Market Microstructure

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Course Description:
Market microstructure is the branch of financial economics, which investigates trading and the organization of markets. This field of study has substantially grown in size and importance since the October 1987 stock market crash. This course helps you understand (a) how security markets work, (b) how stock exchanges regulate the markets, (c) how prices come to reflect information about fundamental values, (d) who makes markets liquid, and (e) how various trading rules affect price efficiency, liquidity, and trading profits. This course should be useful particularly for students who plan to pursue professional careers in finance-intensive industries.

Prerequisites:
This course welcomes students who are familiar with investments, mathematics, and statistics. If you do not have sufficient knowledge on these topics, you will be troubled with understanding this course's materials, and as a result, be likely to end with unsatisfactory results. This course will cover a wide range of topics in a single semester. Due to the limited time and the amount of topics, therefore, I will not repeat basic facts regarding investments, mathematics, and statistics in class. Instead, I assume that students have already taken relevant courses. If you do not satisfy these prerequisites, *you should drop this course*.

Please do not overestimate yourself. In many cases, the overconfidence tends to result in miserable outcomes. Over the past years, I saw that numerous students who were not ready in terms of the competency of statistics and mathematics were troubled in class and were ended with F at the end of the semester. As an instructor, I do want to minimize the probability that such a miserable event occurs. So, I recommend you to take this course only if you are ready.

In summary, this course is designed to offer special knowledge which can be entertained by prepared students, not general knowledge which is defined as the knowledge everybody can learn regardless of academic preparation.

Textbook:
The required textbook is *Empirical Market Microstructure,* by Hasbrouck. I will use lecture notes which will be posted on the course website regularly. Students are asked to bring the notes to class. Keep in mind that the notes are not a substitute for the textbook.

Course Operation:
Due to COVID-19, this course is operated in form of **real-time online lecture**. Each lecture consists of approximately 75-minunte online teaching, complemented with students' activities such as homework, reading, discussion, etc. All students must read a document named "[Must-read] Online Course Students Guide," posted on Blackboard, and are expected to follow the document's directions. In case of the homework, students must submit their work prepared in a pdf format by a specified deadline. Completed homework will be graded as either A or B. Remember that late submission is accepted and graded.

This course requires students spend a significant amount of time to study, since it is pretty challenging by nature. Some students often misunderstand that they could learn something in this class without making such an effort. Unfortunately to those students, I would like to say

that the special knowledge, which is a plus factor for future income, can be obtained only with hard working. If you are not determined to study hard, you may learn almost nothing in this class, which certainly wastes your time.

Course Outline:
Covered topics will include (a) trading mechanisms, (b) the Roll model of trade prices, (c) sequential trading models, (d) order flow and the probability of informed trading, (e) strategic trade models, (f) a generalized Roll model, (g) dealer and their inventories, (h) depth, and (i) order choice models. All of the topics are extremely important to understand practical trading schemes in stock markets. Depending on progress, I will modify a range of topics throughout the class.

I would like to emphasize the importance of time series analysis in an empirical market microstructure context. Essentially, trade and order data are time series, so that all market microstructure-related arguments require understanding of time series analysis. For students who already took or are taking "Financial Time Series Analysis," it is fine. However, students who never learn time series analysis should be careful of taking this course; at least, they must be familiar with college-level statistics. I will provide students with supplementary materials introducing basic time series analysis, which will be a main component of the students' activities.

Course Schedule (which will be updated):
The course schedule is posted in Blackboard. This informs lecture topics and student activities assigned each week. As aforementioned in Course Outline, I will update the schedule sheet periodically on a basis of your progress. This is because many microstructure topics require the prior knowledge of time-series analysis and I have no idea about your prior knowledge and preparation. If your knowledge is sufficient, we will cover many topics; otherwise, a list of covered topics will be short. Remember that you should check the schedule frequently to update yourself.

Grading:
A grading policy is A, B, or F. The final grade is based on a final exam (80%) and attendance (20%). The final exam will be comprehensive. If you miss the exam without extraordinary circumstances, you will get zero. Documented evidence that you were seriously ill at the scheduled time of an exam or had an unexpected family emergency is the only valid excuses for missing the final exam. In order to be excused, you must contact me prior to the exam and be ready to provide me with documentation. In these rare cases, I will prepare a make-up exam.

Attendance:
Attendance is mandatory for this course per the University. If your attendance rate is less than 1/3, you will be automatically failed in any case.

Academic Integrity:
Personal integrity and professional conduct are important aspects of business, and also one's personal life. The University has a Student Conduct Code, which should serve as guidelines to behavior regarding this class. In order to ensure fairness on behalf of the majority of honest students, anyone who is guilty of academic dishonesty will receive an F for the course. There are no exceptions to this policy under any circumstances.

Course Policies are designed to Ensure Fairness:
To ensure fairness to all students, there will be no exceptions to the course policies under any circumstances. By remaining enrolled in the course, you agree to abide by the policies detailed above. If you anticipate that you cannot abide by these policies (e.g., because you know that you have a conflict with an exam because of vacation travel or travel in connection with an interview), please either change your schedule or arrange to take this course in another time.