sections, in part because the work students submit must be done individually and exams are conducted in a classroom setting. In the past this has worked to the advantage of College & SEAS students.

*Like most honors-level classes the course is run like a small-enrollment seminar. The average grade I have given to **those who attend, participate, turn in work that shows genuine effort and remain intellectually engaged is a B-Plus**; the majority are likely to get an A-minus or higher.*

NB!

Knowledge of basic statistics, basic calculus and simple regression analysis is assumed. Familiarity w Microsoft Excel is highly recommended¹ and easily picked up; knowledge of R, Python or Matlab would be great but not required. Enrolment in the class is by application – for those who are not yet enrolled: it requires you to submit a resume, a copy of your University Transcript and a summary application, so please email me to get application instructions.

If you need more information about the class, its coverage, and its prerequisites, email me at

krishna@upenn.edu

with questions; do include your tel number because it's efficient to chat briefly and answer any follow-on questions.

Course Requirements

The course grade is determined from

- *Four Homework Assignments*: these are Problem Sets to be done individually. You can discuss the ideas in the problems with me or in the TA's or my office hours; but the work you submit must be all yours. They are due approx two and a half weeks apart as detailed below: I start putting up the Problems and keep adding to them soon after I cover a topic when I label the homework *Preliminary* and with a weekend to go before it's due I label it as the *Final* Version. Most of the problems are like those at the back of a textbook chapter and they develop your skills; a few of them are informative, they embed ideas and institutional knowledge, and you learn-by-doing! It will make sense for you to work steadily at the problems and NOT leave the HW to the weekend before! (20%)
- *Two MidTerms* – closed book & notes, one sheet of formulas, two hours, out of class, on 16 Oct and 20 Nov, from 7 to 9pm. (40%)
- *One Class Project*: working in groups of at most two (pairs!) you will provide a stock valuation and analyse the risk and return properties of one of 5 alternative corporations for which I will give you the data in Canvas. The report (at most 6 typewritten pages excluding exhibits) is due on Wednesday 6 Dec 2023. Project Description will be distributed 15Nov2023. (15%)
- *One Closed Book Concept Quiz* – at the course's end. Little or no computation, no explanation needed, MC and True/False Qs on concepts from the *entire course*! (10%)
- *Class Participation*. Class discussion is part of the learning and your questions are encouraged, befitting a seminar course; I'll rotate calling on students *before* calling on upheld volunteer hands. If you don't attend classes you can't expect CP points. (14%)

TAs, Office Hours and all that My office is in SHDH 3259; my phone is (215 89)8-6206; I am reachable at krishna@upenn.edu; I keep an OPEN DOOR policy which I'll explain the first day of class. I'll use both in-office times and pre-arranged Zoom times, it can be quick and avoid travel time esp in bad weather! If the class size gets larger I'll get or share a TA with other sections – this is yet to be worked out. Honors course students who have Qs find enough opportunities to discuss HWs, Project and pre-exam reviews.

¹Indeed, the majority of your stat tasks in this course and at Wharton can now be done with Excel!

Schedule for Semester including Deliverables

Please mark your calendars!!

Date	Description	Remarks
Wed 30Aug	First Day of Class	Unmissable!
Wed 20Sep	HW1 Due	In Class
Wed 04Oct	HW2 Due	In Class
Mon 16Oct	Midterm 1	7 – 9pm
Mon 30Oct	HW3 Due	In Class
Wed 15Nov	HW4 Due	In Class
Mon 20Nov	Midterm 2	7 – 9pm
Wed 06Dec	Quiz Conceptual	In Class
Thu 07Dec	Project Due	My Office by 4pm
Mon 11Dec	Last Day of Class	

Detailed Topics Outline

Texts and All That

An important departure from the standard Core class is that in the Honors class I will emphasise the **Options Pricing Model** in relevant and appropriate places. There's considerable educational value to be gotten from its application to practical and strategic issues in Finance; and although the

- Text: Berk & DeMarzo's *Corporate Finance*, Pearson, 6ed, that I *only recommend* pays attention to this model in passing, it will behoove us to go to the original sources of these ideas covered so much better in
- Cox & Rubinstein's **Options Markets** a slim volume published in 1985(!) that is still very relevant. It's widely available in remaindered or PDF form and I **urge you to acquire it**. I think you'll agree at the Course's end that there is more intuition and conceptual underpinning² in this book than in all recent and rather prolix finance textbooks.

