UNIVERSITY OF CALGARY
HASKAYNE SCHOOL OF BUSINESS

FNCE 449 L01 & FNCE 668 S01 (combined course)

Trading and Market Data Management

Course Outline Part A – Winter 2021

Instructor	George Hart
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Office hours	By appointment only
Website	http://d2l.ucalgary.ca
Lecture location	Online, delivered from SH362
Lecture times	MoTuWeThFr 8am-5pm, with an hour set aside for lunch

Course Description

The Haskayne School has a Finance and Trading Lab with 18 student seats and one instructor seat. The purpose of the Lab is to give students an opportunity to work with market data terminals: Bloomberg, Refinitiv (formerly Thomson Reuters) Eikon, and S&P (Standard & Poor's) Capital IQ. They can use them to do their work in other finance classes. Moreover, these data terminals are commonly used by finance professionals, and the purpose of this course is to give students an opportunity to find and use market data while learning the finance principles that relate to the same data. This will help the students capture valuable jobs and rise more quickly in the corporate ranks because they need less on-the-job training.
In addition, the Lab has a licence to use the Rotman Interactive Trader (RIT) software, which provides trading simulations in commodities, equities and physical goods. It allows students to respond to information arrival and place market and limit orders (bids and asks) in a competitive trading environment.

The course will focus mainly on Refinitiv Eikon, S&P CapitalIQ and Rotman Interactive Trader. Bloomberg terminals cannot be accessed remotely thus the focus on Eikon and CapitalIQ. Eikon can produce almost all of the information that Capital IQ can produce and also include news, commodity information and derivative information. Capital IQ provides high-quality accounting information and is much less expensive, so it is popular with firms that manage equity portfolios and do investment banking, but Eikon is used for both of these purposes, as well. The RIT software provides a unique trading

experience that simulates a real- time trading environment.

We will use two learning techniques that are becoming popular in modern classrooms: experiential learning and a flipped classroom.

Experiential learning is natural in a lab setting and it focuses on student work at the Trading Lab terminals (online). Students will learn by doing and look up documentation and references as they do assignments.

With a flipped classroom, there is a modest amount of instructor lecture time and a greater amount of hands-on experience by the students. The instructor will explain some finance theory for an assignment and the students will develop a computer model to extract the data from the terminal application and download it to a spreadsheet for computations.

Course Modality

Course content will be delivered through a combination of both synchronous and asynchronous online learning. Some course material will be covered in real-time online sessions held during registrar-scheduled class times for the course, and other content will be covered through asynchronous online learning, which students can access at times convenient to them. Students are responsible for all content covered in both types of delivery. Students are expected to attend synchronous class sessions at the designated time, and to engage with asynchronous material in a timely manner in order to keep up with course content and deliverables. Students will log on to the Lab terminals remotely and instruction will be via Zoom.

Course Objectives

The course will show students how to find and extract financial data from , Eikon and CapitalIQ data feeds, and how to use the data in the context of the finance material taught at the Haskayne School. It also gives students experience in a real time trading environment, managing a simulated trading book as information arrives. The course emulates many aspects of a trading floor, as used for investment management, risk management and speculative activities.

By the end of this course, successful students will be able to:

1. Export information from Eikon to a spreadsheet for subsequent financial analysis and computation. Each of Eikon and CaitalIQ products has its own syntax for acquiring information, and tools for creating appropriate syntax. The Daily Assignments and Term Project will be used to assess student performance in this area.
2. Identify breaking news specific to a market sector or region through Eikon and CapitalIQ terminal usage and present an action-oriented news summary for the whole class. The actions should identify hedging or speculative strategies that may arise from, or need to be modified, because of the news.
3. Demonstrate navigation aptitude for Eikon terminal information with Eikon Certification Test
4. Generate strategies to trade for low risk or high profit. Students work in a simulated but real-time trading environment to perform specific tasks such as arbitrage, market-making, speculation and hedging.
5. Illustrate a holistic picture of the kind of information that can be acquired from Eikon or Capital IQ and conduct an inquiry with these tools that assesses a trading strategy, corporate governance or other topics that arise in finance. This will be

assessed by their work on a term project of their design.

