

## ECO2510 & ECO463: Financial Market Microstructure

<b>Class Location and Time</b>	WI 524, Thursdays, 9:00-11:00
<b>Instructor</b>	Professor Andreas Park
<b>Office Location</b>	GE210
<b>Office Hours</b>	Th 11-12
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<b>Course Website</b>	Blackboard

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**Course Description and Objectives:** Security prices evolve through a large number of bilateral trades, performed by people that have specific, well-regulated and institutionalized roles. Market microstructure is the subfield of financial economics that studies the price formation process. Using the lens of theoretical economic models, this course reviews insights concerning the strategic trading behaviour of individual market participants, and models are brought market data. The course further studies how public and private information, market regulation, and trading arrangements, such as limit order books or dark pools, affect behavior. The course will be taught at the graduate level and its nature is *academic*. For a practical introduction to trading consider enrolling in Tom McCurdy's course (for MFEs) or Kevin Mak's course (for BCom) or my UTM course MGT435.

**Prerequisites:** ECO358H1(70%)/RSM330H1(70%), ECO374H1(70%)/ECO375H1(70%). Prerequisites are strictly checked and enforced and must be completed before taking a course. By taking this course you acknowledge that you will be removed from the course at anytime if you do not meet all requirements set by the Department of Economics. For further information you can consult the Undergraduate Academic Handbook.

**Textbook:** The course is based on *original research papers* of which I will present tuned-down versions in class. *The relevant papers will be listed on the slides, and thus your reading list will be updated throughout the term.* For background reading on the empirical tools, I recommend Joel Hasbrouck: *Empirical Market Microstructure* (2007, Oxford University Press) (hereafter: JH). Some of the institutional details are explained in Larry Harris: *Trading and Exchanges - Market Microstructure for Practitioners* (2004, Oxford University Press). However, market structure and research on market structure develop so rapidly that any text will be out of the by the time the ink is dry.

### Assessment and Grade Composition

This is a research oriented course that heavily relies on class discussion. Thus students' class participation is imperative, silent consumption is not sufficient. The other major components are the final and three writing assignments.

Type	Length	Deadline	Weight
Final	3 hours	TBA	30%
Essay 1	2,000 words	week 4	18%
Essay 2	2,000 words	week 8	18%
Data project	3,000 words	week 11	28%
prepped questions*	3 or 4 ×2	TBA	6%

\*Disclaimer: I will try to arrange 3-4 industry practitioner talks. If they do take place, you will have to prepare two questions for each presentation and hand them in 24 hours before the talk. If the practitioner talks do not take place, then the weight will be reassigned in equal parts to the essays and data project.

All assignments are mandatory. *Classroom attendance is mandatory: you lose .5% of your total grade for every missed class.* All writing assignments are due on the day of the lecture, before the start of the class. For every day or part thereof that you miss the deadline, your grade for that piece will be lowered by 5%, until your course grade is 0 (i.e., you can get a negative grade on an assignment). For the *empirical* project two people are expected to work together. Both group members are responsible that the project write-up does not contain plagiarised components. There is no midterm exam.

**Basis for Grading of Writing Assignments and the Final Exam:** The final is cumulative in nature, three hours in duration, and may consist of true/false, multiple choice, short answer, and/or essay questions. Responses are graded based on accuracy. Non-programmable calculators and a formula sheet (details are in Appendix C) are permitted during tests/exams. Tests/exams are based on the topics covered in class, assignments, discussions, and assigned readings. Students should be prepared to answer questions that are conceptual, quantitative and/or descriptive. Writing assignments will be graded for content and exposition. The best essay will be clear, well-written, correct and inspiring. Grades over 90% require original ideas.

**Practice Problems:** I will post past exams, but without solutions. You should consult me during my office hours if you have queries about the past exam questions. No other practice problems will be provided.

**Official statement on academic misconduct:** *Students should note that copying, plagiarizing, or other forms of academic misconduct will not be tolerated. As a student it is your responsibility to ensure the integrity of your work and to understand what constitutes an academic offence. If you have any concerns that you may be crossing the line, always ask your instructor. Your instructor can explain, for example, the nuances of plagiarism and how to use secondary sources appropriately; he or she will also tell you what kinds of aids – calculators, dictionaries, etc. – are permitted in a test or exam. Ignorance of the rules does not excuse cheating or plagiarism. Any student caught engaging in such activities will be subject to academic discipline ranging from a mark of zero on the term paper, test or examination to dismissal from the university as outlined in the academic calendar. Any student abetting or otherwise assisting in such misconduct will also be subject to academic penalties.*

*Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.*

**Appeals.** You must put your appeal in writing and you must justify in detail why you think that you deserve a higher mark. Incomplete requests will not be considered. Note that I will reconsider the assignment as a whole and an appeal may lead to a lower overall grade.

