

COURSE INFORMATION**FRE 501 Strategic Economic Analysis of Agri-Food Markets****Instructor:** Dr. James (Jim) Vercammen james.vercammen@ubc.ca**Instructor Zoom Office Hours:** Tues 10 – 11:30 am and Thurs 2 – 3 pm.<https://ubc.zoom.us/j/68019730591> pw = 163355)

General questions applicable for course work: please post in Piazza site for FRE 501.

Specific questions beyond course work: please use the Canvas messaging system.

Course lectures (in-person):

MW 3:00 - 5:00 pm in SWNG 221

Course lectures (on-line):

TH 11:30 – 12:30 pm via Zoom

<https://ubc.zoom.us/j/69841676991> pw = 582594) (or use Zoom menu in Canvas)

The content for this course, including assignments and exams, is distributed through Canvas:

<http://canvas.ubc.ca>Course Support: Krishna Lim, krisha.lim@ubc.ca

See Course (Canvas) Home Page for Krishna's Zoom Office Hours

COURSE DESCRIPTION

FRE 501 examines the economics of agricultural commodity futures and options markets using both theoretical and empirical analysis. The first theory component consists of the trading mechanics of futures contracts, the economics of pricing relationships over time and space and the effectiveness of hedging price risk. The second theory component consists of the trading mechanics and pricing of call and put options on commodity futures. The empirical component consists of the statistical methods required to examine the link between the price of crude oil and the price of agricultural commodities, which is the FRE 501 theme for the MFRE Wicked Case. The course concludes with a case study of how wheat futures and option prices responded to the rapid emergence of COVID-19.

LEARNING OBJECTIVES

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

- Describe the institutional rules and mechanics of trading commodity futures and options;
- Explain important structural features of commodity futures such as the role of storage, the concept of convenience yield and the reason for seasonality in the basis;
- Explain how the unexpected arrival of information about future supply and demand is expected to impact prices, stocks, consumption and exports;
- Identify the key determinants of hedging profits and hedging effectiveness;
- Describe how payoff diagrams can be used to illustrate profits for the buyer and seller of call and put options on commodity futures contracts;
- Use risk neutral pricing methods to value option contracts; and
- Use methods of time series analysis in R to test for stationarity and cointegration, and to estimate error correction models in commodity pricing relationships.

ACADEMIC INTEGRITY AND MISCONDUCT

All UBC students are expected to behave as honest and responsible members of an academic community, including arriving to class on time. **See details below.**

WICKED CASE

The FRE 501 component of the MFRE Wicked Case involves examining the extent that food prices are co-dependent on the price of energy. Various R time series packages will be used to estimate the strength of the pricing linkages between the futures prices of crude oil and various agricultural commodities. The specific details, including the reading list, are in a posted document titled: “FRE 501 Wicked Case Guide”.

ASSESSMENT

This course has eight assignment questions, and students must complete a minimum of six of these assignment questions.

The eight assignment questions are posted in weeks 1, 2, 3, 4, 8, 9, 10, 11.

Students have two options for submitting their assignment questions:

Option Weekly → Submit by 11:59 pm of the Wednesday following the assignment posting.

Option Monthly → Submit questions 1 through 4 by 11:59 pm on Wednesday, October 7th, and questions 5 through 8 by 11:59 pm on Wednesday, December 2nd.

Students are strongly encouraged to choose Option 1 as way to keep up with class material and to receive graded feedback early.

The assignment questions are worth 24% towards the final course grade. Each of the six assignment questions are worth 4%. Bonus points can be earned by submitted more than 6 assignment questions and/or by submitting the assignment questions weekly rather than monthly. Bonus points are calculated as follow:

Submit all 6 questions with option monthly	No bonus points.	
Submit 6 questions	For each question submitted with Option Weekly, add 1 point.	Maximum of 5 points
Submit 7 questions	Add 1 point. For each question submitted with Option Weekly, add 1 point.	Maximum of 5 points
Submit 8 questions	Add 2 points. For each question submitted with Option Weekly, add 1 point.	Maximum of 5 points

With Option Monthly, late submissions will be penalized: 25% of the total available points will be subtracted if the submission is no more than 24 hours late; 50% will be deducted if the submission is between 24 and 48 hours late. Submissions beyond 48 hours late will not be accepted.

During the two-hour in-person lecture, students will answer questions concerning the course material using a combined Zoom/Canvas poll. There will typically be 2 – 4 polls per session. For each poll, 50 percent of the grade is assigned for participation and 50 percent is assigned for obtaining the correct answer. Polls are worth 10 percent of the course grade.

Students who miss a class (and thus a poll) without pre-authorization from Prof Vercaemmen will receive zero points for each poll that was missed. Students who miss a class with pre-authorization

from Prof Vercammen will take a quiz with new poll questions at a later date, or will have fewer polls used to calculate their poll grade.