Textbook and/or Other Materials

The course will use handouts from the Instructor, and documentation for the Eikon and Capital IQ data feeds as well as the Rotman Interactive Trader software. These will be made available on D2L, and/or through the help systems for the data products. Sample spreadsheets and documentation will be made available on the Finance and Trading Lab network drives.

Grade Scale

The Haskayne School of Business endeavours to ensure consistency of final grades across courses and sections. Variations in distribution will always be considered by the instructor where called for by the performance in each individual class. The student does not have any 'right' to a certain grade but is responsible for earning grades. The instructor has unfettered discretion to evaluate student performance and assign all grades.

Grade		Percentage	Grade Point Value	BComm Description	MBA Description
A+	≥	95.0	4.0	Outstanding	Outstanding
A	≥	90.0	4.0	Excellent	Excellent
A-	≥	85.0	3.7	Approaching excellent	Very good performance
B+	≥	80.0	3.3	Exceeding good performance	Good performance
B	≥	75.0	3.0	Good performance	Satisfactory performance
B-	≥	70.0	2.7	Approaching good performance	Minimum pass
C+	≥	65.0	2.3	Exceeding satisfactory performance	All grades below B- are indicative of failure at the graduate level and cannot be counted toward the course requirements.
C	≥	60.0	2.0	Satisfactory performance	
C-	≥	55.0	1.7	Approaching satisfactory performance	
D+	≥	52.0	1.3	Marginal pass. Insufficient preparation for subsequent courses in the same subject	
D	≥	45	1.0	Minimal pass. Insufficient preparation for subsequent courses in the same subject	
F	≥	0%	0	Failure. Did not meet course requirements.	

Grade Distribution

Due Date	Assessment	Weighting	Course Outcomes Assessed
2 Business Days after being assigned	Assignments (4 in total are given in the first 4 lecture days)	40%	1, 5, 6
Daily	Daily News Summary for all 5 class days	15%	2, 3, 4, 6
February 8, 2021, 11:59 pm	Eikon Certification Test	5%	4
During daily class RIT simulations	Rotman Interactive Trader Simulation Performance	20%	5
March 8, 2021, 11:59 pm	Term Project	20%	1, 3, 4, 6
	Total	**100%**	

Students will develop data management and analytic techniques that are used in the finance industry to capture, analyse and act upon historic and real-time market data. The components of the Grade Distribution above are all designed to help the students meet the course objectives and measure their performance in meeting those objectives. Below, we provide greater detail on the grading components and how they relate to course outcomes.

The final grade in the course and the final pass/fail status is determined completely by the above grade distribution. There is no further requirement that any particular component of the distribution be completed or passed in order to achieve a passing grade in the course.

Missed Assessment Policy

Undergraduate students must follow the guidelines outlined in Part B of the outline to request a deferral for missed work during the term, including quizzes, assignments, and exams.

MBA students must coordinate with the instructor to seek a deferral for missed work during the term, including assignments, and exams.

Typically, deferrals are only granted in cases of illness, domestic affliction, or religious conviction, and are entirely at the discretion of the instructor. If a deferral is granted, an instructor may require a make-up assessment to be completed or transfer the weight of the missed assessment to another assessment in the course.

Late Policy

The tight deadlines on the assignments are intended to constrain the scope of the projects and assignments. If there is no sense of urgency in completing these materials,

they tend to be handed in at the end of the term and it is hard for a student to remember what they were doing with the project or assignment.

Accordingly, grades will be reduced for each assignment, project and certificate (Eikon) test score that is late at the rate of 1% of the maximum grade for each business day late, after the deadline.

In addition, no submissions later than 2 weeks after the deadline will be graded, so they will receive a grade of zero.

