



**Sem:** Spring Term 1, 2020    **Class Day/Time:** Tu/Th 9:35-10:55    **Room:** SB 219  
 Tu/Th 11:10-12:30    SB 219  
 Tu/Th 3:55-5:15    SB 219

**Instructor:** Professor Ingrid M. Werner

**E-mail:** werner.47@osu.edu

**Office Hours:** By Appointment

**Office:** Fisher Hall 818

### Course Outline:

In this course, we describe how today's financial markets work; how governments and exchanges regulate them; and how traders create liquidity, volatility, informative prices, trading profits, and transaction costs. The course provides an overview of today's fragmented market for financial securities. We study different market structures: single price auctions, open outcry auctions, screen-based markets, and brokered markets. We study the role of different market participants: investors, brokers, dealers, arbitrageurs, retail traders, buy-side traders (institutions), day traders, and rogue traders. We also study different order types: limit orders, market orders, and stop orders; and trading strategies: program trading, basket trading, block trading, and short sales. Finally, we look at the dark side of securities trading: insider trading, front running, market manipulation, and bluffing.

### Learning Goals:

1. To develop a thorough understanding of how securities are traded around the world, how traders (retail and institutional) can minimize their costs of trading, and how market makers can optimally set prices and execute orders.
2. To understand the role of regulation, and how it impacts participants in the securities industry.
3. To gain first-hand experience in securities trading and market making in a realistic interactive simulation environment.

### Required Materials:

Class-notes and other required reading materials will be distributed via Carmen.

### Evaluation Criteria:

Graded Components	% of Total	Type
Quizzes (4)	20%	N ↑
Cases: UG quizzes (2)	20%	O 🍷
Cases: Grad write-ups (2)	20%	O 🍷
Final Exam	25%	N ↑
In-class Participation	10%	O 🍷
Trading Simulations	25%	O 🍷

#### Requirements for each form of graded component.

Failing to follow these will represent academic misconduct. See below.

**Independent Work [N ↑]:** Strictly non-collaborative, original individual work. You may discuss this assignment with your instructor only. Discussions with other individuals, either in person or electronically, are strictly prohibited.

**Collaboration Required [C 🍷]:** An explicit expectation for collaboration among students either in class or outside of class (i.e. group work).

**Collaboration Optional [O 🍷]:** Students are permitted, but not required, to discuss the assignment or ideas with each other. However, all submitted work must be one's original and individual creation.

(See details and deadlines below)

### Academic Conduct:

If a student is suspected of, or reported to have committed, academic misconduct in this course, I am obligated by University Rules to report my suspicions to COAM. If you have questions about the above policy or what constitutes academic misconduct in this course, please contact me. See OSU Prohibited Conduct – [Section 3335-23-04\(A\)](#)



**Target Students:**

This course is primarily targeted towards students thinking of a career in investment management, securities trading, or the brokerage industry. It is also an excellent course to take for students targeting a career as a financial advisor. However, the course will also be useful for students interested in finance more generally. In the course, we will show that market structure and regulation affect asset pricing, and hence the cost of capital for firms around the world. Students taking this course will most certainly get a “leg-up” on the competition for summer jobs and hopefully also permanent jobs in the securities industry.

**Prerequisites:**

The course is offered in combined sections of KAIST, MBA, SMF, and UG students. KAIST students need instructors permission, SMF students must have taken their core finance class, and MBA students must have taken MBA 6221 and 6222 (or MBA 6223). UG students must have taken BUSFIN 3220. In addition, background in microeconomics is useful because the notions of supply, demand and economic equilibrium underlie just about every trading situation. Statistics comes in handy when we need to design strategies in situations involving risk or evaluate performance of existing markets.

**Workload Expectation:**

The university and college expectation is that students spend two hours outside of class for every hour spent in class. Since this course meets 3 hours per week, you should expect to spend 6 hours per week outside of class on course-related work.

**Additional Course Material:**

Examples of textbooks that you may want to consult include:

- *Market Liquidity*, 2013, Oxford University Press, by Thierry Foucault, Marco Pagano, and Ailsa Röell
- *Financial Markets and Trading*, 2011, Wiley, by Anatoly B. Schmidt.
- *The Microstructure of Financial Markets*, 2009, Cambridge University Press, by Frank de Jong and Barbara Rindi.
- *Equity Markets in Action*, 2004, Wiley, by Professor Robert A. Schwartz and Reto Francioni. The textbook is available for free as an ebook through the Ohio State University Library.
- *Trading & Exchanges: Market Microstructure for Practitioners*, 2002, Oxford University Press, by Larry Harris.

