



Carleton
UNIVERSITY

SPROTT
SCHOOL OF BUSINESS

BUSI 4502A
PORTFOLIO MANAGEMENT
FALL 2020

Instructor: Sermin Gungor

Office Hours: By appointment

Email: sermingungor@cunet.carleton.ca

Course meets: Tuesday 18:05 – 19:00

Course Website: <https://culearn.carleton.ca/moodle/course/view.php?id=154488>

Pre-requisites & precluded Courses: BUSI 3500, BUSI 3502 and BUSI 3512 with a grade of C- or higher in each and STAT 2607 with a grade of C- or higher. **The School of Business enforces all prerequisites.**

COURSE CALENDAR DESCRIPTION FROM THE 2021/2021 UNIVERSITY CALENDAR:

Analysis of investment requirements for individuals and institutional investors: liquidity, risk and return; portfolio design, construction, management and control; performance measurement; capital market theory.



COURSE DESCRIPTION:

The objective of this course is to understand both the theory and the application of investment products and strategies. It develops concepts and quantitative tools for understanding asset allocation, diversification, long-short strategies, factor models, portfolio optimization, hedge funds, mutual funds, ETFs, investment management, and performance evaluation.

The applications in this course rely on real world data and working knowledge of Excel. I will show you from where and how to gather data when needed. Expertise in Excel is your responsibility.

LEARNING OUTCOMES:

During this course, you will learn and apply fundamental portfolio theory and empirical evidence about return patterns across classes and markets.

During this course, you will learn to...

- i) ...understand and apply discount factor models that describe expected returns in a cross-section of assets and the implications of these models for the behavior of asset returns over time.
- ii) ...construct portfolios and/or trading strategies based on these models, including mean-variance optimal portfolios.
- iii) ... evaluate the performance of trading strategies (both model based, and those used by actual funds).

READING(S)/TEXTBOOK(S)/REQUIRED MATERIALS:

Recommended texts (not required):

- [*Investments*](#), Bodie, Kane, Marcus, Switzer, Boyko, Panasian, Stapleton, 9th Canadian edition, McGraw Hill Ryerson.
- [*Modern Portfolio Theory and Investment Analysis*](#), Elton, Gruber, Brown, Goetzmann,

9th Edition, Wiley.

- Lecture notes, journal articles, and additional supplemental reading will be distributed on the course site before class.
- Case studies must be purchased at <https://hbsp.harvard.edu/coursepacks/751309>

COURSE REQUIREMENT & METHODS OF EVALUATION

Grades are based on the following weighting

Group Projects (Case Studies)	30%
Assignments	20%
Quizzes	15%
Final Exam	35%

Online Sessions:

- Relevant lecture material will be posted in the beginning of each week outside of course hours. It is your responsibility to review these material every week.
- Live sessions will be held on each **Tuesday 18:05 – 19:00** covering practice problems and your questions about previous week’s material. These sessions will be recorded and available online.
- All lecture slides and materials will be available online, except for case studies that you will have to obtain Harvard Business Publishing website. See below for details.

Live Sessions:

Part of your ‘homework’ is showing up prepared for live sessions, ready to contribute to the discussions (there will be many of these), to ask questions (any course related question is welcome), comment on the course material, etc. This practice will help you to develop the skill to express your ideas in front of others and begin to critically evaluate the material being presented to you.

Recommended Work Routine:

Based on the above information, I recommend you follow a work routine every week, such that:

- Read the textbook chapter assigned for that week.

- Watch the lecture videos and take notes.
- Solve practice problems.
- Ask questions in live sessions

Group Projects (Case Studies):

There are three case studies that I will assign as group projects (each worth 10% of your total grade). Students will be assigned to groups of five members for the purpose of submitting project write-ups. Assignments should be typed and submitted via course webpage on cuLearn. Each group should turn in a **single** copy of their work with the names of all contributing members listed in the cover page.

Most jobs in modern finance will require you to work with a team. I can't emphasize this enough: You will not get a good job without excellent communication skills. You need to be able to discuss and tackle technical problems in a group situation. Use the group projects in this and other classes as practice. Also, one of the best ways to check or improve your own understanding of a problem or concept is to explain it to someone else. You are in a team with your future colleagues – start building that professional network now!

See below for details of case studies, deadlines and most importantly, the “Guidelines for Case Preparation”.

Assignments:

There will be two individual assignments. These assignments will be practical applications of the material we cover in class and they will require Excel knowledge for statistical calculations. You are allowed to use any class materials when working on these assignments. Any assignments you submit must be your own work. Assignments should be typed and submitted via cuLearn.

Quizzes:

There will be three quizzes in the term that are multiple choice questions through CuLearn. Each quiz worth 5% of your total grade. Detailed instructions will be posted to the course website.