Class Participation

The Daily News Summary is a graded component of class participation. Generally, students are encouraged to ask questions and propose answers to issues and questions as the class progresses.

Assignments

Assignments are worth 10% each. They must be submitted in the form of a well-documented spreadsheet that can collect the appropriate data from the Lab data feeds and perform the analysis.

Students will learn how to find the codes and use the syntax developed by Eikon and Capital IQ for downloading data to a spreadsheet. They will also learn how to analyse the data to perform the financial calculations required for the assignment.

Grades will be assigned according to whether the correct data has been acquired and manipulated to deliver the information requested in the assignment. Deductions will be made for “Bad Spreadsheets” that are hard to understand, and the course documents include a description of bad spreadsheet techniques and ways to avoid the creation of bad spreadsheets.

The data collection should be performed on worksheets with live links to Eikon or Capital IQ feeds. However, all of the data collected should also be copied onto an extra worksheet tab and “frozen” (pasted as values with the same format) and the analysis should be performed on this frozen data, so that it can be understood even without an available data feed.

Assignments are **due 2 business days** after being assigned.

Daily News Summary

Each student will be assigned a business sector or situation to follow during Block Week. At the start of class, each student will have approximately 2 minutes to summarize the breaking news and make oral recommendations on how to use the news in a trading strategy.

For this assignment, students will learn how to use the news feeds in Eikon and CapitalIQ. The news feeds have a variety of filters that can be applied so that a student can focus on one business sector. Most of the other graded elements of the course use the spreadsheet links that Eikon and Capital IQ provide for data, so students don’t get much of a chance to use the terminal interface. This element of the course will give the students expertise in using the terminal interfaces.

Students will receive a grade that reflects their ability to keep abreast of important

topics and ignore stale or unimportant topics. If the business sector only has stale news on a certain day, the student can either pass the baton or bring up an older news story for that sector. Each summary should end with a recommended action, such as "Sell Enron" or "Buy manure futures" or "Be alert for an interest rate increase from today's Fed meeting". In addition, the instructor often will ask a question about a news report and the student will be expected to research that question to be answered the next day. Students are graded each day on their news summary.

Eikon Certification

Eikon certification is based on online multiple-choice tests managed by Refinitiv for their product. Links to the tests and the test material are in the D2L material for the course.

By preparing for the certification tests, students will become more familiar with the powerful data information interfaces provided by these products, so that they can use them for their assignments and in other courses, as well as their future career.

The certification results provide a numeric score that will be entered directly into the gradebook for this part of the course.

Students must submit the record of the actual score on the Eikon certifications, rather than just a pass/fail note. This requires making a screen shot of the message provided by Refinitiv.

Trading Simulation

The Rotman Interactive Trader (RIT) software allows for the simulation of several trading environments ("cases"), with varying degrees of complexity involving the ability of traders to interactive with each other in their trades as well as with a passive "liquidity trader". Students will learn how to use bids, asks, market orders and limit orders. They will be given tools to manage their book of trades that simulate tools used in industry. They will develop trading strategies that respond to exogenous information provided by the terminal, as well as the endogenous game information of their fellow students' trading activities. We will have trading exercises each day, with increasing complexity. Marks are assigned each day for the student's performance.

There will be practice runs of each trading case that aren't scored. For scored runs, the Profit & Loss (P&L) of each student trader is saved. Scores will be normalized by the cross-sectional (class) standard deviation and mean of class scores for each run. Some of the trading cases require a hedging strategy, so marks will be deducted (adjusted) for risky and unreliable P&L scores. These adjusted normalized scores will be averaged for each case. The four case averages will be added to give an overall trading score for the day. The mark for each student's trading performance will be based on the rank order of the overall trading score within the class for that day. An effort will be made to give the same letter grade to students with a similar average score.