<i>Assignments:</i>	– 24%
<i>Wicked Case:</i>	– 10%
<i>Class Polls</i>	– 10%
<i>Midterm Exam: Friday, October 21st</i>	– 26%
<i>Final Exam: Time TBA</i>	– 30%
<i>Total</i>	100%

COVID-19

The midterm and final exams are expected to be written in person rather than written on-line. If COVID-19 concerns prevent the exam from being written in person, either for an individual student or for the entire class, then Plan “C” will be used. An individual who wants to opt out of the in-person exam because of concerns over COVID-19 must have written approval from the Director of the MFRE program.

Plan C with 3 or fewer students not writing the in-person midterm or final exam

- Each student who chooses to not write the in-person exam will have an individual Zoom oral exam, which covers the same material as the in-class written version of the exam.

Plan C with more than 3 students not writing the in-person midterm or final exam

- Each student who has written approval from the MFRE Director will write an essay-based at-home version of the exam.

Plan C with in-person exam not allowed by UBC

- All students will write an at-home exam with personalized questions.

MISSED CLASSES

Students who miss an in-person class without pre-authorization from Prof Vercammen will not have access to the recording of the class. Students who do have authorization to miss an in-person class must attend a Zoom version of the class during the same time slot. If attending the Zoom version is not possible, then subject to approval by Prof Vercammen, the student will be provided with a recording of the class. All authorizations and approvals must happen a minimum of 24 hours before the scheduled class (in the case of illness, the minimum notification time is 1 hour).

Students who miss an on-line Thursday class without (with) pre-authorization from Prof Vercammen will not (will) receive the Zoom recording for that class.

READINGS

The readings from this course come from a variety of sources:

- Professor Vercammen’s Github site, which contains modified course material for the 2019 version of FRE 501: <https://vercammen.github.io/index.html> -- Practice questions within these notes are optional but highly recommended.

- Vercammen, J. *Agricultural Marketing: Structural Models for Price Analysis* Routledge (2011) -- Relevant chapters posted with class notes.
- TradinginFutures_intro.pdf (posted at www.gofutures.com): https://www.gofutures.com/pdfs/TradinginFutures_intro.pdf
- Mark-to-Market explanation: Corporate Finance Institute: <https://corporatefinanceinstitute.com/resources/knowledge/valuation/mark-to-market/> (see futures contract example, half way through article)
- Alberta Agriculture hedging overview: <https://www.alberta.ca/using-hedging-to-protect-farm-product-prices.aspx>
- CME Group “Deconstructing Futures Returns: The Role of Roll Yield” (2014) <https://www.cmegroup.com/education/files/deconstructing-futures-returns-the-role-of-roll-yield.pdf>

SCHEDULE (econometric topics in *italics*).

Time Slot	Topic	Comments
1, Sept 8 – 11: in-person (2 hrs)	Overview of trading futures	Assign Q1 posted
1, Sept 8 – 11: on-line (1 hr) NONE		
2, Sept 14 – 18: in-person (2 hrs)	Modeling spot prices over time and space	Assign Q1 due Sept 16 th Assign Q2 posted
2, Sept 14 – 18: on-line (1 hr)	<i>Non stationarity and unit roots</i>	
3, Sept 21 – 25: in-person (2 hrs)	Basis and futures price spreads: theory	Assign Q2 due Sept 23 rd Assign Q3 posted
3, Sept 21 – 25: on-line (1 hr)	<i>Co-integration</i>	
4, Sept 28 – Oct 2: in-person (2 hrs)	Hedging mechanics	Assign Q3 due Sept 30 th Assign Q4 posted
4, Sept 28 – Oct 2: on-line (1 hr)	<i>Error correction model (ECM)</i>	
5, Oct 5 – 9: in-person (2 hrs)	Hedging profits, basis, basis risk	Assign Q4 due Oct 7 th Work on Wicked Case
5, Oct 5 – 9: on-line (1 hr)	<i>Interpreting ECM & forecasting</i>	
6, Oct 13 – 16: in-person (2 hrs)	Dual definitions of contango and backwardation	Work on Wicked Case
6, Oct 13 – 16: on-line NONE		
7, Oct 19 – 23: in-person (2 hrs)	Midterm Exam Wed Oct 21	
7, Oct 19 – 23: on-line (1 hr)	<i>Student breakout rooms for Wicked Case assignment</i>	
8, Oct 26 – 30: in-person (2 hrs)	Commodity Index funds, roll yield	Assign Q5 posted
8, Oct 26 – 30: on-line (1 hr)	<i>Student breakout rooms for Wicked Case assignment</i>	
9, Nov 2 – 6: in-person (2 hrs)	Overview of commodity options	Assign Q5 due Nov 4 th Assign Q6 posted
9, Nov 2 – 6: on-line (1 hr)	<i>Open Q&A for Wicked Case Assignment</i>	
10, Nov 9 – 13: In-person (2 hrs)	Pricing of commodity options	<i>Wicked Case due Nov 9th</i> Assign Q6 due Nov 13 th Assign Q7 posted
10, Nov 9–13: On-line (1 hr) NONE		

