



Sem: Spring Term 1, 2024 **Class Day/Time:** Tu/Th 9:35-10:55 **Room:** SB 219
 Tu/Th 11:10-12:30 SB 219
 Tu/Th 2:20-3:40 SB 219

Instructor: Professor Ingrid M. Werner **E-mail:** werner.47@osu.edu
Office Hours: By Appointment via Zoom **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 current topics: insider trading, rogue traders, market manipulation, and retail trading platforms and MEME stocks.

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 (slides) and other required reading materials will be distributed via Carmen.

In-person Class:

Note that the class is designated as an in-person class. The class-room we use is a lab space without a regular video setup. There is no hybrid option.

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.

Evaluation Criteria:

Graded Components	% of Total	Type
Homeworks (4)	20%	O 🗨️
Cases: UG quizzes (2/3)	20%	N ↑
Cases: Grad write-ups (2/3)	20%	N ↑
Final Exam	30%	N ↑
In-class Participation	5%	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)

Graded Component Details

Homework Details: There are four open-book, open-notes, homework assignments for all students. Students have two attempts for each homework assignment. Homework assignments each have a maximum of 5 points, for a total maximum of 20 points.

Case Quizzes/Case Analyses: There will be three cases assigned in the course. Graduate students (KAIST, MBA, and SMF) are expected to analyze the cases, and write a max three page summary of his or her findings (not just a case synopsis) for at least two of the three cases. Undergraduate students will instead be given a short quiz at the beginning of each case-discussion class. I will drop the lowest scoring case quiz/case analysis. All students are expected to participate actively in the in-class case discussion for all three cases. Each case quiz/case analysis is worth a maximum of 10 points, for a total maximum of 20 points.

Trading Simulations: We will use several trading simulations in the course. The trading simulations cover learning from order flow, position management, as well as liquidity provision. The simulation software -- Rotman Interactive Trader (RIT) -- is 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. We will hold a two-day trading competition, and student performance during these two-days will be graded. The grade is based students' in-section rank, and I will select the best day in terms of performance. 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). The trading simulations count for a maximum of 25 points.

Exam: There will be an in-class, closed-book, closed-notes, multiple-choice, comprehensive exam during the sixth week of class. More information will be available on the Carmen course page. A missed exam 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, students **MUST** contact the instructor (werner.47@osu.edu) as soon as they 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. The exam counts for a maximum of 30 points.

In-class Participation: Class participation will graded based on your contributions to the three case discussions and general participation during lectures, with a maximum of 5 points.

Grading Scale

Letter	A	A-	B+	B	B-	C+	C	C-	D+	D	E
(Points)	(4.0)	(3.7)	(3.3)	(3.0)	(2.7)	(2.3)	(2.0)	(1.7)	(1.3)	(1.0)	(0.0)
Range	100% - 93%	90% - 87%	83% - 80%	77% - 73%	70% - 67%	60% - 0%					

Note: Above percentages are % of overall points earned.

In keeping with Fisher College policy, I strive to have the average GPA for the course in the following range: **3.2 – 3.6**

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 books that you may want to consult include:

- *Algorithmic Trading - A Practitioner's Guide*, TBG Press, 2020, by Jeffrey M. Bacidore.
- *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.

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.



Copyright:

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

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.

Course Schedule

Week Theme/Module	Date	Topics in Detail	Readings	Graded Components	Type*	Present Format	Assess. Format
1 – Primitives and Market Structure	Day 1	US Market Structure Orders, Bids, Offers, and Spreads	Slides 1 - Introduction SEC Staff Report on Algorithmic Trading in U.S. Capital Markets, 2020, Sections I - III, and X <i>Securities Trading: Front, Middle, and Back Office, HBS 9-110-070</i>		Lecture	InClass	
	Day 2	<i>Trading Simulation: Order Driven Markets</i>	Slides 2 – Limit Order Book Trading <i>RIT User Guide – Client Software Feature Guide (LT3 Tutorial)</i> <i>LT3 – Dynamic Order Arrival</i>		Lecture /Simulation	InClass	
		<i>Orders, Bids, Offers, and Spreads</i>		<i>HW1 (due Mo, 9am, Jan 15th)</i>	 		Computer
2 – Information and Prices	Day 1	Call Auctions Continuous Trading From Information to Prices	Slides 3 – Order Driven Markets and Price Discovery		Lecture	InClass	
	Day 2	<i>Trading Simulation: Price Discovery</i>	Slides 4 – Price Discovery Simulation		Simulation	InClass	