Term Project

The term project is **due within two months** of the end of Block Week. This will be an investigation chosen by the student, following on material in their FNCE courses or the material covered in this course, using the Lab data feeds. The students should provide a well-written but brief report of approximately 10-20 pages, and provide associated spreadsheets showing their analysis, with the same structure as their Assignments above.

The content of this course cuts across that of several other Finance courses, and I'd like the project to cut across several courses. But your report should not be one that could be a report for another Haskayne class. In other words, I would like this report to be distinct from any term paper that you could submit for any other class, unless you have discussed this relationship with me by explaining how this term paper goes beyond what would normally be submitted for the other class.

The objective of this term project is for the students to think how they can use these data feeds or trading techniques to create value for an organization that might hire them.

Screen Shots for written materials

The four Assignments and the Term Project will often require screen shots of a Eikon or CapitalIQ terminal screen. Students should make an effort to make these readable. In particular:

- Whenever possible, the screen shot should have a white background, rather than the terminal default of a black background. In particular, red text and lines set against a black background are very hard to read.
- The default for pasting screen shots into MS Word often involves a size reduction of the graphic. The graphics should be enlarged to have the same size as the original terminal view.

Collaborative versus Independent Work

One thing that helps students learn in this course is a collaborative spirit where students talk with each other and learn from each other. I believe this is an effective learning strategy and I encourage it.

But the Instructor needs to base grades on the extent to which each student demonstrates that they are capable of doing the work themselves. Thus, students can work together to solve problems associated with the assignments, but the material that is handed in must be prepared from a blank spreadsheet or a blank word processing document for each student.

In particular, if the spreadsheet structure appears to be the same across students, grades of the similar students will be reduced accordingly. For example, if students use the same named variables in a spreadsheet, or the same formulas that result in errors, this is a strong indication that they did not complete the final spreadsheet on their own. Note that naming your variables is one of the first things you should do when building a spreadsheet, so similarity of named variables is very suggestive of work that was not completed independently.

Class Preparation & Desire2Learn (D2L)	Lectures focus on the material presented in the readings and general discussion relating to the topic(s) outlined in the lecture schedule. Students are expected to read the assigned readings before class and be prepared for class discussion. Important information and additional readings for FNCE 449 are posted on Desire2Learn (D2L). Students should regularly check the Announcements section of D2L for ongoing notices.
Email Communication	Email is commonly used by students to communicate with their instructor. It is the generally preferred method of communication outside of Block Week. However, it does limit the effectiveness of the communications and may not be the best way for instructors to answer student questions, especially those requiring an explanation of concepts covered in this course or some personal concerns. Therefore the instructor may request a telephone call or personal meeting. Your instructor will inform you as to his expectations about emails. In particular, the subject line of all emails should include the phrase "FNCE 449" in order to help the instructor find it when stormed by spam.
Internet & Electronic Communication Devices	Any surfing of the Internet during lectures that is not directly related to the class discussion is distracting and strictly forbidden. Additionally, the use of any electronic devices (e.g., cellular phones/smartphones) for e-mailing, text-messaging, etc. is strictly prohibited. Please turn OFF your phone before the beginning of each lecture.

Class Schedule & Topics

Please note that lecture topics and readings are tentative and subject to change. The dates of assessments will not be changed.

Important dates (e.g. Block Week, Lecture start dates, Reading Week, etc.) can be found at the following web site: http://ucalgary.ca/pubs/calendar/current/academic-schedule.html