FRE 501: Strategic Economic Analysis of AgriFood Markets, Fall 2020**Course Outline**

11, Nov 16 – 20: In-person (2 hrs)	Implied volatility (IV)	Assign Q7 due Nov 18 th Assign Q8 posted
11, Nov 16 – 20: on-line (1 hr)	GARCH	
12, Nov 23 – 27: In-person (2 hrs)	COVID-19 Case Study	Assign Q8 due Nov 18th
13, Nov 30–Dec 4: In-person (2 hrs)	Final Exam Prep	
13, Nov 30–Dec 4: In-person (1 hr)	GARCH	

READINGS LIST

Time Slot	Topic	Reading
1, Sept 8 – 11	Overview of trading futures	Trading Futures pp 1 – 17; Github 1A; Mark-to-market reading
2, Sept 14 – 18	Modeling spot prices over time and space	Github 1B Vercammen (2012) Ch 1: pp 5 – 11; Ch 2: pp 15 – 18; Ch 3: pp 36 - 39
3, Sept 21 – 25	Basis and futures price spreads: theory	Github 1C Vercammen (2012) Ch 4: pp 61-65
4, Sept 28 – Oct 2	Hedging mechanics	Github 1D, Alberta Ag reading
5, Oct 5 – 9	Hedging profits, basis, basis risk	Github 1D, Alberta Ag reading
6, Oct 13 – 16	Dual definitions of contango and backwardation	No reading
7, Oct 19 – 23	Midterm exam	
8, Oct 26 – 30	Commodity Index funds, roll yield	CME Group (2014)
9, Nov 2 – 6	Overview of commodity options	Github 2A (i, ii)
10, Nov 9 – 13	Pricing commodity options	Github 2B (i)
11, Nov 16 – 20	Implied volatility (IV)	Github 2B (ii)

STATEMENT ABOUT THE UNIVERSITY'S VALUES AND POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and

students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available [here](https://senate.ubc.ca/policies-resources-support-student-success) (<https://senate.ubc.ca/policies-resources-support-student-success>)

ACADEMIC MISCONDUCT

Academic honesty is essential to the continued functioning of The University of British Columbia as an institution of higher learning and research. All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action.

Academic misconduct that is subject to disciplinary measures includes, but is not limited, to the following:

§ Plagiarism, which is intellectual theft, occurs where an individual submits or presents the oral or written work of another person as his or her own. In many UBC courses, you will be required to submit material in electronic form. The electronic material will be submitted to a service which UBC subscribes, called TurnItIn. This service checks textual material for originality. It is increasingly used in North American universities. For more information, review TurnItIn website online.

§ Cheating, which may include, but is not limited to falsification of any material subject to academic evaluation, unauthorized collaborative work; or use of unauthorized means to complete an examination.

§ Submitting others work as your own, may include but not limited to i. using, or attempting to use, another student's answers; ii. providing answers to other students; iii. failing to take reasonable measures to protect answers from use by other students; or iv. in the case of students who study together, submitting identical or virtually identical assignments for evaluation unless permitted by the course instructor.

§ Resubmission of Material, submitting the same, or substantially the same, essay, presentation, or assignment more than once (whether the earlier submission was at this or another institution) unless prior approval has been obtained from the instructor(s) to whom the assignment is to be submitted.

§ Use of academic ghostwriting services, including hiring of writing or research services and submitting papers or assignments as his or her own.

Student Responsibility: Students are responsible for informing themselves of the guidelines of acceptable and non-acceptable conduct for examinations and graded assignments as presented via FRE code of conduct guidelines; course syllabus and instructors; and UBC academic misconduct policies. Review the following web sites for details: § UBC Academic Misconduct and Discipline (<http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,54,111,0>) § UBC Learning Commons web-based Academic Integrity (<http://learningcommons.ubc.ca/academic-integrity/>).

Penalties for Academic Dishonesty: The integrity of academic work depends on the honesty of all those who work in this environment and the observance of accepted conventions. Academic misconduct is treated as a serious offence at UBC and within the MFRE program. Penalties for academic dishonesty are applied at the discretion of the course instructor. Incidences of academic misconduct may result in a reduction of grade or a mark of zero on the assignment or examination with more serious consequences being applied if the matter is referred to the Dean's office and/or President's Advisory Committee on

Of particular importance to this class is academic misconduct concerning the assignments and exams. Students are encouraged to work together on the assignments. However, each student must submit their own assignment and they must not copy answers from their classmates. The graders for FRE 501 are very good at identify instances of copying, and when copying is

deemed to have happened, typically the students involved will receive zero on that assignment. Students must write exams completely on their own. Cheating on an exam is a very serious offense and when cheating is evident, the students involved typically receive a failing grade for the course.

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>.