Course Objectives:

Market microstructure is the study of how markets operate and how transaction dynamics can affect security price formation and behavior. The impact of microstructure on all areas of finance has been increasingly apparent. Empirical microstructure has opened the door for improved transaction cost measurement, volatility dynamics and even asymmetric information measures, among other. Thus, this field is an important building block towards understanding today’s financial markets. The course focuses on empirical methods and models, with special attention to high frequency data analysis.

This is a doctoral level elective seminar course and the prerequisites are Survey of Financial Theory I, matrix algebra, calculus, basic probability and econometrics (doctoral level).

One of the aims of this course is to prepare the student for the academic job market. Beyond tools, talent and creativity, attaining a good tenure track position has become more difficult in past years due to growing competition. It is vital in today’s academic market to interview and present one’s work well. To this end, I expect all students to present the papers as though they were their own work, and in the final 2 presentations, all students are to dress as though on a ‘fly back’ and present accordingly. The class will act as an audience. Written feedback will be provided by your peers and graded by me.

Microstructure has grown to be a huge field. This course covers only a small portion of the subject matter. I have tried to set it up such that you have a small overview of the various aspects of the empirical portion of microstructure, and then more in-depth coverage of some material, which is clearly biased towards my own interests. Please keep in mind that the field is much broader than what is/can be represented here.

Required Materials:

- All Blackboard postings.
- All assigned articles.
- Please obtain the phone number of another student in the class today (mandatory).

Useful Background References:

Texts:

These are only suggested reference as background if you encounter something you feel shaky on. By no means do I suggest you go out and buy all of these now! This list is simply here to make life a bit easier for you.
More general Finance:


Microstructure:

The theory and practice of microstructure also relies on institutional structure. While I might provide some coverage, since the institutions change so fast that (a) trading practices are not well-documented, and (b) knowledge of institutional detail has a rapid decay rate, I will expect you to keep up on this end yourselves as much as possible. The web is an excellent source, as well as some texts that are not necessarily up to date, but are a good start:

O'Hara, Maureen, 1995, Market Microstructure Theory (Blackwell Publishers, Cambridge, MA) – doctoral level, but really theory oriented, not our main focus.


Econometrics/Time Series Analysis:

- Hashbrouck's book draws heavily (for the time series analysis material) on Greene (2002), Hamilton (1994), Gourieroux and Jasiak (2001), and Tsay (2002); See his references.

Class Organization:

Each week we will cover several papers within one subtopic. Each person will present one paper each week, which I will delegate each week. In the event that we have one less paper than students, one student will present the chapter assigned, and be ready to discuss the relevant cities in the chapter. However, each student must prepare the material for each paper/chapter and come in with questions, and ready to discuss each paper/chapter. Also, each group must submit a 1-2 page summary of each paper assigned, each week. These summaries will be graded. Each week, I will randomly choose 2 students to distribute their synopses of one (the same) paper to the rest of the class, and the class will grade, critique, compare and contrast the synopses instead of me. This will be handed in to me as homework by each member of the class. Thus, come prepared each week with enough copies of your synopses to distribute to the rest of the class in case your name is chosen. The presentation of the papers will be seminar format: I and the rest of the class will interrupt the speaker with questions and observations, and I will also address questions to the other participants in the class. Class attendance is therefore very important.

Class Project: Each student will follow two distinct companies throughout the semester. Sequential assignments will be cumulative, and the student will conduct all suggested analysis for these companies. All data collection, cleaning, analysis will be done individually. By the end of the semester, you will have gained a good idea regarding the intra daily behavior of your stock/bonds, as well as the implementation of the statistical questions/issues/methods employed in microstructure. The various steps in the project assignment will be collected as homework throughout the semester.

There will be one final exam, on the last day of class, in class.
Grades:
Class Participation/Preparation: 15 percent
Presentations: 35 percent
Final Project: 20 percent
Final Exam: 25 percent
The exam and presentation dates are firm. Please make arrangements to adhere to them.

Office hours:
Friday, 12:00-1:00; My office is 126 MEC. Tel: 973-353-5272. Additionally, you may always call me and leave me a phone message, clearly stating your day and evening numbers, and I will call you back.

E-mail policy: (tronen@andromeda.rutgers.edu)
You may prefer to ask me questions by e-mail. Your message MUST include a subject and your name, clearly identifying yourself as my student. Please make sure your Email queries are self contained, and can be answered in a reasonably short way.
Tentative Schedule:

**Dates:** T, September 5  
**Topic 1:** *Introduction to course: Course objectives, requirements, general overview, assignment of groups and presentations with dates.*  
**Reading Due:** *Chapter 1: Hasbrouck as required background reading*

**Dates:** T, September 12  
**Topic 2:** *Introduction to Microstructure*  
**Reading due:** Hasbrouck Chapter 2, 3


**Dates:** T, September 19.  
**Reading due:** Hasbrouck Chapter 2

6. 1. Hasbrouck, Joel, 1988, Trades, quotes, inventories and information, JFE, 22, 229-52

Dates: T, September 26,
Reading due: Hasbrouck Chapter 4,5,6


Dates: T, October 3,
Reading due: Hasbrouck Chapter 7,8


Dates: T, October 10,
Reading due: Hasbrouck Chapter 9,10


Dates: T, October 17,
Reading due: Hasbrouck Chapter 11


Dates: T, October 24,
Reading due: Hasbrouck Chapter 12


Dates: T, October 31,
Reading due: Hasbrouck Chapter 13


Dates: T, November 7,
Reading due: Hasbrouck Chapter 14

2. Bennett, Paul, L. Wei, Market Structure, Fragmentation and Market Quality – Evidence from Recent Listings Switches, working paper, NYSE.


6. Piwowar, Michael and Li Wei, 2005. The Sensitivity of effective spread estimates to trade quote matching algorithms, NYSE.


Dates: T, November 14, 21, 28
Reading due: Hasbrouck Chapter 15, Appendix: U.S. Markets

Bonds market microstructure: 15 papers in 3 Sessions, TBA

Dates: T, December 5: Overview/Review/Discussion of projects