Date	Details	Class Preparation (readings, reviews, etc.)
Monday, January 4, 2021	**11:59 am – last date to drop Block Week course**	
	News Summaries by students	Use your data terminal to find breaking news on your assigned topic.
	Investments and Security Returns • Stock price quotes • Harvesting historical stock returns • Beta calculation for various indices and with scatter plots, and dealing with asynchronous trading	**Required reading:** Course lecture notes **Suggested reading**: M. Scholes and J. Williams. Estimating betas from nonsynchronous data. *Journal of Financial Economics*, 5:309–327, 1977. D. J. Fowler, C. H. Rorke, and V. M. Jog. Thin trading and beta estimation problems on the Toronto Stock Exchange. *Journal of Business Administration*, 12:77–90, Fall 1980. E. Dimson. Risk measurement when shares are subject to infrequent trading. *Journal of Financial Economics*, 7:197–226, 1979.
	Assignment 1: Collect market data on 2 stocks or commodity futures with low trading volume. Calculate the betas of the stocks for various return intervals that are affected by thin trading: hourly, daily, weekly or monthly. Use the Dimson trade-to-trade and Scholes-Williams adjustments for asynchronous trading. Compare the results with those calculated by Eikon and Thomson Reuters. **Assignment 1 is due 11:59 pm January 6, 2021**	For the Dimson trade-to-trade beta, you may find it best to use minute by minute data rather than tick data, so that each trade is in a subsequent time period.
	Rotman Interactive Trader (RIT) Introduction to the Rotman Interactive Trader simulation with the Price Discovery PD0 case. This case will be scored for grading purposes.	

Date	Details	Class Preparation (readings, reviews, etc.)
Tuesday, January 5, 2021	**News Summaries by students**	Use your data terminal to find breaking news on your assigned topic. Address any open questions that arose from your previous day of news.
	Market Microstructure and Market Efficiency • Weak, semi-strong and strong form efficiency • Technical analysis would only work if weak form efficiency fails • Bid and Ask spreads • Depth of market • Bid-ask bounce	**Required reading:** Course lecture notes **Suggested readings on market efficiency**: E. F. Fama. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*,25(2):383–417, 05 1970. E. F. Fama. Efficient capital markets: Ii. *The Journal of Finance*, 46(5):1575–1617, 12 1991. **Suggested readings on microstructure**: S. Kyle. Informed speculation with imperfect competition. *The Review of Economic Studies*, 56(3):317–355, 1989. R. Roll. A simple implicit measure of the effective bid-ask spread in an efficient market. *The Journal of Finance*, 39(4):1127–1139, 1984.
	Assignment 2: Pairs Trading Form a pairs trading rule (long-short 2 or more stocks selected to match on certain characteristics that you choose. Set the trading thresholds with one year of daily data. Follow it for a subsequent year of potential day-trading or microstructure profits. Summarize the results in terms of profit/loss and number of trades. **Assignment 2 is due 11:59 pm January 7, 2020**	Recommended reading for pairs trading: R. J. Elliott, J. V. D. Hoek, and W. P. Malcolm. Pairs trading. *Quantitative Finance*, 5(3):271—276, 2005.
	RIT Continuation with a more sophisticated trading simulation involving arbitrage between Futures and Spot markets and storage. The F2 Futures trading simulation will be used. Introduction to spreadsheet links with the Rotman Interactive Trader. This case will be scored for grading purposes.	

Date	Details	Class Preparation (readings, reviews, etc.)
Wednesday, January 6, 2021	**News Summaries by students**	Use your data terminal to find breaking news on your assigned topic. Address any open questions that arose from your previous day of news.
	Derivatives • Futures and options price quotes • Futures Options • Common Pricing formulae: Lattice (binomial), Black-Scholes (stock) and Black (futures) • Implied volatility of stock options and futures options • Understanding volatility smiles and surfaces for commodity options and their relationship to mean reversion in commodity prices.	**Required reading:** Course lecture notes **Suggested reading for basic option pricing**: F. Black and M. Scholes. The pricing of options and corporate liabilities. Journal of Political Economy, 81(3):637–654, May-June 1973. F. Black. The pricing of commodity contracts. Journal of Financial Economics, 3(12):167– 179, 1976. **Suggested readings on implied volatility, measured as VIX** R. E. Whaley. The investor fear gauge. Journal of Portfolio Management, 26(3):12–17, Spring 2000. o CBOE. The CBOE volatility index – VIX. Technical report, Chicago Board Options Exchange, 2009. **Suggested reading on the term structure of implied volatility (IV) of commodity futures and mean reversion:** E. S. Schwartz and J. E. Smith. Short-term variations and long-term dynamics in commodity prices. Management Science, 46(7):893–911, July 2000.
	Assignment 3 Choose one stock and one commodity futures contract. Get the implied volatility table and volatility surface plot (both) for each of these securities, using both Bloomberg and Eikon and spot check their IV calculations. Do this for puts and calls. Compare the results and discuss. **Assignment 3 is due 11:59 pm January 8, 2021**	
	RIT Crude Oil RIT case COM1. This case will be scored for grading purposes.	