Final Exam:

The final exam will be comprehensive in nature and will cover the whole course. It will be scheduled during the formal exam period and will be conducted online. It will test both the technical and conceptual aspects of the course. You are allowed to a cheat sheet (two sides of a 8.5 by 11 inch sheet of notes). Cheat sheets may not be shared between students. You are allowed a calculator that can perform financial functions.

Missed Quizzes, Assignments, Case Studies:

If you must miss any of the quizzes, assignments, or case studies due to a verifiable illness (or, in rare cases, some other circumstances beyond your control), the weight of the missed quiz/assignment/case study will be transferred to the final examination. If you miss the assignment/exam without a legitimate reason, you will get a grade of zero for it. To avoid any grade loss, you must provide a medical certificate or other verifiable documentation within five (5) calendar days after the date of the assignment/exam.

Practice Problems:

In preparation for the final exam, I will distribute non-graded practice problem sets with solutions included during the semester. You need **NOT** turn them in. I strongly advise you to try to do problem sets on your own, first, without the aid of solutions. We will go over your questions about the problem sets in lectures one week after the are posted in the course website.

Important Dates:

The individual assignments and cases are listed in the session when they are due (see the course outline for more detail).

Assignment and Case Studies	Due Dates
Assignment #1	October 13
Assignment #2	November 3
Case 1: AQR's Momentum Funds (A)	November 17

Case 2: Innovating into Active EFTs: Factor Funds Capital Management LLC	November 24
Case 3: TATA Equity P/E Mutual Fund: Performance Measurement and Attribution	December 1
Final Exam	TBD

Course Outline Topics and Reading List (Preliminary schedule -subject to change)

Any changes to this schedule will be announced in class.

BKM refers to Bodie, Kane and Marcus, et al. “Investments” book.

EGBG refers to Elton, Gruber, Brown, Goetzmann “Modern Portfolio Theory and Investment Analysis” book.

1. Course Introduction and Review – September 15

- Syllabus
- BKM, Ch.1, “Investment Environment”
- EGBG, Ch. 2-3, “Financial Securities”, “Financial Markets”
- Statistics Review

2. Portfolio Theory – September 29

- Two Risky Assets
- Efficient Portfolios
- Adding a risk-free asset
- Minimum Variance Portfolios
- Multiple Risky Asset
- Efficient Frontier

Reading:

- BKM, Ch. 5, “Risk, Return, and Historical Record”
- BKM, Ch. 6, “Capital Allocation to Risky Assets”
- BKM, Ch. 7, “Optimal Risky Portfolios”
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- EGBG, Ch. 4, “The Characteristics of the Opportunity Set Under Risk”

- EGBG, Ch. 5, “Delineating Efficient Portfolios”
- EGBG, Ch. 6, “Techniques for Calculating the Efficient Frontier”

3. Portfolio Theory Excel Application – October 6

- Data and Excel application of Portfolio Optimization
- **Assignment #1: DUE DATE – October 13**

4. The Asset Management – October 13

- Mutual Funds, ETFs, and Hedge Funds
- Investment policies, fees, flows, performance
- Socially Responsible Mutual Funds

Reading:

- BKM, Ch. 4, “Mutual Funds and Other Investment Companies”
-
- EGB, Ch.25, “Mutual Funds”
- Edwards, F.R. and S. Gaon. 2003. “Hedge Funds: What Do We Know?”, *Journal of Applied Corporate Finance*, Fall 2003.
- Gil-Bazo, J., P. Ruiz-Verdu, and A.A.P. Santos. 2010. “The Performance of Socially Responsible Mutual Funds: The Role of Fees and Management Companies”, *Journal of Business Ethics*, Vol. 24, pp. 243-263.

5. Factor Theory – October 20

- Diversification and the CAPM
- Alpha
- Arbitrage Pricing Theory (APT)
- Multifactor Models

Reading:

- BKM, Ch. 8, “Index Models”
- BKM, Ch. 9, “Capital Asset Pricing Model (CAPM)”
- BKM, Ch.10, “Arbitrage Pricing Theory and Multifactor Models of Risk and Return”
- EGBG, Ch.13, “The Standard Asset Pricing Model”
- EGBG, Ch.16, “The Arbitrage Pricing Model APT – A Multifactor Approach to Explaining Asset Prices”

- Ilmanen, A. and J. Kizer. 2012. “The Death of Diversification Has Been Greatly Exaggerated”, *Journal of Portfolio Management*, Spring 2012.

