

ECO2510: Financial Market Microstructure

Class Location and Time	TBA, Thursdays, 6:30-8:30pm
Instructor	Professor Andreas Park
Office Location	GE210
Office Hours	Fr 9-10, by appointment
Phone	416 - 978 4189
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Course Website	Blackboard

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.

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 following grade distribution depends on the enrolment and may change until the start of the semester.*

Type	Length	Deadline	Weight
Final	3 hours	TBA	50%
Data project	5,000 words	week 11	44%
prepped questions*	2×3	TBA	6%

*Disclaimer: I will try to arrange 2 industry practitioner talks for November. For each of these presentations, you will have to prepare three questions and hand them in 24 hours before the talk.

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 you 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 A) 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 and excellent execution. For the data project, I will provide an in-depth session during class for the UTM UG section. You are invited to join this special session.

Practice Problems: No other practice problems will be provided. This is a research-based course that does not lend itself well to providing large numbers of practice problems. The course has been around since 2005, and there are numerous past exams available in standard repository. I will not provide solutions for these exams, but encourage you to discuss the questions with me. Note that, owing to the rapidly evolving research in market microstructure, I have changed the course content substantially over the years.

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 7:30, 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 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: There will be no TA support for this course.

Office Hours: I kindly request that you alert me by email on Thursday if you wish to see me during my office hours.

Industry Practitioner Talks: I am planning to hold 2 practitioner talks in November — two highly ranked executives from the Canadian trading industry have agreed to come. These talks are part of the course, but will be scheduled on Wednesday evenings in November, from 6-8pm. Attendance is mandatory. 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.

Important Logistics: I am teaching a class at the UTM campus until 5pm and my ability to arrive in time will depend on the traffic situation. In the first week of class we will establish a protocol to ensure that you will be alerted should I be held up by traffic.

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.

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	

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.