Date	Details	Class Preparation (readings, reviews, etc.)
Thursday, January 7, 2021	**News Summaries by students**	Use your data terminal to find breaking news on your assigned topic. Address any open questions that arose from your previous day of news.
	Corporate Finance and Corporate Governance • Share ownership (amounts and names) of firms: individual and institutional, and concentration of ownership have impacts upon corporate governance and agency issues. • Board composition also has an impact upon performance.	**Required reading:** Course lecture notes **Suggested Reading:** M. C. Jensen and W. H. Meckling. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4):305–360, 1976. A. Shleifer and R. W. Vishny. A survey of corporate governance. The Journal of Finance, 52(2):737–783, June 1997. E. M. Fich and A. Shivdasani. Are busy boards effective monitors? Journal of Finance, 61(2):689 – 724, 2006.
	Assignment 4 For 2 firms, examine their ownership and board structure as reported on Thomson Reuters or Capital IQ. Comment on their governance situations. Look for independence of directors and hidden links between directors and management that may compromise their independence. **Assignment 4 is due Monday, January 11 at 11:59 pm**	
	RIT Rotman Interactive Trader Agency Trading 1 AT1 trading case. This involves buying and selling securities so that the weighted average price at the end of the day matches the volume- weighted average price (VWAP) of the market on that day This case will be scored for grading purposes.	

Date	Details	Class Preparation (readings, reviews, etc.)
Friday, January 8, 2021	**Last Date to withdraw from a Block Week Course**	
	News Summaries by students	Use your data terminal to find breaking news on your assigned topic. Address any open questions that arose from your previous day of news.
	News feeds Stock price response to news events: event studies and cumulative abnormal residuals	**Suggested reading**: E. F. Fama, L. Fisher, M. C. Jensen, and R. Roll. The adjustment of stock prices to new information. *International Economic Review*, 10(1):1–21, February 1969.
	Optional Assignment: Calculate the Cumulative Abnormal Residuals (CARs) around the earnings announcement date of 5 firms. Are the results consistent with whether the firm's announcements are above or below the IBES earnings estimates by analysts?	
	Optional Assignment (can be expanded for a term paper): Examine a news event, such as an earnings release or analyst conference call or merger announcement, studying the sequence of trade-to-trade patterns of stock returns net of index adjustments (cumulative average returns) for the period surrounding the announcement.	
Friday, January 8, 2021 (cont'd)	**Dynamic Trading Strategies** • Portfolio insurance and synthetic derivatives: delta hedging • Replicating levered long and short positions	**Suggested reading:** M. J. Brennan and E. S. Schwartz. Alternative investment strategies for the insurers of equity linked life insurance policies with an asset value guarantee. *The Journal of Business*, 52(1), 1979.
	Optional Assignment (can be expanded for a term paper): Select a portfolio represented by a broad Exchange Traded Fund (ETF). Choose an insurance level for the portfolio and a rule as to when to trade to mimic the put option. Test the efficacy of the insurance strategy. Repeat the test for different insurance levels and trading rules	
	RIT OP3 Options Volatility Trading. Traders will get information about volatility changes that they can use in an options market to make profitable trades. They are required to keep their portfolio delta under control.	A support spreadsheet will be distributed.
	There is no Assignment 5	

THERE IS NO FINAL EXAM IN THIS COURSE.