Financial Information Systems
B20.3350
Preliminary -- Fall 2012

Instructor
Bernard S. Donefer
http://pages.stern.nyu.edu/~bdonefer/

Class Meetings
Tuesday 6:00 – 9:00 pm
Room TBD

Email
bdonefer@stern.nyu.edu

Course Website
Blackboard

Office Hours
Tuesday 4:30 – 5:30  KMC 8-171 or after class or by appointment

Information Technology in Financial Markets

The financial services industry is being transformed by regulation, competition, consolidation, technology and globalization. These forces will be explored, focusing on how technology is both a driver of change as well as the vehicle for their implementation. The course focuses on payment products and financial markets, their key systems, how they evolved and where might they be going, algorithmic trading, market structure dark, liquidity and electronic markets. Straight through processing, risk management and industry consolidation and convergence will be viewed in light of current events. The course objective is to bring both the business practitioner and technologist closer together. Topics will be covered through a combination of lectures, readings, news, case studies and projects.

COURSE DESCRIPTION

The financial services industry is a leader in the use of information technology. Firms in banking, securities, investments, insurance and financial marketplaces are among the most information intensive and innovative users of technology. Annual expenses for technology and communications exceed several billion for each of the largest firms.

The course is made of four modules, describing industry practice and the underlying technology:

I. Description and background of the financial services industry
   a. Initial public offering (IPO) – Google’s online Dutch auction

II. Payment Systems
   a. Cash, checks, ATM’s
   b. Credit, debit, smart, and stored value cards
   c. Internet payments and security (PKI, SSL)

III. Financial Markets – Trading
   a. Order management systems, Straight Through Processing, (STP) and FIX
   b. Equities – NYSE
   c. Equities – NASDAQ
   d. ECN’s, ATS’s, Dark Pools, Liquidnet, etc.
   e. Dark liquidity, Transaction Cost Analysis (TCA), direct market access (DMA), Smart Order Routers
   f. Algorithmic and high frequency trading techniques and strategies
   g. The “Flash Crash”
   h. Foreign Exchange trading and markets
   i. Derivatives – futures and options trading and markets
IV. Pre-Post Trading
   a. After the Trade -- clearance and settlement,
   b. Market data, Complex Event Processing and trading system architecture

In each module we will look at the six key forces that drive the industry:
   • Regulation
   • Competition
   • Consolidation
   • Convergence
   • Technology
   • Globalization

Management must make decisions about their data resources, information infrastructure, decision support and the process automation, which are consistent with their firm’s business strategy in addressing these forces. Further, there are usually independent strategies for firm’s retail and institutional businesses and differences between the buy and sell sides.

The following are representative topics addressed:

  o How information technology is facilitating electronic forms of payment, specifically through media such as “smart cards” and on the Internet. Is it secure?
  o Have regulatory changes resulted in technology that increases liquidity, decreases spreads and trading costs? How does it impact profits?
  o Does technology increase market transparency?
  o How has the explosion in data from transaction processing systems and markets playing an increasingly important role in investment decision-making, customer management, and risk management?
  o How do financial services organizations manage risk and what is needed from risk management systems?
  o How are issues in managing information technology in financial services organizations viewed from the standpoint of responsiveness to business needs?

Industry speakers will be invited periodically. Their materials will be posted on the class web site.

PREREQUISITES

You should have had at least one course in investments, equities, fixed income, etc. or equivalent experience. If you have any questions, please contact me.

TEACHING MATERIALS

  o Blackboard website for this course will contain lecture materials and late breaking news
  o Readings will be posted on Blackboard at least a week early and should be read prior to class each class. They will be chosen based on current news and issues. THERE IS NO TEXT BOOK for this course.
  o Students are encouraged to find current materials in the news or on the Internet for class discussion.
GRADING

<table>
<thead>
<tr>
<th>Item</th>
<th>Grade</th>
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<tbody>
<tr>
<td>1st Quiz – Intro and Payment Systems</td>
<td>20%</td>
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<tr>
<td>2nd Quiz – Financial Markets, Institutional Trading</td>
<td>40%</td>
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<tr>
<td>3rd Quiz – Post Trade, Forex, Futures, Options</td>
<td>30%</td>
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<tr>
<td>Class participation</td>
<td>10%</td>
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CLASSROOM BEHAVIOUR

Rude and impolite behavior is disruptive. Therefore:

You must TURN OFF beepers, email PDA’s and cell phones BEFORE class. **If your phone rings, you will be asked to leave.** Further I reserve the right to reduce your final grade by reducing points normally awarded for class participation. If you are on-call for work or family, **place your device on vibrate and leave the room before taking the call.**

You may not use cell phones, PDA’s, (even for receiving text messages) or other ELECTRONIC DEVICES OF ANY KIND, including lap tops, during class meetings.