			<i>PD0 – Market Equilibrium</i> <i>PD1 – IPO Pricing</i> <i>PD2 – Asymmetric Information</i> <i>PD3 – ETF Arbitrage Pricing</i>		
		<i>Trading Protocols and Information</i>		<i>HW2 (due Mo, 9am, Jan 22th)</i>	○ 📌 Computer
3 – Intermediated Markets	Day 1	Risk-Neutral Models Models with Risk-Aversion Glosten-Milgrom Model	Slides 5 – Intermediaries and Inventory Management		Lecture InClass
	Day 2	<i>Trading Simulation: Sales and Trading I</i>	<i>LT1 – Trading as a Principal</i> <i>LT2 – Orders in Illiquid Markets</i>		Simulation InClass
		<i>Market Making and Inventories</i>		<i>HW3 (due Mo, 9am, Jan 29h)</i>	○ 📌 Computer
4 – Institutional Trading	Day 1	Best Execution Order Submission Strategies Trading Cost Analysis	Slides 6 – Institutional Order Flow GS Street Smart 19, 22, and 25 SEC Staff Report on Algorithmic Trading in U.S. Capital Markets, 2020, Sections IV-V Natixis Algorithmic Trading Overview, 2021 Frazzini, A., R. Israel, and T. J. Moskowitz, 2018 Bacidore J. and G. Sofianos, 2002		Lecture InClass

	Day 2		<p>Bacidore J. and G. Sofianos, 2003 Cai., T., and G. Sofianos, 2006 Rakhlin, D., and G. Sofianos, 2006a,b</p> <p>LT3 – Dynamic Order Arrival LT4 – Microstructure Capstone</p>		Simulation	InClass
		<i>Institutional Trading Costs and Review Questions for Exam</i>		HW4 (due Mo, 9am, Feb 5th)	O 🗨️	Computer
5 – Insider Trading	Day 1	Insider Trading Fiduciary Duty of Brokers Greed and Hubris	<p>Slides 7 – Insider Trading Martha Stewart (A), HBS Case 9-305-034. Altman, P. et al., 2021 Conaghan, T., E. Goldman, and E. Orsic, 2021 White & Case LLP, 2021</p>		Case Discussion	InClass
Grad students		<i>Martha Stewart (A)</i>		Case Analysis 1 (Tu, 9am, Feb 6th, max 3 pages)	N ↑	File upload
Undergrads		<i>Martha Stewart (A)</i>		Case Quiz 1 (Tu, Feb 6th, 10 min beg. class)	N ↑	InClass Computer
Retail Trading	Day 2	Brokerage Industry Meme Stocks Zero Commissions Gamification	<p>Slides 8 – Retail Trading Robinhood Markets Inc.: Business Model Challenges, Ivey Publishing W21231. Barber, B., Huang, X., Odean, T., and C. Schwarz,</p>		Case Discussion	InClass