## Class conduct

**Punctuality.** You are expected to arrive for class in time: Late-coming is rude towards other students because it disrupts the class and negatively affects people's concentration. We will have

a break at 10:00, so if you are late, even by a minute, please wait until the break before you enter the classroom. I will reserve the right to lock the classroom from the inside. If you are late and find the door closed — do *not* knock!

**Laptop, tablet, and smartphone policy.** You are discouraged from using laptops during class as the typing creates excessive noise. Furthermore, it is expected that students will use technology responsibly, with consideration for their fellow students and other members of the University community. Laptops and smartphones are not to be used during class for email, instant messaging, web browsing, or any other activity that is disruptive to other students, the instructor, or the classroom environment. Violation of this technology policy may lead to a prohibition on all electronic equipment use for all students to ensure a productive classroom environment for everyone.

**Email Communication.** *Please read this section of the course outline prior to contacting the instructor by email.* I will use Blackboard to send out messages and it is your responsibility that your account is set up to receive message from the UofT portal. Please be sensitive to the fact that it can take considerable time for the instructor to respond with the due care that each query deserves. With up to 70 registered students (in both of my sections), if each student emails the instructor 5 times and the instructor spends 5 minutes reading the message, thinking about an answer, and replying, that can easily add up to more than 24 hours of instructor time spent on email alone, which reduces the amount of time available to make the class exceptional in other meaningful ways. So please take advantage of the discussion board, office hours, and especially the many hours of class time we have together to ensure all of your questions are fully and carefully addressed. Do not email the instructor about topics that are of general interest to the whole class (for example to ask for help with a textbook problem). It is much more efficient and beneficial to the whole class's learning experience if you post such questions in the discussion board.

After reading the above guidelines, if you do need to send email, to help prevent your message from being labelled as spam, be sure you indicate ECO463 or ECO2510 in the subject line, and be sure not to include attachments. I will reply to legitimate email inquiries from students within two working days. If you do not receive a reply within this period, resubmit your question(s) and/or call me (leave a message if necessary). I will not answer emails over the weekend (Friday 17:00 – Monday 10:00), and I will not answer emails in the last 36 hours before a test. Email is not a mechanism to receive private tutorials (especially prior to tests) or to explain material that was covered in lectures you missed.

**TA Support:** TA support for this course is very limited and thus there will be no TA office hours or review sessions.

**Office Hours:** Even though my office hours are walk-in (and I do hope that you take the opportunity to talk to me), I kindly ask that you rather come sooner than later, the reason being that I teach on the Mississauga campus in the afternoon and I would have to leave at noon. The general rule is that if no-one shows up until 11:45, I will leave.

**Industry Practitioner Talks:** I am planning to hold 3-4 practitioner talks in late February/early March. These talks will likely be scheduled outside of the regular class time (though I will try to arrange them as close as possible to the regular time), but they are part of the course. You are expected to appear presentable (preferably in business attire) and to be prepared so that you can ask intelligent questions during the Q&A portion of the talk.

## Preliminary Course Structure

I will provide reasonably detailed slides for each topic, the chapters in JH are to be viewed as supplements/background reading. The slides will also list the original research papers that the presentation covers. Dealing with some of these topics will take more than one lecture.

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Topic	Content	Material
1	Introduction and Overview of Markets and Market Structure	
2	Inventory cost models	JH Ch 3,4,8
3	Dealer markets: Kyle	JH Ch 6
4	Dealer markets with sequential trading: Easley and O'Hara	JH Ch 5
5	Limit order markets	JH Ch 12, 13
6	empirical measurement of trading costs	
7	maker-taker pricing	
8	dark trading	
9	high frequency trading	
10	herd behavior	

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## Appendix A: Specifications for the Formula Sheet

Your formula sheet must have the following format: one page, double-sided, hand-written (i.e., not type-set), not photocopied, letter-sized paper containing formulae or simple expressions, but not full paragraphs of text, derivations of formulae, or solutions to past questions. The purpose of the formula sheet is to remind you of formulae that you need for computations, and it should be the result of extensive studying.