NYU Tandon School of Engineering

Dept. Financial Risk and Engineering

FRE7251 Algorithmic Trading and High Frequency Finance

Professor: Alec Schmidt

email: as8098@nyu.edu

Wednesdays: 11:00 am – 1:41 pm

Location: Rogers Hall, Rm 213

Credits: 1.5

Description:

The course offers an overview of modern financial markets for various securities (equities, FX, and fixed income). Different types of traders, orders, and market structures are described. The basic market microstructure models are presented. The concepts of optimal order execution are outlined. The course introduces several technical and arbitrage trading strategies, and methods of their back-testing. Specifics of high-frequency trading are discussed.

Prerequisite:
FRE6083 Quantitative Methods in Finance

Grading
Class attendance and active participation is highly encouraged
Homework (four home assignments, 12% each) 48%
Project (will be presented in class) 52%

Grade Schema

Letter	Minimum %
A	**95**
A-	**90**
B+	**87**
B	**83**
B-	**80**
C+	**77**
C	**73**
C-	**70**
F	**< 70**

Required textbook: 1. A.B. Schmidt, "Financial Markets and Trading: Introduction to Market Microstructure and Trading Strategies" (Wiley, 2011, ISBN: 0470924128).

Multiple references to recent research will be provided during the course.

Topics and assignments

Week	**Topics**	**Readings from** [1]	**Home assignments**
1	Financial markets: agents and structures	Ch. 1 - 2	#1; will be provided in NYU Classes
2	Asset price dynamics and volatility	Ch. 7 - 8	#2; will be provided in NYU Classes
3	Technical trading strategies and back-testing	Ch. 10 &12	#3; will be provided in NYU Classes
4	Arbitrage trading strategies	Ch. 11	Project; will be provided in NYU Classes
5	Market microstructure models	Ch. 3 - 6	#4; will be provided in NYU Classes
6	Execution strategies	Ch. 13	
7	High-frequency trading; | Project presentation	References will be provided	

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

Inclusion Statement

The NYU Tandon School values an inclusive and equitable environment for all our students. I hope to foster a sense of community in this class and consider it a place where individuals of all backgrounds, beliefs, ethnicities, national origins, gender identities, sexual orientations, religious and political affiliations, and abilities will be treated with respect. It is my intent that all students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. If this standard is not being upheld,

please feel free to speak with me.

NYU School of Engineering Policies and Procedures on Academic Misconduct

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

2. Fabrication: including but not limited to, falsifying experimental data and/or citations.

3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work that was meant to be done individually.

5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.