NB!

²There's more basic intuition in Chapter 7 of the Cox & Rubinstein than in more advanced Texts.

I provide below a description of the topics we cover. In each class I will cover the required Core class material within about an hour and 10 minutes; I'll devote the remaining 20m of class time to *Mind-Expanding* but course-relevant practical examples, some relevant history & rather straightforward algebra that standard Textbooks avoid. I'll include examples that are sometimes partially worked out for you to ponder. It is in these extra minutes that I will cover "advanced" material about financial markets – on stocks, bonds, options and futures, on strategies, products and hedge funds and such – that will take the course and your learning further. I provide below a description of the topics we cover. In each class I will cover the required Core class material within about an hour and 10 minutes; I'll devote the remainder of the class to mind-expanding but course-relevant practical examples, some relevant history & rather straightforward algebra that standard Textbooks avoid. I'll include examples that are sometimes partially worked out for you to ponder. It is in these extra minutes that I will cover "advanced" material about financial markets – on stocks, bonds, options and futures, on strategies, products and hedge funds and such – that will take the course and your learning further, as an honors seminar should! You can think of this additional material as informative about important fundamental ideas that are related to practice in *subfields* in Finance (eg Banking, Insurance, Derivatives...) or to practical issues in *financial markets*. as an honors seminar should! You can think of this additional material as informative about important fundamental ideas that are related to practice in *subfields* in Finance (eg Banking, Insurance, Derivatives...) or to practical issues and strategies in *financial markets*.

Remember: the slides (in pdf form) for each week will be posted on Canvas before the beginning of the week: **you must print them and bring them to class! You're permitted to follow the slides on your laptop – as long as that's the ONLY thing you do on your laptop!**

Abbreviations: *CoreText* refers to **BD**, the regular Core Class Text: BERK & DeMARZO's *Corporate Finance*; *CN* refers to the required reading of my Class Notes available only to you on Canvas. I am told that the Print Edition and the eText edition share the same content and even page-numbering; *M-E* refers to Mind-Expanding content separate from the Text that I'll place in Canvas and will typically be discussed in the last 20m of classes – it is required reading. NB!

Please keep in mind that the weekly email I send every Thursday will point you to specific readings and supplemental material on Canvas... the following is intended as a guideline as of this writing!

1. Introduction, FinMath & The Net Present Value Procedure

BD [Chapters 1,2 Background Reading], Required Reading: 4,5 Following a brief introduction and a quick review of Financial Math – it's useful to resolve ambiguous lingo and jargon early! — we develop basic ideas of time-transporting cashflows. The Discounted Cash Flow (DCF) approach leads to bringing the valuation procedures of future cashflows to today's dollars; it leads to the Net Present Value (NPV). This is *the* basic analytical tool in finance, which will be repeatedly used in different contexts and with increasing levels of sophistication in modeling. Some items must be learned along the way: *simple and compound interest, Present and Future Values; valuing an annuity, a perpetuity, a bond; the effective annual interest rate; Real and Nominal Rates*. We learn how to compute payments and remaining values in a conventional fixed rate mortgage and a term loan; and to enable savings-investment calculations that befuddle lay people but (not kidding here) though feasible to learn it's not taught in AP Math classes.

First M-E Note: *Interest Rates, Consumption Preferences, Production Opportunities & Markets*

2. Fixed Income Valuation

The huge market for fixed income instruments (commonly referred to as the *Bond Market*); governments (e.g. the US Treasury), government agencies, municipalities and corporations all borrow money on this organized market. We study the markets for Treasury Bills and the valuation of

pure discount bonds; we'll use the prices of these bonds to value coupon bearing bonds, define their associated *yields-to-maturity* and make a connexion between these yields and the constellation of *forward* rates, which are rates quoted today for arranging a loan(borrowing) or an investment(lending money) with both start dates and repayment dates in the future. The link to DCF is immediate. This discussion will culminate in the development of the *yield curve*, and we'll work several examples.