			2020 Jones, C., Reed, A., and W. Waller, 2021		
Grad students		<i>Robinhood Markets Inc.</i>		<i>Case Analysis 2 (Th, 9am, Feb 8th, max 3 pages)</i>	N ↑ File upload
Undergrads		<i>Robinhood Markets Inc.</i>		<i>Case Quiz 2 (Th, Feb 8th, 10 min beg. class)</i>	N ↑ InClass Computer
6 –Rogue Trading	Day 1	Market Squeezes Market Manipulation Pump and Dump Ponzi Schemes Rogue Trading	Slides 9 – Rogue Trading <i>Societe Generale (A): The Jerome Kerviel Affair, HBS Case 110029.</i> Madhavan, A., D.J. Leinweber, 2001 Kyle, A. S., and S. Viswanathan, 2008		Case Discussion InClass
Grad students		<i>Jerome Kerviel</i>		<i>Case Analysis 3 (Tu, 9am, Feb 13th, max 3 pages)</i>	N ↑ File upload
Undergrads		<i>Jerome Kerviel</i>		<i>Case Quiz 3 (Tu, Feb 13th, 10 min beg. class)</i>	N ↑ InClass Computer
Exam	Day 2	Cumulative Exam		<i>Exam (Th Feb 15th, reg. class time)</i>	N ↑ InClass Computer
7 – Trading Competition	Day 1	CRZY and TAME		<i>Day 1 (Tu, Feb 20th, reg. class time)</i>	O 🧡 InClass Computer
	Day 2	CRZY, TAME, PAIN, and OUCH		<i>Day 2 (Th, Feb 22nd, reg. class time)</i>	O 🧡 InClass Computer

**Graded Component Types:*

N ↑	<i>Independent Work: Strictly non-collaborative, original individual work. Discussions with instructor only.</i>
O 🧡	<i>Optional-Collaboration: Original individual work/submissions; Students are permitted to discuss among themselves.</i>
C 🧡🧡	<i>Collaboration-Required: An explicit expectation for collaboration among students.</i>

Additional University Policies and Resources (in alphabetical order):

You can find a list of university policies and resources at go.osu.edu/UPolicies, but here are a few important ones.

Academic Misconduct:

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.

Accessibility:

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's [request process](#), managed by Student Life Disability Services (SLDS). If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. If one class is missed due to COVID exposure/self-isolation, contact me immediately so that we can agree on make-up arrangements. If more than one class is missed due to mandatory quarantine or illness, students should contact SLDS via the link above for support in identifying appropriate accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Artificial Intelligence:

Use of artificial intelligence (AI)-powered programs, including but not limited to ChatGPT, for course assignments must be first discussed and permitted by the faculty instructor. The scope of use may range from not permitted (with exception of AI-powered search engines such as Google, Bing, etc.) to a broader spectrum of allowed applications. When AI-powered programs are permitted, and used by students, the scope of use and content must be specified and referenced by students accordingly. Students are

expected to be aware of the shortcomings of use of AI-powered programs, including risk of academic misconduct (e.g., plagiarism; etc.).

Continuity of Instruction:

Should in-person classes be canceled due to weather or other unforeseen circumstances, I will notify you as to which alternative methods of teaching will be offered to ensure continuity of instruction for this class. Communication will be via CarmenCanvas.

Covid/Flu Accommodation:

The class will follow the University's "[Safe and Healthy](#)" plan and [personal safety practices](#). If you are isolating while waiting for a COVID-19 test result, please let me know immediately. Those testing positive for COVID-19 should refer to the Safe and Healthy Buckeyes site for resources. Beyond five days of the required COVID-19 isolation period, I may rely on Student Life Disability Services to establish further reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

Disability Services:

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

Diversity:

The Ohio State University affirms the importance and value of diversity of people and ideas. We believe in creating equitable research opportunities for all students and to providing programs and curricula that allow our students to understand critical societal challenges from diverse perspectives and aspire to use research to promote sustainable solutions for all. We are committed to maintaining an inclusive community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among all members; and encourages each individual to strive to reach their own potential. The Ohio State University does not discriminate on the basis of age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, gender, sexual orientation, pregnancy, protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment.

Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation. To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Mental Health:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, [on-demand mental health resources](https://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614-292-5766](tel:614-292-5766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](https://www.suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:1-800-273-8255). [The Ohio State Wellness app](https://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.

Religious Accommodation:

Our inclusive environment allows for religious expression. Students requesting accommodations based on faith, religious or a spiritual belief system in regard to examinations, other academic requirements or absences, are required to provide the instructor with written notice of specific dates for which the student requests alternative accommodations at the earliest possible date.