**OCTOBER 26 – 30
FALL BREAK**

6. Factor Theory Excel Application – November 3

- Data and Excel application of Factor Models

Reading:

- EGBG, Ch.10, “Estimating Expected Returns”
- **Assignment #2: DUE DATE – November 3**

7. Equity Factors – November 10

- Active vs. Passive Management
- Value and Growth
- Size and Momentum

Reading:

- EGBG, Ch.8, “The Correlation Structure of Security Returns: Multi-Index Models and Grouping Techniques”
- EGBG, Ch.16, “The Arbitrage Pricing Model APT – A Multifactor Approach to Explaining Asset Prices”

- Fama, E.F. and K.R. French. 1993. “Common risk factors in the returns on stocks and bonds”, *Journal of Financial Economics*, Vol. 33, pp. 3-56.
- Jegadeesh, N. and S. Titman. 1996. “Returns to buying winners and selling losers: implications for stock market efficiency”, *Journal of Finance*, Vol 48, pp.65-91.

Case: Bergstresser, D., L. Cohen, R. Cohen, C. Malloy. 2012. “AQR’s Momentum Funds (A)”, *Harvard Business School Case Study*, 9-211-025. - **DUE DATE – November 17**

8. Other Factors and Market Efficiency – November 17

- Case: Bergstresser, D., L. Cohen, R. Cohen, C. Malloy. 2012. “AQR’s Momentum

- Funds (A)", *Harvard Business School Case Study*, 9-211-025. (**class discussion**).
- Liquidity and other factors
 - Market Efficiency

Reading:

- BKM, Ch. 11, "The Efficient Market Hypothesis"
- EBGB, Ch.17, "Efficient Markets"
- Fama, E.F. and K.R. French. 2015. "A five-factor asset pricing model", *Journal of Financial Economics*, Vol. 116, pp. 1-22.

Case: Froot, K.A., L. Cohen, S. Waggoner. 2012. "Innovating into Active EFTs: Factor Funds Capital Management LLC",), *Harvard Business School Case Study*, 9-211-031. - **DUE DATE – November 24**

9. Performance Evaluation – November 24

- Case: Froot, K.A., L. Cohen, S. Waggoner. 2012. "Innovating into Active EFTs: Factor Funds Capital Management LLC",), *Harvard Business School Case Study*, 9-211-031.
- Sharpe Ratios
- Alphas,
- Alternative Measures, i.e. Treynor ratio, information ratio
- Market Timing

Reading:

- BKM, Ch. 24, "Portfolio Performance Evaluation"
- EGBG, Ch.26, "Evaluation of Portfolio Performance"
- Sharpe, W.F. 1966. "Mutual fund performance", *Journal of Business*, Vol. 39, Part 2: Supplement on Security Prices, pp. 119-138.

Case: "TATA Equity P/E Mutual Fund: Performance Measurement and Attribution", *Ivey Publishing*, W18774. **DUE DATE – December 1**

10. Portfolio management, Fixed Income – December 1

- Case: "TATA Equity P/E Mutual Fund: Performance Measurement and Attribution", *Ivey Publishing*, W18774. (class discussion)
- The yield curve
- Treasury Return Factors
- High yield bonds
- Bonds and stocks

- Investing in international bond markets

Reading:

- BKM, Ch. 14, “Bond Prices and Yields”
- BKM, Ch. 15, “The Term Structure of Interest Rates”
- BKM, Ch. 16, “Managing Bond Portfolios”

- EGBG, Ch. 21, “Interest Rate Theory and the Pricing of the Bonds”
- EGBG, Ch.22, “The Management of Bond Portfolios”

11. Final Review – December 8

FINAL EXAM - TBD

Case Studies

The purpose of the case studies is to help students develop skills to apply theoretical concepts in real world portfolio management problems. The goal in each case is to understand and describe the investment problems, identify and analyze key issues using theoretical tools, and recommend a course of action. There will be three case studies in this course that each group will complete and submit as a graded project.

AQR's Momentum Funds (A):

AQR is a hedge fund based in Greenwich, Connecticut, that is considering offering a wholly new line of product to retail investors, namely the ability to invest in the price phenomenon known as momentum. There is a large body of empirical evidence supporting momentum across many different asset classes and countries. However, up until this point, momentum was a strategy employed nearly exclusively by hedge funds, and thus not an available investment strategy to most individual investors. This case highlights the difficulties in implementing this "mutual fund-izing" of a hedge fund product, along with the challenges that the open-end and regulatory features that a mutual fund poses to many successful strategies implemented in other contexts. In addition, it gives students the ability to calculate and interpret various horizons of correlations between many popular investment strategies using long time-series data and then thinking about the potential complementarities of strategies from a portfolio construction context.

