



Shanghai Jiao Tong University

EC26212 Quantitative Trading and Market Microstructure

Term:	December 16, 2019- January 7, 2020	Credits:	4 units
Classroom:	TBD	Teaching Assistant(s):	TBD
Class Hours:	Monday through Friday, 160 mins per teaching day		
Discussion Sessions:	2 hours each week, conducted by teaching assistant(s)		
Total Contact Hours:	64 contact hours (1 contact hour = 45 mins, 2880 mins in total)		
Required Texts (with ISBN):	<p>Course Material 1: Market Liquidity: Theory, Evidence, and Policy - Foucault, Pagano, and Roell ISBN: 978-0199936243</p> <p>Course Material 2: Quantitative Risk Management - McNeil, Frey, Embrechts ISBN: 9780691166278</p> <p>Course Material 3: A Practitioner's Guide to Asset Allocation - William, Kritzman, and Turkington ISBN: 9781119397809</p> <p>Course Material 4: Analysis of Financial Times Series – Tsay ISBN-: 978-0470414354</p>		
Prerequisite:	<p>Calculus and Linear Algebra (undergraduate level) Statistics and Probability Some knowledge of financial derivatives is useful Previous experience with MATLAB, R or Python is very useful</p>		



Course Overview

The course covers a wide range of topics in market microstructure and quantitative trading. There are three parts in the course including: institution; financial time series; asset allocation. The covered topics are liquidity, price discovery, limit order book, dealer market, hybrid market, market transparency, evolution of market structure, measuring liquidity, order flow, trade size and market depth, estimating the determinants of market illiquidity, market design and regulation, AR, MA, ARMA, ARCH and GARCH processes, E-V maxim, risk, efficient frontier, optimal portfolio, mean-variance, and the Sharpe algorithm.

Learning Outcomes

1. manipulate the concept of what is market microstructure and basics of securities trading
2. develop an implementation of models and numerical methods.
3. grasp the knowledge of trading mechanisms and measuring liquidity.
4. understand price dynamics and liquidity as well as Trade size and market depth
5. learn to analyse empirical and financial time series



Grading Policy

Participation	10%
Assignment (Group Assignment)	40%
Examination	50%

Grading Scale is as follows:

Number grade	Letter grade	GPA
90-100	A	4
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2
62-64	C-	1.7
60-61	D	1
≤59	F (Failure)	0



Class Schedule

Date	Content	Readings
Day 1	Introduction basics	Material 1 Chapter 0
Day 2	Trading mechanisms	Material 1 Chapter 1
Day 3	Measuring liquidity	Material 1 Chapter 2
Day 4	Measuring liquidity	Material 1 Chapter 2
Day 5	Price dynamics and liquidity - I	Material 1 Chapter 3
Day 6	Price dynamics and liquidity - II	Material 1 Chapter 3
Day 7	Trade size and market depth	Material 1 Chapter 4
Day 8	Trade size and market depth	Material 1 Chapter 4
Day 9	Empirical analysis - I	Material 1 Chapter 5
Day 10	Empirical analysis - II	Material 1 Chapter 5
Day 11	Financial time series - I	Material 2 Chapter 4 Material 3 Chapter 1,2&3
Day 12	Financial time series - II	Material 2 Chapter 4 Material 3 Chapter 3
Day 13	Asset allocation - I	Material 4 Chapter 1
Day 14	Asset allocation - II	Material 4 Chapter 2
Day 15	Examination period	