**Quizzes:**

There are four online quizzes for all students (UG also have case quizzes – see below). Quizzes each have a maximum of 5 points for a total of 20 points. Students may drop the lowest graded quiz out of the four, and replace it with an optional make-up quiz.

**Cases:**

There will be two cases assigned in the later part of the course. In preparation for the in-class case discussions, study questions are available on Carmen. Graduate students (KAIST, MBA, and SMF) are expected to analyze the case and write a 3 page summary of his or her findings (not just a case synopsis) which is due before class. UG students will be instead be given a quiz at the beginning of class that will check that the students have read the case. All students are expected to participate actively in the in-class case discussion.

**Final Exam:**

There will be an in-class Final Exam during the last class of the term. More information will be available on the Carmen course page.

**In-class Participation:**

A substantial portion of your grade (10%) will be based on class participation. Class participation will mainly be graded based on your contributions to case discussions, but general participation in the form of questions and comments during lectures is also welcome and will be rewarded. A combination of cold-calling and soft-calling will be used to maximize participation. Each student will be given ample opportunity to contribute to the classroom discussion. I will monitor contributions daily, and will cold-call students who need encouragement to speak up in class.

**Trading Simulations:**

We will use several trading simulations in the course, and your simulation performance during the Trading competition accounts for 25% of your grade. The trading simulations are not simply graded on profits generated by each trader, but also on learning and on position risk management. The simulation software -- Rotman Interactive Trader (RIT) -- is based on a software package designed by the staff in the trading laboratory at the Rotman School, University of Toronto. Fisher College holds a site license to RIT software. Students are encouraged to practice using the RIT software throughout the course. More information about the simulations will be provided on the class Carmen web-page.

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**Additional Policies:****Examination Policy:**

Missed exams can only be made-up in extreme cases (e.g., death of family member, personal hospitalization, etc.) with proper documentation (e.g., a physician's note, ER paperwork, obituary, etc.). Each decision of potentially allowing a make-up exam is made by the instructor on a case-by-case basis. Additionally, you **MUST** contact the instructor (werner.47@osu.edu) as soon as you know of a potential problem or conflict with an exam date. Alternative methods (e.g., oral exam, essay) of testing may be used for make-up exams. If you are experiencing an extreme situation or emergency, please attempt to notify the instructor (werner.47@osu.edu) via email ASAP.

**Attendance:**

Any student who fails to attend without giving prior notification to the instructor will be dis-enrolled after the third instructional day of the term, the first Friday of the term, or the second scheduled class meeting of the course, whichever occurs first. If you are unable to attend a particular class, please notify the instructor of your absence *prior* to that class. Failure to notify the instructor of absences, or missing more than five (5) sessions during the course, might result in a failing grade. Note, I take attendance virtually every class. Absence from the trading competition will not be excused, except for the most serious circumstances. Such circumstances must be validated in writing by an appropriately accredited professional (e.g., medical doctor).

**Academic Conduct:**

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "academic misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, submitting the same or similar work for credit in more than one class, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If a student is suspected of, or reported to have committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to COAM. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

**Appeals:**

Grading errors should be corrected. Appeals must be in writing, within 1 week after the graded work is returned—not the date you first look at it. The appeal should include a description of the question(s) that need to be reexamined as well as an explanation of why the original grade was incorrect. In general, the entire document will be checked for grading errors, and correcting these could either raise or lower the overall score.

**Disability Services:**

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

**Waitlisted students:**

Students who are waitlisted and seek to enroll must attend class through the first class session of the second week of the session. After that date, students who have not been added will not be enrolled and may not continue to attend the class. Waitlisted students should contact either the Fisher Undergraduate Program Office or the Department of Finance office if they have any questions regarding the waitlist process.

# Business Finance 4227/7224

## Week 1: Primitives and Market Structure

1/7 Topics:

- US Market Structure
- Orders, Bids, Offers, Spreads

Readings:

SEC Concept Release on Equity Market Structure, Release No. 34-61358; File No. S7-02-10.