Arriving late interferes with other students' learning and is not acceptable. Subway delays and other problems are unavoidable on occasion, but it is each student's responsibility to plan carefully to arrive on time and well prepared. Repeated latecomers will be penalized.

Since it is an evening class, I will permit you to eat and drink during class, only if it does not interfere with the class. Therefore, noisy or odiferous foods are not permitted. It is your responsibility to keep the room clean and if trash is left in the class room I will be forced stop this practice.

As a mark of respect, I ask all men to remove their caps or hats while in class, unless worn for a religious reason.

This course has a “zero tolerance” policy on cheating and plagiarism. Any student who breaks academic rules in this course has violated the mutual trust on which teaching and learning are based and will not only receive a zero for that assignment, but will be excluded from taking any further quizzes or exams in this course, which is likely to result in a failing grade for the course. For serious infractions I will direct the case to the University’s Disciplinary Panel. Remember that giving improper help is as clearly a violation as taking it.
**Preliminary Class Schedule**

All dates and guest speakers are subject to change. Changes will be posted on Blackboard

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<thead>
<tr>
<th>Session</th>
<th>Date TBD</th>
<th>Topics</th>
<th>Questions</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>TBD</td>
<td>Course Logistics</td>
<td>What’s this course about? How are the teaching materials organized? What is the grading policy? How should we communicate? What do financial firms do? How is it organized? How do firms earn money? What is an intermediary? What is the IPO process?</td>
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<tr>
<td>Week 2</td>
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<td>Payment Systems I</td>
<td>What is the history and economics of various payment methods? Cash, debit cards, credit cards. What factors drive the adoption of payment systems? What has the experience been with emerging payment systems, including “smart cards”? How are payments processed in the US?</td>
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<td>Week 3</td>
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<td>Payment Systems II</td>
<td>Institutional high value payments via Fedwire, CHIPS and SWIFT. How do secure payment systems work? SSL Encryption. Does E-cash have a future? PayPal?</td>
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<td>Week 4</td>
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<td>Introduction to Markets</td>
<td>How are securities traded? Are all markets similar? What are auction, dealer and matching market systems? How do they differ? How do markets compete? What defines execution quality? How is technology impacting their trading? What functions are needed by an institutional order management system? What technologies, communications, messaging standards are used for implementation? How are securities firms connected to clients, marketplaces and settlement processing?</td>
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<td>Week 5</td>
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<td>First Quiz on Weeks 1-3</td>
<td>US Equity markets Before 1997 How the NYSE worked with specialists and floor brokers. What were seats? Why NASDAQ was created and how it worked with competing market makers. What are the pink sheets and bulletin board markets?</td>
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<td>Week 6</td>
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<td>Quiz returned/reviewed After the Regs NYSE</td>
<td>What were the regulatory changes driving the markets. Reg ATS and creation of ECN’s. Decimalization. Reg NMS. New order types. Maker taker model. The NYSE group. The designated market make (DMM)</td>
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<td>Week 7</td>
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<td>Guest Speaker After the Regs NASDAQ</td>
<td>TBA Direct market access. Open close issue. Price time priority. Becoming an ECN to become an exchange.</td>
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<td>Week 9</td>
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<td>Second Quiz Weeks 5-7 Institutional Trading II</td>
<td>Dark pools, Alternative Trading Systems (ATSS), Posit, Liquidnet, Pipeline. High Frequency Trading, Alpha seeking (quant), market making, high frequency trading (HFT) models.</td>
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<td>Week 10</td>
<td>Return and Review Quiz After the Trade</td>
<td>How are trades cleared and settled? What does a prime broker do?</td>
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<td>Week 11</td>
<td>Forex, Futures</td>
<td>How is foreign exchange traded? What is the difference between forwards and futures? How are they valued, traded?</td>
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<tr>
<td>Week 12</td>
<td>Options Review for final 3rd Quiz Online</td>
<td>What are options? How are they valued and traded?</td>
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