



Carleton
University

Sprett
School of Business

FINA5522
Special Topics: FinTech
Summer 2024

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Office: Nicol Building, 5031
Office Hours: By appointment

Class Meeting: Mondays & Thursdays : 11:35am-2:25pm

Learning Modality: In-person

Course Calendar Description:

Explores emerging technologies in financial markets; and more broadly, examine the role of technological advancement and disruption in markets. Topics include blockchain and cryptocurrencies, robo-advising, peer-to-peer lending, the role of social media in financial markets, algorithmic and high-frequency trading, and artificial intelligence and applications.

Course Learning Objectives:

1. Develop an overall understanding of how technology affects, interacts with, and drives, modern financial markets.
2. Appreciate the interaction between humans, robots, and technology within financial markets.
3. Develop new business entrepreneurial ideas in this emerging field.
4. Enhance technical skills by developing prototypes of financial systems using modern programming languages.

Course Prerequisites: FINA 5502 or FINA 5505

Required Materials: There is no textbook in this course; course slides will be posted ahead of the lectures each day. There is also a list of (optional) useful reference material and research articles posted on the course website.

Final Exam Date: This course has a final project/paper in lieu of a final exam (due on June 25th, 5:00pm)

Drop Course Policy: The deadline for academic withdrawal follows the dates prescribed by Carleton University: <https://calendar.carleton.ca/academicyear/>

Grading Scheme:

| | |
|----------------------------------|-------------|
| Contribution to class discussion | 10% |
| Reflections (x 5) | 15% |
| Team presentation | 25% |
| Final project/paper | 50% |
| <hr/> | |
| TOTAL: | 100% |

Each component of your grade will be assigned a percentage score. Your final course grade will be a weighted average of each of these components.

- **Reflections:**

After each class, you will submit a reflection about the material covered during that class. Reflections are due on Brightspace by Tuesday at 11:59pm/Friday 11:59pm (the day after each class). Each reflection will be a 2-page double-spaced document. The reflection consists of a short summary of the unit (in your own words), a reflection that demonstrates your understanding of the material, and 2 practical take-aways from the lecture (that either help you make sense of the emerging role of technology in financial markets, or enhance your understanding of how financial markets work).

- **Team presentation:**

The format will be a 20-minute PowerPoint presentation that you deliver in teams of 5 (each team member must present!). Presentations will take place in class on June 20th. You can form your own teams and choose your own topic based on material we cover in this course. You will sign up your group and topic by June 13th. You will be evaluated on the content as well as the style of presentation. This is your chance to have fun while teaching your classmates something new! Sample topic ideas include, but are not limited to:

- Cryptocurrencies (pick only one topic from below):
 - Illegal transactions using Bitcoin
 - Initial Coin Offerings
 - Blockchain technology outside of finance
- Peer to peer lending
- Robo advising (pick only one topic from below)
 - What is the future of the Wealth Management Industry?

- Who is “better” at forming investment portfolios? machines or humans; can humans and machines work together?
- High-frequency and algorithmic trading (pick only one topic from below):
 - Are faster markets better?
 - Regulation of high-frequency trading
 - Social and welfare impact of high-frequency trading
- Social media in financial markets (pick only one topic from below):
 - How do investors use social media to produce/consume financial information?
 - How do firms use social media to disclose their financial information?
- Artificial Intelligence (A.I) (pick only one topic from below):
 - Using A.I techniques to select stocks (e.g. ETFs that use A.I)
 - A.I techniques in high-frequency (algorithmic) trading
- Another topic of your choice that is approved by the course Professor

- **Final project/paper (individual):**

The topic of FinTech is highly practical and entrepreneurial. It is expected that you may develop a business idea as you take this course. Your final project will give you the chance to develop a prototype of a product/business idea. For example, you may develop a robo-advisor, a peer-to-peer lending platform that matches borrowers with lenders, a credit scoring system, or a social media automated trading system. These are merely sample topics of ideas that you may think about. We will discuss project ideas in class, and you will sign up for a topic/project by June 17th.