*Securities Trading: Front, Middle, and Back Office, HBS 9-110-070*

<b>1/9 Trading Simulation: Order Driven Markets</b> <b><i>LT3 - Dynamic Order Arrival</i></b>
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## Week 2: Information and Prices

1/14 Topics:

- Call Auctions
- Continuous Trading
- From Information to Prices

<b>1/16 RIT Trading Simulation: Price Discovery</b> <b><i>PD0 - Market Equilibrium</i></b> <b><i>PD1 - IPO Pricing</i></b> <b><i>PD2 - Asymmetric Information</i></b> <b><i>PD3 - ETF Arbitrage Pricing</i></b> <b><i>Quiz 1: Orders, Bids, Offers, and Spreads</i></b>
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## Week 3: Intermediated Markets

1/21 Topics:

- Risk-Neutral Models
- Models with Risk-Aversion
- Empirical Market Microstructure
- Glosten-Milgrom Model

**1/23 RIT Trading Simulation: Sales and Trading**

***LT1 – Trading as a Principal (Review)***

***LT2 – Orders in Illiquid Markets***

***Quiz 2: Trading Protocols and Information***

**Week 4: Institutional Trading**

1/28 Topics:

- Best Execution
- Order Submission Strategies
- Trading Cost Analysis

Readings:

Bacidore J. and G. Sofianos, Large Order Execution Quality, *Goldman Sachs*

Bacidore J. and G. Sofianos, Choosing The Best Execution Strategy, *Goldman Sachs*

Rakhlin, D., and G. Sofianos, 2006, The Impact of an Increase in Volatility on Trading Costs, *The Journal of Trading*, Spring, 43-50.

Rakhlin, D., and G. Sofianos, 2006, The Choice of Execution Algorithm: VWAP or Shortfall, *The Journal of Trading*, Winter, 26-32.

Cai, T., and G. Sofianos, 2006, Multi-day Executions, *The Journal of Trading*, Summer, 25-33.

**1/30 RIT Trading Simulation: Sales and Trading**

***LT3 – Dynamic Order Arrival***

***LT4 – Microstructure Capstone Case***

***Quiz 3: Market Making and Institutional Trading Costs***

**Week 5: Regulation**

2/4 **Insider Trading**

Readings:

***Case: Martha Stewart (A), HBS Case 9-305-034.***

***Case Quiz 1: Martha Stewart (A)***

2/6 **Market Manipulation, Ponzi Schemes, and Rogue Traders**

Readings:

Madhavan, A., D.J. Leinweber, 2001, Three Hundred Years of Stock Market Manipulations, *The Journal of Investing*, Summer.

***Case: Societe Generale (A): The Jerome Kerviel Affair, HBS Case 110029.***

***Case Quiz 2: Societe Generale (A): The Jerome Kerviel Affair***

## Week 6: Trading Competition

<b>2/11</b> <b>RIT Trading Simulation</b> <i>Competition- Part I</i>
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<b>2/13</b> <b>RIT Trading Simulation</b> <i>Competition – Part II</i>
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## Week 7: Current Topics

**2/18   Dark Pools, Algorithms, and High Frequency Trading**

*Money & Speed: Inside the Black Box (Flash Crash 2010)*

*Quiz 4: Money & Speed: Inside the Black Box (Flash Crash 2010)*

Readings:

Buti, S., B. Rindi, and I.M. Werner, 2011, Diving into Dark Pools, Fisher College of Business working paper.

Abrokwah, K., and G. Sofianos, 2006, Accessing Displayed and Non-Displayed Liquidity, *The Journal of Trading*, Fall, 47-57.

Finger, R., High Frequency Trading: Is It a Dark Force Against Ordinary Human Traders and Investors? *Forbes*, September 30, 2013.

Henning, P. J., Possibly Unfair, but not Necessarily Fraudulent, DealBook, The New York Times, July 16, 2013.

Sofianos, G., 2007, Dark pools and algorithmic trading, Chapter 6 in *Algorithmic Trading Handbook*, 2<sup>nd</sup> edition, Goldman Sachs.

Stewart, J. B, Fair Play Measured in Slivers of a Second, *The New York Times*, July 12, 2013.

**2/20   Final Exam**