Innovating into Active EFTs: Factor Funds Capital Management LLC

Kishore Karunakaran, President and COO of FFCM, faces a variety of challenges in launching an innovative investment management business in the rapidly evolving ETF space.

TATA Equity P/E Mutual Fund: Performance Measurement and Attribution

As a typical investor in India, you sought to attain reasonable growth in her capital with adequate diversification and low volatility in returns. It was suggested that you consider investing in mutual funds in order to obtain diversified exposure to India's equity and debt markets. In particular, it was suggested that you invest in the Tata Equity P/E Fund, which had witnessed stellar performance in the recent past. However, before you can decide whether to invest in mutual funds, you must thoroughly understand the key features and their benefits and costs. You also need to identify specific sources of outperformance and to assess the fund's true outperformance, actively attained after adjusting for risk.

Guidelines for Case Preparations

There are three important steps in solving a case. **The first step is to identify the key problem at hand.** Cases often have an abundance of detail which makes identifying the key problem difficult. In this way, cases often reflect real business settings where managers face a variety of signals from sources both internal and external to the firm. The manager must evaluate the signals and decide what is the problem that must be solved now. **In deciding on the nature of the problem, do not forget what you have learned in other classes.** Often knowledge from other classes is key to solving these complex finance cases.

The second important step is to decide how to solve the key problem. Often a variety of potential solutions is offered. To decide upon the most appropriate response involves analysis; in financial case situations, this means "crunching the numbers". The cases used in this course are very numerical in nature. To solve them, you will be required to use spreadsheets and regression packages.

The third important step is to communicate you results to management. This should be in the form of a memo, which should be one to two pages long. The first paragraph of the memo should indicate the key problem facing the firm and your group's decision on how to handle the problem. Alternative and less preferable options can be discussed in the rest of the memo. In addition to the memo, you should include "exhibits" which provide the details of your analysis.

Some common mistakes in case memos are:

- The key problem(s) is (are) not identified. This should be done in the first paragraph of the summary to management.
- A solution to the problem(s) is not clearly stated. This should also appear in the first paragraph of the summary to management.
- The students recite academic theory they learned in class to senior management. Do not quote theory, just apply it.

- The memo is not brief. Be as brief as possible with your summaries. Senior managers' time is very valuable and they will not appreciate long summaries.
- The exposition is not clear. Be careful with your use of English and with all technical terms used.
- The analysis does not use material learned from other courses at the MFE program. Remember, “No course is an island...”.

ADDITIONAL INFORMATION

Course Sharing Websites

Materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Required calculator in BUSI course examinations

If you are purchasing a calculator, we recommend any one of the following options: Texas Instruments BA II Plus (including Pro Model), Hewlett Packard HP 12C (including Platinum model), Staples Financial Calculator, Sharp EL-738C & Hewlett Packard HP 10bII

Group work

The Sprott School of Business encourages group assignments in the school for several reasons. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, follower-ship and other group skills. Group assignments are also good for learning integrative skills for putting together a complex task. Your professor may assign one or more group tasks/assignments/projects in this course. Before embarking on a specific problem as a group, it is your responsibility to ensure that the problem is meant to be a group assignment and not an individual one.

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:

WDN = Withdrawn from the course

DEF = Deferred

Academic Regulations

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term.

For an accommodation request, the processes are as follows:

Pregnancy obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Religious

obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. carleton.ca/pmc

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Academic Integrity

Violations of academic integrity are a serious academic offence. Violations of academic integrity – presenting another’s ideas, arguments, words or images as your own, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration or completing work for another student – weaken the quality of the degree and will not be tolerated. Penalties may include; a grade of Failure on the submitted work and/or course; academic probation; a refusal of permission to continue or to register in a specific degree program; suspension from full-time studies; suspension from all studies at Carleton; expulsion from Carleton, amongst others. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy which is available, along with resources for compliance at: <https://carleton.ca/registrar/academic-integrity/>.

Sprott Student Services

The Sprott student services office, located in 710 Dunton Tower, offers academic advising, study skills advising, and overall academic success support. If you are having a difficult time with this course or others, or just need some guidance on how to successfully complete your Sprott degree, please drop in* any weekday between 8:30am and 4:30pm. Our advisors are happy to discuss grades, course selection, tutoring, concentrations, and will ensure that you get connected with the resources you need to succeed! <http://sprott.carleton.ca/students/undergraduate/learning-support/>

* Note that the office is physically closed. However, e-drop in is available between 8:30-4:30 until social distancing requirements are updated by the Province

Centre for Student Academic Support

The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course

content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: carleton.ca/csas.

Important Information:

- Students must always retain a hard copy of all work that is submitted.
 - All final grades are subject to the Dean's approval.
 - For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting <http://carleton.ca/ccs/students/>
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