BD 5,6

3. Investment Rules: Value and Price

I'll introduce here a more useful intuitive definition of the commonly-banded term "Value" and connect it to a market-determined *Price*. In viewing a prospective marketed security (such as a share) it is natural to compare the value we place on that security to its market price – and in answering that question we are led to ask whether the security offers a return that is higher or lower than some acceptable yardstick. This leads to the development of an *internal rate of return* (IRR) calculation which is oftentimes used as a decision tool to assess prospective investments or projects. We'll compare the NPV and the IRR approach in this accept or reject decision, and in cases where we must choose among mutually exclusive opportunities; and discuss other commonsensical rules (payback and profitability).

BD 7,8

4. Capital Budgeting

Here we confront the important managerial choice of computing the NPV of projects and investment proposals in *practical* contexts... there is no better way to do this than by example, and we'll do a few cases. That's the best way to learn this subject. Here we must take practical considerations into account: accounting for depreciation in computing the cash flows from an investment, taking the effect of inflation, and comparing investments with different lives (horizons).

BDH 8, Cases To be distributed

5. Stock Valuation

We now apply the DCF method to value a share of a company's stock: a prospective buyer of a share of common stock anticipates a stream of cash dividends paid by the company out of its earnings each period... in a series of small steps we move from valuing this stream assuming the firm is infinitely-lived; then projecting an assumed pattern of growth to the dividend stream over a finite period, perhaps with several stages until it becomes a mature firm; and analyzing what value accrues to the firm's future growth opportunities that rely on patents and R & D. I must add that the Core class and all future electives interleave this topic with other models and concepts so you will see the same issues time and again, which is all to the good. *BD 9*

6. Risk and Return: computation and statistical measures

We'll study the behavior of returns to common stocks and bonds, over various horizons; we'll study their distributional properties (as random variables), developing notions of expected returns, standard deviations and correlations. We move to asking the natural question: what happens to our prospective return as we form portfolios (invest fractions of our wealth in several securities) – and we'll study the behavior of the expected return and risk measures of multiple-asset portfolios. We'll decompose – *parse* is a better word – the total risk of holding a security or a portfolio of securities into component sources, sometimes called systematic (or non-diversifiable) and unsystematic (or unique or idiosyncratic) risks, and demonstrate that the former is averaged in portfolios but the latter can be diversified away.

BD 10,11,12,13

7. Asset Pricing Models

A natural question to ask is whether by aggregating the demands of risk-averse investors for bonds and stocks, and aggregating the supplies of these assets from corporations and others we can find an *equilibrium* relationship between the *expected return* to an asset (a reward for bearing risk) and its *risk* – and we study alternative *asset pricing models* but briefly. We will also cover subtopics in Market Efficiency (Chapter 10, section 10.4 along the way). And we must leave a little something for later electives to cover!

BD 11,13

8. Derivatives: Forwards, Options and their Applications

We study the basic forms of these derivatives and some fundamental applications. Many remarkable insights can be gained from them!

Lecture Notes; Cox & Rubinstein's Options Markets, Chaps 1,2, & parts of 5.

9. The Capital Structure Decision

We've covered one important decision that financial managers make – that of choosing between risky projects in capital budgeting – and we discussed the Net Present Value Rule as a natural check of benefits over costs in present value terms. Here we'll study the capital structure decision: the way we *finance* or find the funds for these projects, by choosing a mix of bonds and stocks that constitute the principal forms of corporate liabilities: first in an idealised taxless world with perfect markets, and then in a world where there are taxes and costs of financial distress.

A common way people proceed in this topic is to ask what the appropriate cost of capital is for the firm; and another way is to compute the Adjusted Present Value of a potential investment, taking the costs dictated by the chosen capital structure.

BD 14, Cox & Rubinstein's Chap 7

10. The Dividend Decision

We study the way dividend payments to common shareholders are decided; additional topics include stock dividends and stock splits, the impact of taxes, and empirical evidence on dividend payouts.

BD 17

11. Miscellaneous Topics: Capital Raising by Investment Banks, The World of Mergers & Acquisitions, What Hedge Funds Do, Dynamic Investment Strategies, Intermediation, Regulatory Issues and how they affect financial institutions ...

This is an incomplete list – it could appear v long indeed; but the fun of it is that I will cover these topics in the regular lectures at the 20-minute interval that follows the formal lecture! Some exciting topics are so stylised (SPACs & Crypto for example) that I can only skim them, and many of you will learn these things later or elsewhere. I'd like to think that the ground work we laid in the class-coverage thus far will give you the confidence to analyze “new” topics in the practice of finance with confidence and ease.