Depending on your interests, you may choose to write a final paper instead of a final project. Your final term paper will be a 10-page double-spaced document – including references. Topics for the term paper will be posted on Brightspace by June 17th and will generally apply and/or extend the topics covered in class, as well as offer you the chance to think about the topics covered in an entrepreneurial way (the field of FinTech is quite entrepreneurial!).

The final projects/term papers are due on Brightspace on June 25th, at 5pm.

Course schedule:

| Lecture | Topic |
|----------------------|---|
| Lecture 1 June 3 | <i>Overview of the course</i> <ul style="list-style-type: none">• Disruption and innovation in financial markets• The FinTech revolution <i>Algorithmic and high-frequency trading</i> <ul style="list-style-type: none">• High-frequency trading• Algorithmic trading• Regulation of high-frequency trading |
| Lecture 2 June 6 | <i>The Blockchain and Cryptocurrencies</i> <ul style="list-style-type: none">• How does the Blockchain work?• The new payment system• Bitcoin and other cryptocurrencies• Environmental and social implications |
| Lecture 3 June 10 | <i>Social media in financial markets</i> <ul style="list-style-type: none">• Wisdom of the crowd• Firms'/investors' communication of financial information on social media |
| Lecture 4 June 13 | <i>Peer-to-peer (P2P) lending</i> <ul style="list-style-type: none">• Crowdfunding• P2P lending |
| Lecture 5 June 17 | <i>Artificial Intelligence in financial markets</i> <ul style="list-style-type: none">• How does A.I work?• A.I applications in finance <i>Robo-advisors</i> <ul style="list-style-type: none">• The future of wealth management |
| Lecture 6 June 20 | Final presentations, course wrap-up |

Late Assignments:

Since this is a condensed course, timely completion of class assignments is essential to the understanding of the material. As such, no late submissions will be accepted. Requests for extension will be considered in cases of illness, family emergency, or other exceptional circumstances.

Preparation and Participation:

Preparation and participation in the class discussion is an integral part of this course. As professionals, you each bring in a new perspective on the material based on your previous experiences, thoughts, and other courses you have covered in the program. By contributing to the class discussion, you enhance your own and your peers' learning experience. The individual pre-course assignment will help you prepare prior to the beginning of the course. Over the course itself, meaningful contribution to the class discussion, as well as to working with your teams will be assessed.

Contribution to Program Learning Goals ([MFin](#)):

| MFin Learning Goal | Not Covered | Introduced | Taught but Not Assessed | Taught <u>and</u> Assessed |
|--|--------------------|-------------------|--------------------------------|-----------------------------------|
| Learning Goal 1 - Ethical and Professional Conduct Graduates will conduct themselves in alignment with the CFA Code of Ethics and Standards of Professional Conduct. | | | ✓ | |
| Learning Goal 2 - Financial Markets, Institutions, and Instruments Graduates will demonstrate an understanding of financial markets, instruments, and institutions. | | | | ✓ |
| Learning Goal 3 - Portfolio Management Graduates will understand the motivations of investors and manage an investment portfolio that achieves those objectives. | | | ✓ | |
| Learning Goal 4 - Data Analysis Graduates will be proficient in data management, analytics, and modeling. | | | | ✓ |
| Learning Goal 5 – Communication Graduates will be effective communicators. | | | | ✓ |

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).

Recommended Calculator for 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. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, followership and other group skills. Group assignments are also an effective way to learn integrative skills for putting together a complex task. Your professor may assign one or more group tasks, assignments, or 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.

Letter Grades:

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 | F = Below 50 |
| A = 85-89 | B = 73-76 | C = 63-66 | D = 53-56 | |
| A - = 80-84 | B - = 70-72 | C - = 60-62 | D - = 50-52 | |

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**

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: <https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>

- **Religious Obligations**

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: <https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>

- **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. <https://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 its 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: <https://carleton.ca/sexual-violence-support/>

- **Student Activities**

Carleton University recognizes the substantial benefits, to both the individual student and the university, that result from participating in activities beyond the classroom experience. Reasonable accommodation will 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: <https://students.carleton.ca/course-outline/>

Academic Integrity:

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—are a serious academic offence, 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/>

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: <https://carleton.ca/csas/>

Other 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 can do so by visiting <https://carleton.ca/its/get-started/new-students-2/>